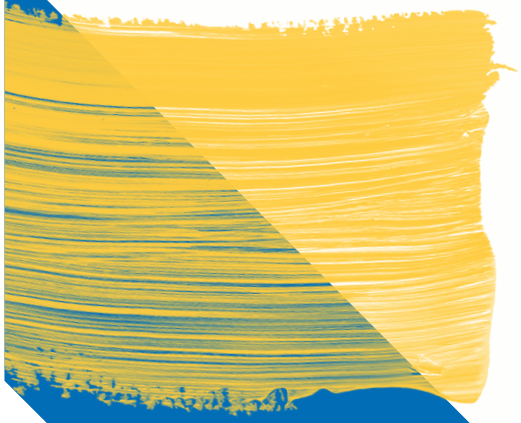
TOSHIBA

# MOSFETs

## Selection Guide 2021



## Contents

# I Small Signal MOSFETs

## 1. Over 500mA Series MOSFETs (Semi-Power Type)

Package Dimensions (unit: mm)

| CST3C | CST3 (SOT-883) | CST3B | VESM (SOT-723) | UFM (SOT-323F) | ES6 (SOT-563) | UF6 (SOT-363F) | WCSP6C |
|---|---|---|---|---|---|---|---|
| Bottom View | Bottom View | Bottom View | | | | | Bottom View |
|  |  |  |  |  |  |  |  |
| 0.8x0.6 | 1.0x0.6 | 1.2x0.8 | 1.2x1.2 | 2.0x2.1 | 1.6x1.6 | 2.0x2.1 | 1.5x1.0 |

### P-Channel Single MOSFET

| Package | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (mΩ) | | | | | | | Qg typ. (nC) | Ciss typ. (pF) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{GS}$=-1.2V | $V_{GS}$=-1.5V | $V_{GS}$=-1.8V | $V_{GS}$=-2.5V | $V_{GS}$=-4V | $V_{GS}$=-4.5V | $V_{GS}$=-10V | | | |
| CST3C | SSM3J64CTC $ | -12 | +/-10 | -1.0 | 11300 | 1310 | 890 | 560 | - | 370 | - | - | 50 | |
| | SSM3J65CTC $ | -20 | +/-10 | -0.7 | 11300 | 1550 | 1070 | 700 | - | 500 | - | - | 48 | |
| CST3 | SSM3J56ACT $ | -20 | +/-8 | -1.4 | 4000 | 900 | 660 | 480 | - | 390 | - | 1.6 | 100 | |
| CST3B | SSM3J46CTB ● $ | -20 | +/-8 | -2.0 | - | 250 | 178 | 133 | - | 103 | - | 4.7 | 290 | ⇒ SSM3J377R |
| VESM | SSM3J66MFV ☆ # $ | -20 | +6/-8 | -0.8 | 4000 | 900 | 660 | 480 | - | 390 | - | 1.6 | 100 | |
| | SSM3J56MFV $ | -20 | +/-8 | -0.8 | 4000 | 900 | 660 | 480 | - | 390 | - | 1.6 | 100 | |
| WCSP6C | SSM6J771G $ | -20 | +/-12 | -5.0 | - | - | - | 47.5 | - | 35 | 34.7(@-8V) 31(@-8.5V) | 9.8 | 870 | |
| ES6 | SSM6J216FE $ | -12 | +/-8 | -4.8 | - | 88.1 | 56 | 39.3 | - | 32 | - | 12.7 | 1040 | |
| | SSM6J213FE $ | -20 | +/-8 | -2.6 | - | 250 | 178 | 133 | - | 103 | - | 4.7 | 290 | |
| | SSM6J215FE $ | -20 | +/-8 | -3.4 | - | 154 | 104 | 79 | - | 59 | - | 10.4 | 630 | |
| | SSM6J212FE $ | -20 | +/-8 | -4.0 | - | 94 | 65.4 | 49 | - | 40.7 | - | 14.1 | 970 | |
| | SSM6J207FE $ | -30 | +/-20 | -1.4 | - | - | - | - | 491 | - | 251 | - | 137 | |
| | SSM6J214FE $ | -30 | +/-12 | -3.6 | - | - | 149.6 | 77.6 | - | 57 | 50 | 7.9 | 560 | |
| UFM | SSM3J132TU $ | -12 | +/-6 | -5.4 | 94 | 39 | 29 | 21 | - | 17 | - | 33 | 2700 | |
| | SSM3J135TU $ | -20 | +/-8 | -3.0 | - | 260 | 180 | 132 | - | 103 | - | 4.6 | 270 | |
| | SSM3J145TU # $ | -20 | +6/-8 | -3.0 | - | 260 | 180 | 132 | - | 103 | - | 4.6 | 270 | |
| | SSM3J134TU $ | -20 | +/-8 | -3.2 | - | 240 | 168 | 123 | - | 93 | - | 4.7 | 290 | |
| | SSM3J144TU # $ | -20 | +6/-8 | -3.2 | - | 240 | 168 | 123 | - | 93 | - | 4.7 | 290 | |
| | SSM3J120TU ● $ | -20 | +/-8 | -4.0 | - | 140 | 78 | 49 | 38 | - | - | 22.3 | 1484 | ⇒ SSM3J133TU |
| | SSM3J130TU $ | -20 | +/-8 | -4.4 | - | 63.2 | 41.1 | 31 | - | 25.8 | - | 24.8 | 1800 | |
| | SSM3J140TU # $ | -20 | +6/-8 | -4.4 | - | 63.2 | 41.1 | 31 | - | 25.8 | - | 24.8 | 1800 | |
| | SSM3J133TU $ | -20 | +/-8 | -5.5 | - | 88.4 | 56 | 39.7 | - | 29.8 | - | 12.8 | 840 | |
| | SSM3J143TU # $ | -20 | +6/-8 | -5.5 | - | 88.4 | 56 | 39.7 | - | 29.8 | - | 12.8 | 840 | |
| | SSM3J112TU # $ | -30 | +/-20 | -1.1 | - | - | - | - | 790 | - | 390 | - | 86 | |
| | SSM3J118TU # $ | -30 | +/-20 | -1.4 | - | - | - | - | 480 | - | 240 | - | 137 | |
| | SSM3J117TU # $ | -30 | +/-20 | -2.0 | - | - | - | - | 225 | - | 117 | - | 280 | |
| UF6 | SSM6J50TU $ | -20 | +/-10 | -2.5 | - | - | 205(@-2V) | 100 | - | 64 | - | - | 800 | |
| | SSM6J422TU ☆ # $ | -20 | +6/-8 | -4.0 | - | 99.6 | 67.8 | 51.4 | - | 42.7 | - | 12.8 | 840 | |
| | SSM6J412TU $ | -20 | +/-8 | -4.0 | - | 99.6 | 67.8 | 51.4 | - | 42.7 | - | 12.8 | 840 | |
| | SSM6J424TU ☆ # $ | -20 | +6/-8 | -6.0 | - | 54 | 36 | 26 | - | 22.5 | - | 23.1 | 1650 | |
| | SSM6J414TU $ | -20 | +/-8 | -6.0 | - | 54 | 36 | 26 | - | 22.5 | - | 23.1 | 1650 | |
| | SSM6J402TU # $ | -30 | +/-20 | -2.0 | - | - | - | - | 225 | - | 117 | 5.3 | 280 | |
| | SSM6J410TU # $ | -30 | +/-20 | -2.1 | - | - | - | - | 393 | - | 216 | 2.9 | 120 | |
| | SSM6J401TU # $ | -30 | +/-20 | -2.5 | - | - | - | - | 145 | - | 73 | 16 | 730 | |

☆ New Products, ● Recommend Another New Product
# AEC-Q101 qualified, $ With protection Zener diode between gate and source

Package Dimensions (unit: mm)

| UDFN6B (SOT-1220) | SOT-23F | S-Mini (SOT-346) | TSOP6F |
|---|---|---|---|
| Bottom View  |  |  |  |
| 2.0x2.0 | 2.9x2.4 | 2.9x2.5 | 2.9x2.8 |

## P-Channel Single MOSFET

| Package | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (mΩ) | | | | | | | Qg typ. (nC) | Ciss typ. (pF) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{GS}$=-1.2V | $V_{GS}$=-1.5V | $V_{GS}$=-1.8V | $V_{GS}$=-2.5V | $V_{GS}$=-4V | $V_{GS}$=-4.5V | $V_{GS}$=-10V | | | |
| UDFN6B | SSM6J512NU $ | -12 | +/-10 | -10.0 | - | - | 40.1 | 25.7 | 20.5(@-3.6V) | 18.7 | 16.2(@-8V) | 19.5 | 1400 | |
| | SSM6J505NU $ | -12 | +/-6 | -12.0 | 61 | 30 | 21 | 16 | - | 12 | - | 37.6 | 2700 | |
| | SSM6J511NU $ | -12 | +/-10 | -14.0 | - | - | 19.2 | 13.5 | 11.5(@-3.6V) | 10 | 9.1(@-8V) | 47 | 3350 | |
| | SSM6J503NU $ | -20 | +/-8 | -6.0 | - | 89.6 | 57.9 | 41.7 | - | 32.4 | - | 12.8 | 840 | |
| | SSM6J502NU $ | -20 | +/-8 | -6.0 | - | 60.5 | 38.4 | 28.3 | - | 23.1 | - | 24.8 | 1800 | |
| | SSM6J501NU $ | -20 | +/-8 | -10.0 | - | 43 | 26.5 | 19 | - | 15.3 | - | 29.9 | 2600 | |
| | SSM6J507NU $ | -30 | +20/-25 | -10.0 | - | - | - | - | 32 | 28 | 20 | 13.6 | 1150 | |
| SOT-23F | SSM3J338R $ | -12 | +/-10 | -6.0 | - | - | 45.3 | 27.9 | 21.9(@-3.6V) | 20.2 | 17.6(@-8V) | 19.5 | 1400 | |
| | SSM3J327R $ | -20 | +/-8 | -3.9 | - | 240 | 168 | 123 | - | 93 | - | 4.6 | 290 | |
| | SSM3J377R # $ | -20 | +6/-8 | -3.9 | - | 240 | 168 | 123 | - | 93 | - | 4.6 | 290 | |
| | SSM3J331R $ | -20 | +/-8 | -4.0 | - | 150 | 100 | 75 | - | 55 | - | 10.4 | 630 | |
| | SSM3J371R # $ | -20 | +6/-8 | -4.0 | - | 150 | 100 | 75 | - | 55 | - | 10.4 | 630 | |
| | SSM3J328R ● $ | -20 | +/-8 | -6.0 | - | 88.4 | 56 | 39.7 | - | 29.8 | - | 12.8 | 840 | ⇒ SSM3J355R |
| | SSM3J378R # $ | -20 | +6/-8 | -6.0 | - | 88.4 | 56 | 39.7 | - | 29.8 | - | 12.8 | 840 | |
| | SSM3J355R $ | -20 | +/-10 | -6.0 | - | - | 52.3 | 38.8 | - | 30.1 | - | 16.6 | 1030 | |
| | SSM3J358R $ | -20 | +/-10 | -6.0 | - | - | 49.3 | 32.8 | 27.7(@-3.6V) | 25.3 | 22.1(@-8V) | 38.5 | 1331 | |
| | SSM3J334R $ | -30 | +/-20 | -4.0 | - | - | - | - | 136 | 105 | 71 | 5.9 | 280 | |
| | SSM3J374R # $ | -30 | +10/-20 | -4.0 | - | - | - | - | 136 | 105 | 71 | 5.9 | 280 | |
| | SSM3J340R $ | -30 | +20/-25 | -4.0 | - | - | - | - | 86 | 73 | 45 | 6.2 | 492 | |
| | SSM3J332R $ | -30 | +/-12 | -6.0 | - | - | 144 | 72 | - | 50 | 42 | 8.2 | 560 | |
| | SSM3J372R # $ | -30 | +6/-12 | -6.0 | - | - | 144 | 72 | - | 50 | 42 | 8.2 | 560 | |
| | SSM3J356R # $ | -60 | +10/-20 | -2.0 | - | - | - | - | 400 | 360 | 300 | 8.3 | 330 | |
| | SSM3J351R # $ | -60 | +10/-20 | -3.5 | - | - | - | - | 184 | 164 | 134 | 15.1 | 660 | |
| S-Mini | SSM3J325F $ | -20 | +/-8 | -2.0 | - | 311 | 231 | 179 | - | 150 | - | 4.6 | 270 | |
| | SSM3J375F # $ | -20 | +6/-8 | -2.0 | - | 311 | 231 | 179 | - | 150 | - | 4.6 | 270 | |
| | SSM3J352F $ | -20 | +/-12 | -2.0 | - | - | 443 | 199 | - | 136 | 110 | 5.1 | 210 | |
| | SSM3J353F $ | -30 | +20/-25 | -2.0 | - | - | - | - | 274 | 232 | 150 | 3.4 | 159 | |
| TSOP6F | SSM6J801R $ | -20 | +6/-8 | -6.0 | - | 88.4 | 56 | 39.7 | - | 32.5 | - | 12.8 | 840 | |
| | SSM6J808R ☆ # | -40 | +10/-20 | -7.0 | - | - | - | - | 52 | 48 | 35 | 24.2 | 1020 | |
| | SSM6J811R ★ $ | -60 | +10/-20 | -4.0 | - | - | - | - | 184 | 164 | 134 | 15.1 | 660 | |

☆ New Products, ★ Under Development (The specification is subject to change without notice.), ● Recommend Another New Product
# AEC-Q101 qualified, $ With protection Zener diode between gate and source

Package Dimensions (unit: mm)

| CST3 (SOT-883) | CST3B | VESM (SOT-723) | SSM (SOT-416) | UFM (SOT-323F) | ES6 (SOT-563) | UF6 (SOT-363F) | UDFN6B (SOT-1220) | WCSP6C |
|---|---|---|---|---|---|---|---|---|
| Bottom View  | Bottom View  |  |  |  |  |  | Bottom View  | Bottom View  |
| 1.0x0.6 | 1.2x0.8 | 1.2x1.2 | 1.6x1.6 | 2.0x2.1 | 1.6x1.6 | 2.0x2.1 | 2.0x2.0 | 1.5x1.0 |

## N-Channel Single MOSFET

| Package | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (mΩ) | | | | | | | Qg typ. (nC) | Ciss typ. (pF) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{GS}$=1.2V | $V_{GS}$=1.5V | $V_{GS}$=1.8V | $V_{GS}$=2.5V | $V_{GS}$=4V | $V_{GS}$=4.5V | $V_{GS}$=10V | | | |
| CST3 | SSM3K56CT $ | 20 | +/-8 | 0.8 | - | 840 | 480 | 300 | - | 235 | - | 1.0 | 55 | |
| | SSM3K56ACT $ | 20 | +/-8 | 1.4 | - | 840 | 480 | 300 | - | 235 | - | 1.0 | 55 | |
| CST3B | SSM3K59CTB ● $ | 40 | +/-12 | 2.0 | - | - | 420 | 268 | 238(@3.6V) 231(@4.2V) | 228 | 215(@8V) | 1.1 | 130 | ⇒ SSM3K339R |
| VESM | SSM3K36MFV # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | SSM3K56MFV $ | 20 | +/-8 | 0.8 | - | 840 | 480 | 300 | - | 235 | - | 1.0 | 55 | |
| WCSP6C | SSM6K781G | 12 | +/-8 | 7.0 | - | 124 | 47.4 | 23.2 | - | 18 | - | 5.4 | 600 | |
| SSM | SSM3K36FS # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | SSM3K56FS $ | 20 | +/-8 | 0.8 | - | 840 | 480 | 300 | - | 235 | - | 1.0 | 55 | |
| ES6 | SSM6K204FE $ | 20 | +/-10 | 2.0 | - | 307 | 214 | 164 | 126 | - | - | 3.4 | 195 | |
| | SSM6K211FE $ | 20 | +/-10 | 3.2 | - | 118 | 82 | 59 | - | 47 | - | 10.8 | 510 | |
| | SSM6K24FE $ | 30 | +/-12 | 0.5 | - | - | - | 180 | - | 145 | - | - | 245 | |
| | SSM6K208FE $ | 30 | +/-12 | 1.9 | - | - | 296 | 177 | 133 | - | - | 1.9 | 123 | |
| | SSM6K202FE $ | 30 | +/-12 | 2.3 | - | - | 145 | 101 | 85 | - | - | - | 270 | |
| | SSM6K217FE $ | 40 | +/-12 | 1.8 | - | - | 400 | 248 | 218(@3.6V) 211(@4.2V) | 208 | 195(@8V) | 1.1 | 130 | |
| UFM | SSM3K36TU # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | SSM3K62TU # $ | 20 | +/-8 | 0.8 | 432 | 139 | 89 | 68 | - | 57 | - | 2.0 | 177 | |
| | SSM3K122TU # $ | 20 | +/-10 | 2.0 | - | 304 | 211 | 161 | 123 | - | - | 3.4 | 195 | |
| | SSM3K121TU # $ | 20 | +/-10 | 3.2 | - | 140 | 93 | 63 | 48 | - | - | 5.9 | 400 | |
| | SSM3K123TU # $ | 20 | +/-10 | 4.2 | - | 66 | 43 | 32 | 28 | - | - | 13.6 | 1010 | |
| | SSM3K127TU # $ | 30 | +/-12 | 2.0 | - | - | 286 | 167 | 123 | - | - | 1.5 | 123 | |
| | SSM3K116TU # $ | 30 | +/-12 | 2.2 | - | - | - | 135 | - | 100 | - | - | 245 | |
| | SSM3K131TU # | 30 | +/-20 | 6.0 | - | - | - | - | - | 41.5 | 27.6 | 10.1 | 450 | |
| | SSM3H137TU # $ | 34 | +/-20 | 2.0 | - | - | - | - | 295 | 280 | 240 | 3.0 | 119 | Built-in Active Clamp Zener |
| | SSM3K2615TU # $ | 60 | +/-20 | 2.0 | - | - | - | 580(@3.3V) | 440 | - | 300 | 6.0 | 150 | |
| | SSM3K341TU # $ | 60 | +/-20 | 6.0 | - | - | - | - | 69 | 51 | 36 | 9.3 | 550 | Tch=175°C |
| | SSM3K361TU # $ | 100 | +/-20 | 3.5 | - | - | - | - | - | 92 | 69 | 3.2 | 430 | Tch=175°C |
| UF6 | SSM6K405TU $ | 20 | +/-10 | 2.0 | - | 307 | 214 | 164 | 126 | - | - | 3.4 | 195 | |
| | SSM6K404TU # $ | 20 | +/-10 | 3.0 | - | 147 | 100 | 70 | 55 | - | - | 5.9 | 400 | |
| | SSM6K403TU # $ | 20 | +/-10 | 4.2 | - | 66 | 43 | 32 | 28 | - | - | 16.8 | 1050 | |
| | SSM6K406TU # $ | 30 | +/-20 | 4.4 | - | - | - | - | - | 38.5 | 25 | 12.4 | 490 | |
| | SSM6K407TU # $ | 60 | +/-20 | 2.0 | - | - | - | - | 440 | - | 300 | 6.0 | 150 | |
| UDFN6B | SSM6K518NU ☆ | 20 | +/-8 | 6.0 | - | 108 | 74 | 45 | - | 33 | - | 3.6 | 410 | |
| | SSM6K517NU ☆ | 30 | +12/-8 | 6.0 | - | - | 82 | 53 | - | 39.1 | - | 3.2 | 310 | |
| | SSM6K504NU # $ | 30 | +/-20 | 9.0 | - | - | - | - | - | 26 | 19.5 | 4.8 | 620 | |
| | SSM6K513NU | 30 | +/-20 | 15.0 | - | - | - | - | - | 12 | 8.9 | 7.5 | 1130 | |
| | SSM6K516NU ☆ | 30 | +20/-12 | 6.0 | - | - | - | - | - | 64 | 46 | 2.5 | 280 | |
| | SSM6K514NU | 40 | +/-20 | 12.0 | - | - | - | - | - | 17.3 | 11.6 | 7.5 | 1110 | |
| | SSM6K341NU $ | 60 | +/-20 | 6.0 | - | - | - | - | 69 | 51 | 36 | 9.3 | 550 | |
| | SSM6K361NU $ | 100 | +/-20 | 3.5 | - | - | - | - | - | 92 | 69 | 3.2 | 430 | |

☆ New Products, ● Recommend Another New Product
# AEC-Q101 qualified, $ With protection Zener diode between gate and source

Package Dimensions (unit: mm)

| SOT-23F | TSOP6F |
|---|---|
|  |  |
| 2.9x2.4 | 2.9x2.8 |

## N-Channel Single MOSFET

| Package | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (mΩ) | | | | | | | Qg typ. (nC) | Ciss typ. (pF) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{GS}$=1.2V | $V_{GS}$=1.5V | $V_{GS}$=1.8V | $V_{GS}$=2.5V | $V_{GS}$=4V | $V_{GS}$=4.5V | $V_{GS}$=10V | | | |
| SOT-23F | SSM3K344R $ | 20 | +/-8 | 3.0 | - | 232 | 139 | 91 | - | 71 | - | 2.0 | 153 | |
| | SSM3K345R $ | 20 | +/-8 | 4.0 | - | 108 | 74 | 45 | - | 33 | - | 3.6 | 410 | |
| | SSM3K329R $ | 30 | +/-12 | 3.5 | - | - | 289 | 170 | 126 | - | - | 1.5 | 123 | |
| | SSM3K324R $ | 30 | +/-12 | 4.0 | - | - | 109 | 72 | - | 56 | - | 2.2 | 200 | |
| | SSM3K376R ☆ # $ | 30 | +12/-8 | 4.0 | | | 109 | 72 | - | 56 | - | 2.2 | 200 | |
| | SSM3K336R # $ | 30 | +/-20 | 3.0 | - | - | - | - | - | 140 | 95 | 1.7 | 126 | |
| | SSM3K333R # | 30 | +/-20 | 6.0 | - | - | - | - | - | 42 | 28 | 3.4 | 436 | |
| | SSM3K335R # $ | 30 | +/-20 | 6.0 | - | - | - | - | - | 56 | 38 | 2.7 | 340 | |
| | SSM3K347R # $ | 38 | +/-20 | 2.0 | - | - | - | - | 480 | 410 | 340 | 2.5 | 86 | Built-in Active Clamp Zener |
| | SSM3K337R # $ | 38 | +/-20 | 2.0 | - | - | - | - | 200 | 176 | 150 | 3.0 | 120 | Built-in Active Clamp Zener |
| | SSM3K339R $ | 40 | +/-12 | 2.0 | - | - | 390 | 238 | 208(@3.6V)<br>201(@4.2V) | 198 | 185(@8V) | 1.1 | 130 | |
| | SSM3K357R ☆ # $ | 60 | +/-12 | 0.65 | - | - | - | 2400(@3V) | - | 1800(@5V) | - | 1.5 | 43 | Built-in Active Clamp Zener |
| | SSM3K2615R # $ | 60 | +/-20 | 2.0 | - | - | - | 580(@3.3V) | 440 | - | 300 | 6.0 | 150 | |
| | SSM3K318R # $ | 60 | +/-20 | 2.5 | - | - | - | - | - | 145 | 107 | 7.0 | 235 | |
| | SSM3K341R # $ | 60 | +/-20 | 6.0 | - | - | - | - | 69 | 51 | 36 | 9.3 | 550 | Tch=175°C |
| | SSM3K361R # $ | 100 | +/-20 | 3.5 | - | - | - | - | - | 92 | 69 | 3.2 | 430 | Tch=175°C |
| TSOP6F | SSM6K809R ☆ # $ | 60 | +/-20 | 6.0 | - | - | - | - | 69 | 51 | 36 | 9.3 | 550 | Tch=175°C |
| | SSM6K810R ☆ # $ | 100 | +/-20 | 3.5 | - | - | - | - | - | 92 | 69 | 3.2 | 430 | Tch=175°C |
| | SSM6K818R ★ | 30 | +/-20 | 15.0 | - | - | - | - | - | 12 | 8.9 | 7.5 | 1130 | |
| | SSM6K819R ☆ # $ | 100 | +/-20 | 10.0 | - | - | - | - | - | 36.4 | 25.8 | 8.5 | 1110 | Tch=175°C |

☆ New Products, ★ Under Development (The specification is subject to change without notice.)
# AEC-Q101 qualified, $ With protection Zener diode between gate and source

Package Dimensions (unit: mm)

| ES6 (SOT-563) | UF6 (SOT-363F) | US6 (SOT-363) | UDFN6 (SOT-1118) | TSOP6F | TCSP6A | TCSPAC-153001 |
|---|---|---|---|---|---|---|
|  |  |  | Bottom View  |  | Bottom View  | Bottom View  |
| 1.6x1.6 | 2.0x2.1 | 2.0x2.1 | 2.0x2.0 | 2.9x2.8 | 2.14x1.67 | 2.98x1.49 |

## Dual MOSFET

| Package | Polarity | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (mΩ) | | | | | | | Qg typ. (nC) | Ciss typ. (pF) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $\|V_{GS}\|$= 1.2V | $\|V_{GS}\|$= 1.5V | $\|V_{GS}\|$= 1.8V | $\|V_{GS}\|$= 2.5V | $\|V_{GS}\|$= 4V | $\|V_{GS}\|$= 4.5V | $\|V_{GS}\|$= 10V | | | |
| ES6 | P-ch x 2 | SSM6P41FE $ | -20 | +/-8 | -0.72 | - | 1040 | 670 | 440 | - | 300 | - | 1.76 | 110 | |
| | | SSM6P56FE ☆ $ | -20 | +/-8 | -0.8 | 4000 | 900 | 660 | 480 | - | 390 | - | 1.6 | 100 | |
| | N-ch x 2 | SSM6N36FE # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | | SSM6N56FE $ | 20 | +/-8 | 0.8 | - | 840 | 480 | 300 | - | 235 | - | 1.0 | 55 | |
| | N-ch + P-ch | SSM6L14FE $ | 20 | +/-10 | 0.8 | - | 600 | 450 | 330 | - | 240 | - | 2.0 | 90 | |
| | | | -20 | +/-8 | -0.72 | - | 1040 | 670 | 440 | - | 300 | - | 1.76 | 110 | |
| | | SSM6L36FE # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | | | -20 | +/-8 | -0.33 | - | 3600 | 2700 | 1600(@-2.8V) | - | 1310 | - | 1.2 | 43 | |
| | | SSM6L56FE ☆ $ | 20 | +/-8 | 0.8 | - | 840 | 480 | 300 | - | 235 | - | 1 | 55 | |
| | | | -20 | +/-8 | -0.8 | 4000 | 900 | 660 | 480 | - | 390 | - | 1.6 | 100 | |
| UDFN6 | P-ch x 2 | SSM6P47NU $ | -20 | +/-8 | -4.0 | - | 242 | 170 | 125 | - | 95 | - | 4.6 | 290 | |
| | | SSM6P69NU ☆ # $ | -20 | +6/-12 | -4.0 | - | - | 157 | 76 | - | 56 | 45 | 6.74 | 480 | |
| | | SSM6P49NU $ | -20 | +/-12 | -4.0 | - | - | 157 | 76 | - | 56 | 45 | 6.74 | 480 | |
| | N-ch x 2 | SSM6N61NU # $ | 20 | +/-8 | 4.0 | - | 108 | 74 | 45 | - | 33 | - | 3.6 | 410 | |
| | | SSM6N55NU $ | 30 | +/-20 | 4.0 | - | - | - | - | - | 64 | 46 | 2.5 | 280 | |
| | | SSM6N67NU # $ | 30 | +12/-8 | 4.0 | - | - | 82 | 53 | - | 39.1 | - | 3.2 | 310 | |
| | | SSM6N68NU # $ | 30 | +12/-8 | 4.0 | - | - | 180 | 117 | - | 84 | - | 1.8 | 129 | |
| | | SSM6N57NU $ | 30 | +/-12 | 4.0 | - | - | 82 | 53 | - | 39.1 | - | 3.2 | 310 | |
| | | SSM6N58NU $ | 30 | +/-12 | 4.0 | - | - | 180 | 117 | - | 84 | - | 1.8 | 129 | |
| | N-ch + P-ch | SSM6L61NU $ | 20 | +/-8 | 4.0 | - | 108 | 74 | 45 | - | 33 | - | 3.6 | 410 | |
| | | | -20 | +/-12 | -4.0 | - | - | 157 | 76 | - | 56 | 45 | 6.74 | 480 | |
| UF6 | P-ch x 2 | SSM6P54TU $ | -20 | +/-8 | -1.2 | - | 555 | 350 | 228 | - | - | - | 7.7 | 331 | |
| | | SSM6P39TU # $ | -20 | +/-8 | -1.5 | - | - | 430 | 294 | 213 | - | - | 6.4 | 250 | |
| | | SSM6P40TU # $ | -30 | +/-20 | -1.4 | - | - | - | - | 403 | - | 226 | 2.9 | 120 | |
| | N-ch x 2 | SSM6N36TU # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | | SSM6N62TU # $ | 20 | +/-8 | 0.8 | 456 | 173 | 120 | 98 | - | 85 | - | 2.0 | 177 | |
| | | SSM6N39TU # $ | 20 | +/-10 | 1.6 | - | 247 | 190 | 139 | 119 | - | - | 7.5 | 260 | |
| | | SSM6N24TU # $ | 30 | +/-12 | 0.5 | - | - | - | 180 | - | 145 | - | - | 245 | |
| | | SSM6N40TU # $ | 30 | +/-20 | 1.6 | - | - | - | - | 182 | - | 122 | 5.1 | 180 | |
| | N-ch + P-ch | SSM6L36TU # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| | | | -20 | +/-8 | -0.33 | - | 3600 | 2700 | 1600(@-2.8V) | - | 1310 | - | 1.2 | 43 | |
| | | SSM6L39TU # $ | 20 | +/-10 | 1.6 | - | 247 | 190 | 139 | 119 | - | - | 7.5 | 260 | |
| | | | -20 | +/-8 | -1.5 | - | - | 430 | 294 | 213 | - | - | 6.4 | 250 | |
| | | SSM6L12TU # $ | 30 | +/-12 | 0.5 | - | - | - | 180 | - | 145 | - | - | 245 | |
| | | | -20 | +/-12 | -0.5 | - | - | - | 430 | 260 | - | - | - | 218 | |
| | | SSM6L40TU # $ | 30 | +/-20 | 1.6 | - | - | - | - | 182 | - | 122 | 5.1 | 180 | |
| | | | -30 | +/-20 | -1.4 | - | - | - | - | 403 | - | 226 | 2.9 | 120 | |
| US6 | N-ch x 2 | SSM6N43FU # $ | 20 | +/-10 | 0.5 | - | 1520 | 1140 | 850 | - | 660 | 630(@5V) | 1.23 | 46 | |
| TSOP6F | N-ch x 2 | SSM6N357R ☆ # $ | 60 | +/-12 | 0.65 | - | - | - | 2400 (@3V) | - | 1800 (@5V) | - | 1.5 | 43 | Built-in Active Clamp Zener |
| | | SSM6N815R $ | 100 | +/-20 | 2.0 | - | - | - | - | 180 | 142 | 103 | 3.1 | 290 | |
| | | SSM6N813R ☆ # $ | 100 | +/-20 | 3.5 | - | - | - | - | - | 154 | 112 | 3.6 | 242 | $T_j$=175°C |
| | P-ch x 2 | SSM6P816R ☆ $ | -20 | +/-10 | -6.0 | - | - | 52.3 | 38.8 | - | 30.1 | - | 16.6 | 1030 | |
| | N-ch + P-ch | SSM6L807R ☆ $ | 30 | +12/-12 | 4 | - | - | 82 | 53 | - | 39.1 | - | 3.2 | 310 | |
| | | | -20 | +12/-12 | -4 | - | - | 157 | 76 | - | 56 | 45 | 6.74 | 480 | |
| | | SSM6L820R ☆ # $ | 30 | +12/-8 | 4 | - | - | 82 | 53 | - | 39.1 | - | 3.2 | 310 | |
| | | | -20 | +6/-12 | -4 | - | - | 157 | 76 | - | 56 | 45 | 6.74 | 480 | |
| TCSP6A | N-ch x 2 | SSM6N951L ☆ $ | 12 | +/-8 | 8 | - | - | - | 10 | 5.5(@3.8V) | 5.1 | - | 26 | - | Drain common |
| TCSPAC-153001 | N-ch x 2 | SSM10N954L ★ $ | 12 | +/-8 | 13.5 | - | - | - | 6.1 | 2.85 (@3.8V) | 2.75 | - | 25 | - | Drain common |

☆ New Products, ★ Under Development (The specification is subject to change without notice.)
# AEC-Q101 qualified, $ With protection Zener diode between gate and source

## 2. Less than 500mA Series MOSFETs (Standard Type)

Package Dimensions (unit: mm)

| CST3C | CST3 (SOT-883) | VESM (SOT-723) | SSM (SOT-416) | UFM (SOT-323F) | USM (SOT-323) | S-Mini (SOT-346) |
|---|---|---|---|---|---|---|
| Bottom View | Bottom View | | | | | |
|  |  |  |  |  |  |  |
| 0.8x0.6 | 1.0x0.6 | 1.2x1.2 | 1.6x1.6 | 2.0x2.1 | 2.0x2.1 | 2.9x2.5 |

## P-Channel Single MOSFET

| Package | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (Ω) | | | | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{GS}$=-1.2V | $V_{GS}$=-1.5V | $V_{GS}$=-1.8V | $V_{GS}$=-2.5V | $V_{GS}$=-4V | $V_{GS}$=-4.5V | $V_{GS}$=-10V | |
| CST3C | SSM3J35CTC $ | -20 | +/-10 | -0.25 | 20 | 4 | 2.9 | 2.1 | - | 1.4 | - | |
| CST3 | SSM3J35CT $ | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | |
| | SSM3J16CT ● $ | -20 | +/-10 | -0.1 | - | 45 | - | 12 | 8 | - | - | ⇒ SSM3J35CT |
| | SSM3J15CT $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | |
| VESM | SSM3J35MFV ● # $ | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | ⇒ SSM3J35AMFV |
| | SSM3J36MFV ● $ | -20 | +/-8 | -0.33 | - | 3.6 | 2.7 | 1.6 | - | 1.36 | - | ⇒ SSM3J56MFV |
| | SSM3J16FV ● $ | -20 | +/-10 | -0.1 | - | 45 | - | 12 | 8 | - | - | ⇒ SSM3J35AMFV |
| | SSM3J35AMFV $ | -20 | +/-10 | -0.25 | 20 | 4 | 2.9 | 2.1 | - | 1.4 | - | |
| | SSM3J15FV # $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | |
| SSM | SSM3J35FS # $ | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | |
| | SSM3J35AFS $ | -20 | +/-10 | -0.25 | 20 | 4 | 2.9 | 2.1 | - | 1.4 | - | |
| | SSM3J36FS # $ | -20 | +/-8 | -0.33 | - | 3.6 | 2.7 | 1.6(@-2.8V) | - | 1.31 | - | |
| | SSM3J16FS ● $ | -20 | +/-10 | -0.1 | - | 45 | - | 12 | 8 | - | - | ⇒ SSM3J35FS |
| | SSM3J15FS # $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | |
| UFM | SSM3J36TU # $ | -20 | +/-8 | -0.33 | - | 3.6 | 2.7 | 1.6(@-2.8V) | - | 1.31 | - | |
| USM | SSM3J16FU # $ | -20 | +/-10 | -0.1 | - | 45 | - | 12 | 8 | - | - | |
| | SSM3J15FU # $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | |
| | SSM3J09FU $ | -30 | +/-20 | -0.2 | - | - | - | 6(@-3.3V) | 4.2 | - | 2.7 | |
| S-Mini | SSM3J15F # $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | |
| | 2SJ305 $ | -30 | +/-20 | -0.2 | - | - | - | 4 | - | - | - | |
| | 2SJ168 ● $ | -60 | +/-20 | -0.2 | - | - | - | - | - | - | 2 | ⇒ SSM3J168F |
| | SSM3J168F ☆ # $ | -60 | +10/-20 | -0.4 | - | - | - | - | 2 | 1.9 | 1.55 | |

☆ New Products, ● Recommend Another New Product, # AEC-Q101 qualified, $ With protection Zener diode between gate and source

Package Dimensions (unit: mm)

| CST3C | CST3 (SOT-883) | VESM (SOT-723) | SSM (SOT-416) | USM (SOT-323) | SOT23 (SOT-23) | S-Mini (SOT-346) |
|---|---|---|---|---|---|---|
| Bottom View | Bottom View |  |  |  |  |  |
| 0.8x0.6 | 1.0x0.6 | 1.2x1.2 | 1.6x1.6 | 2.0x2.1 | 2.9x2.4 | 2.9x2.5 |

## N-Channel Single MOSFET

| Package | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (Ω) | | | | | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{GS}$=1.2V | $V_{GS}$=1.5V | $V_{GS}$=1.8V | $V_{GS}$=2.5V | $V_{GS}$=4V | $V_{GS}$=4.5V | $V_{GS}$=5V | $V_{GS}$=10V | |
| CST3C | SSM3K16CTC $ | 20 | +/-10 | 0.2 | - | 5.6 | 4 | 3 | - | 2.2 | - | - | |
| | SSM3K35CTC $ | 20 | +/-10 | 0.25 | 9 | 3.1 | 2.4 | 1.6 | - | 1.1 | - | - | |
| | SSM3K15ACTC $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | SSM3K72CTC $ | 60 | +/-20 | 0.15 | - | - | - | 5.7(typ.) | - | 4.7 | 4.4 | 3.9 | |
| CST3 | SSM3K16CT ● $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | ⇒ SSM3K37CT |
| | SSM3K35CT $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | |
| | SSM3K37CT $ | 20 | +/-10 | 0.2 | - | 5.6 | 4.05 | 3.02 | - | 2.2 | - | - | |
| | SSM3K15CT ● $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | ⇒ SSM3K15ACT |
| | SSM3K15ACT $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | SSM3K72KCT $ | 60 | +/-20 | 0.4 | - | - | - | - | - | 1.75 | 1.65 | 1.5 | |
| VESM | SSM3K16FV $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | |
| | SSM3K35MFV # $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | |
| | SSM3K37MFV $ | 20 | +/-10 | 0.25 | - | 5.6 | 4.05 | 3.02 | - | 2.2 | - | - | |
| | SSM3K35AMFV $ | 20 | +/-10 | 0.25 | 9 | 3.1 | 2.4 | 1.6 | - | 1.1 | - | - | |
| | SSM3K15AMFV $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | SSM3K44MFV # $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| SSM | SSM3K16FS ● # $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | ⇒ SSM3K37FS |
| | SSM3K35FS ● # $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | ⇒ SSM3K35AFS |
| | SSM3K37FS $ | 20 | +/-10 | 0.2 | - | 5.6 | 4.05 | 3.02 | - | 2.2 | - | - | |
| | SSM3K35AFS $ | 20 | +/-10 | 0.25 | 9 | 3.1 | 2.4 | 1.6 | - | 1.1 | - | - | |
| | SSM3K15FS ● $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | ⇒ SSM3K15AFS |
| | SSM3K44FS # $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| | SSM3K15AFS $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | SSM3K72CFS $ | 60 | +/-20 | 0.17 | - | - | - | - | - | 4.7 | 4.4 | 3.9 | |
| | SSM3K72KFS # $ | 60 | +/-20 | 0.3 | - | - | - | - | - | 1.75 | 1.65 | 1.5 | |
| USM | SSM3K16FU # $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | |
| | SSM3K15FU # $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| | SSM3K15AFU $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | SSM3K48FU $ | 30 | +/-20 | 0.1 | - | - | - | 5.4 | 3.2 | - | - | - | |
| | SSM3K09FU $ | 30 | +/-20 | 0.4 | - | - | - | 1.7(@3.3V) | 1.2 | - | - | 0.7 | |
| | SSM3K17FU # $ | 50 | +/-7 | 0.1 | - | - | - | 40 | 20 | - | - | - | |
| | SSM3K7002CFU $ | 60 | +/-20 | 0.17 | - | - | - | - | - | 4.7 | 4.4 | 3.9 | |
| | SSM3K7002KFU # $ | 60 | +/-20 | 0.4 | - | - | - | - | - | 1.75 | 1.65 | 1.5 | |
| SOT23 | T2N7002AK $ | 60 | +/-20 | 0.2 | - | - | - | - | - | 4.7 | 4.4 | 3.9 | |
| | T2N7002BK $ | 60 | +/-20 | 0.4 | - | - | - | - | - | 1.75 | 1.65 | 1.5 | |
| S-Mini | SSM3K15F # $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| | 2SK2009 $ | 30 | +/-20 | 0.2 | - | - | - | 2 | - | - | - | - | |
| | SSM3K7002KF # $ | 60 | +/-20 | 0.4 | - | - | - | - | - | 1.75 | 1.65 | 1.5 | |

● Recommend Another New Product, # AEC-Q101 qualified, $ With protection Zener diode between gate and source

Package Dimensions (unit: mm)

| ESV (SOT-553) | ES6 (SOT-563) | USV (SOT-353) | UF6 (SOT-363F) | US6 (SOT-363) |
|---|---|---|---|---|
|  |  |  |  |  |
| 1.6x1.6 | 1.6x1.6 | 2.0x2.1 | 2.0x2.1 | 2.0x2.1 |

## Dual MOSFET

| Package | Polarity | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | $R_{DS(ON)}$ max (Ω) | | | | | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $\|V_{GS}\|$= 1.2V | $\|V_{GS}\|$= 1.5V | $\|V_{GS}\|$= 1.8V | $\|V_{GS}\|$= 2.5V | $\|V_{GS}\|$= 4V | $\|V_{GS}\|$= 4.5V | $\|V_{GS}\|$= 5V | $\|V_{GS}\|$= 10V | |
| ESV | N-ch x 2 | SSM5N16FE $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | |
| | | SSM5N15FE $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| ES6 | P-ch x 2 | SSM6P35FE # $ | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | - | |
| | | SSM6P35AFE $ | -20 | +/-10 | -0.25 | 20 | 4 | 2.9 | 2.1 | - | 1.4 | - | - | |
| | | SSM6P36FE # $ | -20 | +/-8 | -0.33 | - | 3.6 | 2.7 | 1.6(@-2.8V) | - | 1.31 | - | - | |
| | | SSM6P16FE ● $ | -20 | +/-10 | -0.1 | - | 45 | - | 12 | 8 | - | - | - | ⇒ SSM6P35FE |
| | | SSM6P15FE # $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | - | |
| | N-ch x 2 | SSM6N16FE $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | |
| | | SSM6N35FE ● # $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | ⇒ SSM6N35AFE |
| | | SSM6N37FE $ | 20 | +/-10 | 0.25 | - | 5.6 | 4.05 | 3.02 | - | 2.2 | - | - | |
| | | SSM6N35AFE $ | 20 | +/-10 | 0.25 | 9 | 3.1 | 2.4 | 1.6 | - | 1.1 | - | - | |
| | | SSM6N44FE # $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| | | SSM6N15AFE $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | | SSM6N7002BFE $ | 60 | +/-20 | 0.2 | - | - | - | - | - | 3.3 | 2.6 | 2.1 | |
| | N-ch + P-ch | SSM6L35FE # $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | |
| | | | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | - | |
| USV | P-ch x 2 | SSM5P15FU $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | - | |
| | N-ch x 2 | SSM5N16FU $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | |
| | | SSM5N15FU $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| UF6 | P-ch x 2 | SSM6P36TU # $ | -20 | +/-8 | -0.33 | - | 3.6 | 2.7 | 1.6(@-2.8V) | - | 1.31 | - | - | |
| US6 | P-ch x 2 | SSM6P35FU ● # $ | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | - | ⇒ SSM6P35AFU |
| | | SSM6P35AFU $ | -20 | +/-10 | -0.25 | 20 | 4 | 2.9 | 2.1 | - | 1.4 | - | - | |
| | | SSM6P16FU ● $ | -20 | +/-10 | -0.1 | - | 45 | - | 12 | 8 | - | - | - | ⇒ SSM6P35AFU |
| | | SSM6P15FU # $ | -30 | +/-20 | -0.1 | - | - | - | 32 | 12 | - | - | - | |
| | N-ch x 2 | SSM6N16FU ● $ | 20 | +/-10 | 0.1 | - | 15 | - | 4 | 3 | - | - | - | ⇒ SSM6N37FU |
| | | SSM6N35FU ● # $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | ⇒ SSM6N35AFU |
| | | SSM6N35AFU $ | 20 | +/-10 | 0.25 | 9 | 3.1 | 2.4 | 1.6 | - | 1.1 | - | - | |
| | | SSM6N37FU $ | 20 | +/-10 | 0.25 | - | 5.6 | 4.05 | 3.02 | - | 2.2 | - | - | |
| | | SSM6N48FU $ | 30 | +/-20 | 0.1 | - | - | - | 5.4 | 3.2 | - | - | - | |
| | | SSM6N44FU # $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | |
| | | SSM6N15FU ● $ | 30 | +/-20 | 0.1 | - | - | - | 7 | 4 | - | - | - | ⇒ SSM6N15AFU |
| | | SSM6N15AFU $ | 30 | +/-20 | 0.1 | - | - | - | 6 | 3.6 | - | - | - | |
| | | SSM6N09FU $ | 30 | +/-20 | 0.4 | - | - | - | 1.7(@3.3V) | 1.2 | - | - | 0.7 | |
| | | SSM6N17FU # $ | 50 | +/-7 | 0.1 | - | - | - | 40 | 20 | - | - | - | |
| | | SSM6N7002CFU $ | 60 | +/-20 | 0.17 | - | - | - | - | - | 4.7 | 4.4 | 3.9 | |
| | | SSM6N7002KFU # $ | 60 | +/-20 | 0.3 | - | - | - | - | - | 1.75 | 1.65 | 1.5 | |
| | N-ch + P-ch | SSM6L35FU # $ | 20 | +/-10 | 0.18 | 20 | 8 | - | 4 | 3 | - | - | - | |
| | | | -20 | +/-10 | -0.1 | 44 | 22 | - | 11 | 8 | - | - | - | |
| | | SSM6L09FU $ | 30 | +/-20 | 0.4 | - | - | - | 1.7(@3.3V) | 1.2 | - | - | 0.7 | |
| | | | -30 | +/-20 | -0.2 | - | - | - | 6(@-3.3V) | 4.2 | - | - | 2.7 | |

● Recommend Another New Product, # AEC-Q101 qualified, $ With protection Zener diode between gate and source

# 3. MOSFET with Diode

Package Dimensions (unit: mm)

| ESV (SOT-553) | UFV (SOT-353F) | UDFN6 (SOT-1118) |
|---|---|---|
| | | Bottom View |
|  |  |  |
| 1.6x1.6 | 2.0x2.1 | 2.0x2.0 |

| Package | Polarity | Part Number | $V_{DSS}$ (V) | $V_{GSS}$ (V) | $I_D$ (A) | MOSFET $R_{DS(ON)}$ max (mΩ) $\|V_{GS}\|$= 1.5V | $\|V_{GS}\|$= 1.8V | $\|V_{GS}\|$= 2.5V | $\|V_{GS}\|$= 4V | $\|V_{GS}\|$= 4.5V | $\|V_{GS}\|$= 5V | $\|V_{GS}\|$= 10V | MOSFET Ciss typ. (pF) | Diode $V_R$ (V) | Diode $I_O$ (A) | Diode $V_F$ max (V) | Diode @$I_F$ (A) | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ESV | P-ch + SBD | SSM5G06FE $ | -20 | +/-10 | -0.1 | 45000 | - | 12000 | 8000 | - | - | - | 11 | 12 | 0.1 | 0.5 | 0.1 | |
| | N-ch + SBD | SSM5H06FE $ | 20 | +/-10 | 0.1 | 15000 | - | 4000 | 3000 | - | - | - | 9.3 | 12 | 0.1 | 0.5 | 0.1 | |
| UFV | P-ch + SBD | SSM5G02TU $ | -12 | +/-12 | -1.0 | - | - | 240 | 160 | - | - | - | 310 | 12 | 0.5 | 0.43 | 0.5 | |
| | | SSM5G09TU $ | -12 | +/-8 | -1.5 | - | - | 200 | 130 | - | - | - | 550 | 12 | 0.5 | 0.43 | 0.5 | |
| | | SSM5G11TU $ | -30 | +/-20 | -1.4 | - | - | - | 403 | - | - | 226 | 120 | 30 (¥) | 0.7 (¥¥) | 0.44 | 0.7 (¥¥) | |
| | N-ch + SBD | SSM5H08TU $ | 20 | +/-12 | 1.5 | - | - | 220 | 160 | - | - | - | 125 | 20 | 0.5 | 0.43 (typ.) | 0.5 | |
| | | SSM5H01TU $ | 30 | +/-20 | 1.4 | - | - | - | 450 | - | - | 200 | 106 | 20 | 0.5 | 0.43 (typ.) | 0.5 | |
| | | SSM5H11TU $ | 30 | +/-20 | 1.6 | - | - | - | 182 | - | - | 122 | 180 | 30 (¥) | 0.7 (¥¥) | 0.44 | 0.7 | |
| | | SSM5H16TU $ | 30 | +/-12 | 1.9 | - | 296 | 177 | 133 | - | - | - | 123 | 30 | 0.8 | 0.55 | 0.8 | |
| | N-ch + Switching Diode | SSM5H90ATU $ | 20 | +/-10 | 2.4 | - | - | 89 | 65 | - | - | - | 200 | 80 | 0.1 | 1.2 | 0.1 | |
| UDFN6 | P-ch + SBD | SSM6G18NU $ | -20 | +/-8 | -2.0 | 261 | 185 | 143 | - | 112 | - | - | 270 | 30 | 1 | 0.58 | 1 | |
| | N-ch + SBD | SSM6H19NU $ | 40 | +/-12 | 2.0 | - | 390 | 238 | 208(@3.6V) 201(@4.2V) | 198 | - | 185(@8V) | 130 | 40 | 0.5 | 0.57 | 0.5 | |

$ With protection Zener diode between gate and source, ¥ $V_{RRM}$, ¥¥ $I_{F(AV)}$

## 4. Part Naming Conventions

### Small Signal MOSFET SSM Series

Ex) SSM 3 K 329 R
① ② ③ ④ ⑤

① Small-Signal MOSFET
② Pin count
③ Polarity and internal configuration
K: N-channel, single
J: P-channel, single
N: N-channel, dual
P: P-channel, dual
L: N-channel and P-channel (dual)
E: N-channel and P-channel (pre-wired as a load switch)
H: N-channel and SBD
G: P-channel and SBD
Q: PNP and P-channel

④ Serial number of the products
⑤ Package

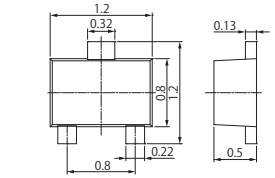
| 3-pin | 5-pin | 6-pin |
|---|---|---|
| F: S-Mini | F: SMV | G: WCSP6C |
| FU: USM | FU: USV | L: TCSP6A |
| FS: SSM | FE: ESV | R: TSOP6F |
| FV: VESM | TU: UFV | FU: US6 |
| TU: UFM | | FE: ES6 |
| CT: CST3 | | TU: UF6 |
| CTB: CST3B | | NU: UDFN6/UDFN6B |
| CTC: CST3C | | |
| R: SOT-23F | | |

# 5. Device Packages

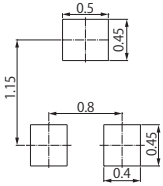
## Dimensional Outline

### VESM (SOT-723)

Package dimension unit : mm

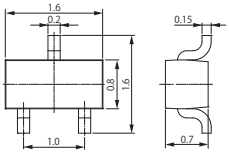



Land pattern example unit : mm

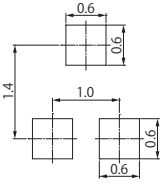



### SSM (SOT-416)

Package dimension unit : mm

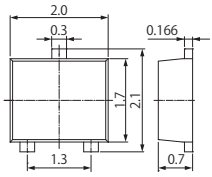



Land pattern example unit : mm

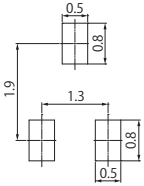



### UFM (SOT-323F)

Package dimension unit : mm

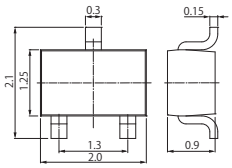



Land pattern example unit : mm

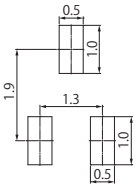



### USM (SOT-323)

Package dimension unit : mm

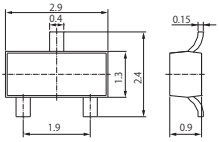



Land pattern example unit : mm

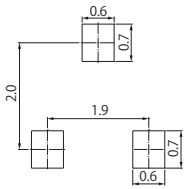



### SOT23 (SOT-23)

Package dimension unit : mm

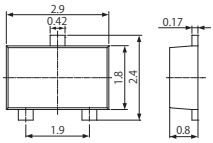



Land pattern example unit : mm

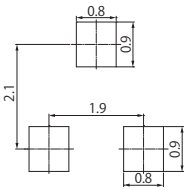



### SOT-23F

Package dimension unit : mm

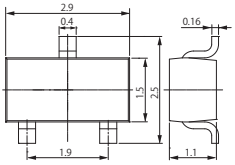



Land pattern example unit : mm

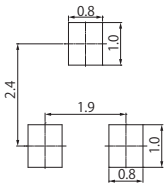



### S-Mini (SOT-346)

Package dimension unit : mm

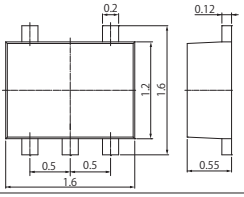



Land pattern example unit : mm

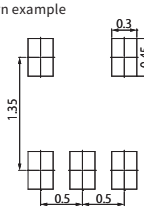



### ESV (SOT-553)

Package dimension unit : mm

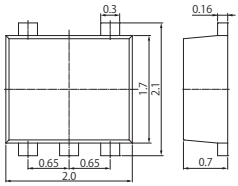



Land pattern example unit : mm

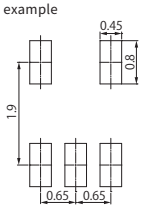


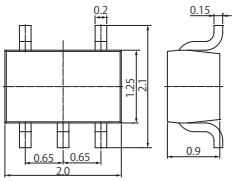
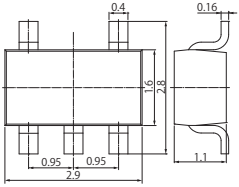
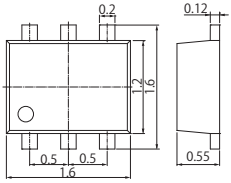
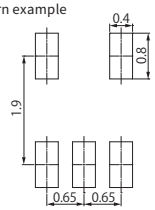
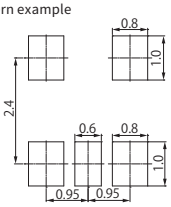
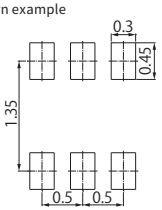

### UFV (SOT-353F)

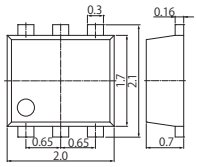
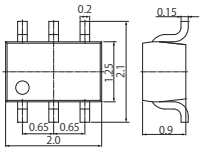
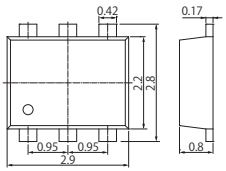
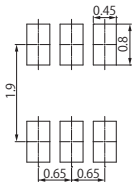
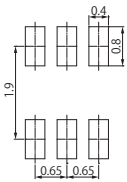
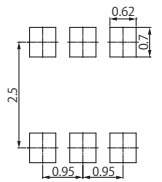
Package dimension unit : mm



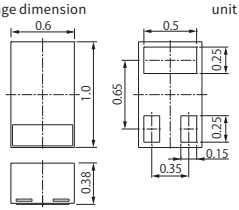
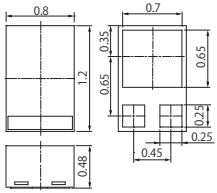
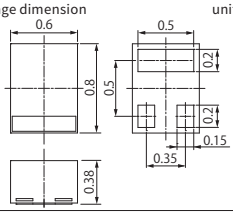
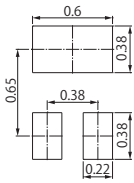
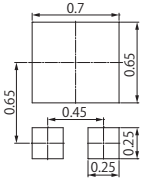
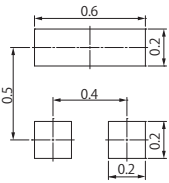

Land pattern example unit : mm



| USV (SOT-353) | SMV (SOT-25) | ES6 (SOT-563) |
|---|---|---|
| Package dimension unit : mm | Package dimension unit : mm | Package dimension unit : mm |
|  |  |  |
| Land pattern example unit : mm | Land pattern example unit : mm | Land pattern example unit : mm |
|  |  |  |

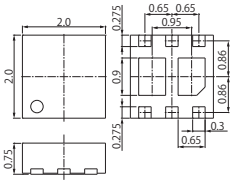
| UF6 (SOT-363F) | US6 (SOT-363) | TSOP6F |
|---|---|---|
| Package dimension unit : mm | Package dimension unit : mm | Package dimension unit : mm |
|  |  |  |
| Land pattern example unit : mm | Land pattern example unit : mm | Land pattern example unit : mm |
|  |  |  |

## Leadless packages

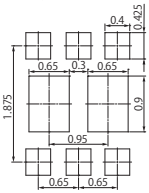
| CST3 (SOT-883) | CST3B | CST3C |
|---|---|---|
| Package dimension unit : mm | Package dimension unit : mm | Package dimension unit : mm |
|  |  |  |
| Land pattern example unit : mm | Land pattern example unit : mm | Land pattern example unit : mm |
|  |  |  |

## UDFN6 (SOT-1118)

Package dimension unit : mm

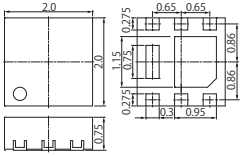



Land pattern example unit : mm

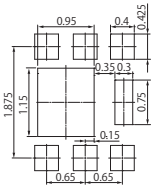



## UDFN6B (SOT-1220)

Package dimension unit : mm

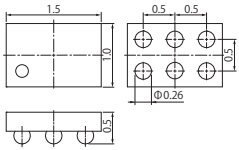



Land pattern example unit : mm

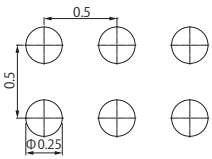



## WCSP6C

Package dimension unit : mm

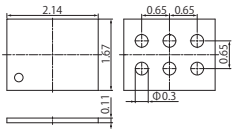



Land pattern example unit : mm

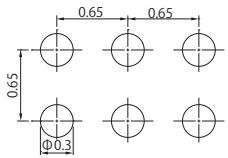



## TCSP6A

Package dimension unit : mm

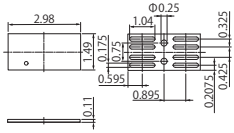



Land pattern example unit : mm

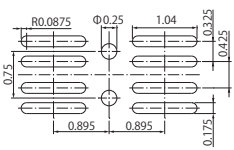



## TCSPAC-153001

Package dimension unit : mm




Land pattern example unit : mm



# Ⅱ Power MOSFETs

## 1. Low-Voltage MOSFET Series

### TSON Advance ( 3.3x3.3 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | | | | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | \|$V_{GS}$\|= 10V | \|$V_{GS}$\|= 6.5V | \|$V_{GS}$\|= 6V | \|$V_{GS}$\|= 4.5V | \|$V_{GS}$\|= 4V | \|$V_{GS}$\|= 2.5V | \|$V_{GS}$\|= 2V | \|$V_{GS}$\|= 1.8V | \|$V_{GS}$\|= 10V | \|$V_{GS}$\|= 4.5V | | |
| N-ch Note(1) | TPN11003NL | 30 | +/-20 | 31[SL] | 11 | - | - | 16 | - | - | - | - | 7.5 | 3.3 | 510 | U-MOSVIII-H |
| | TPN8R903NL | 30 | +/-20 | 37[SL] | 8.9 | - | - | 12.7 | - | - | - | - | 9.8 | 4.4 | 630 | U-MOSVIII-H |
| | TPN6R003NL | 30 | +/-20 | 56[SL] | 6 | - | - | 8.3 | - | - | - | - | 17 | 8.2 | 1050 | U-MOSVIII-H |
| | TPN5R203PL | 30 | +/-20 | 76[SL] | 5.2 | - | - | 6.4 | - | - | - | - | 22 | 10 | 1520 | U-MOSIX-H |
| | TPN4R303NL | 30 | +/-20 | 63[SL] | 4.3 | - | - | 6.3 | - | - | - | - | 14.8 | 6.8 | 1110 | U-MOSVIII-H |
| | TPN2R903PL | 30 | +/-20 | 122[SL] | 2.9 | - | - | 4.1 | - | - | - | - | 26 | 12 | 1780 | U-MOSIX-H |
| | TPN2R703NL | 30 | +/-20 | 90[SL] | 2.7 | - | - | 4.1 | - | - | - | - | 21 | 9.5 | 1600 | U-MOSVIII-H |
| | TPN1R603PL | 30 | +/-20 | 188[SL] | 1.6 | - | - | 2.5 | - | - | - | - | 41 | 20 | 2970 | U-MOSIX-H |
| | TPN7R504PL | 40 | +/-20 | 68[SL] | 7.5 | - | - | 10 | - | - | - | - | 24 | 12 | 1570 | U-MOSIX-H |
| | TPN3R704PL | 40 | +/-20 | 92[SL] | 3.7 | - | - | 6 | - | - | - | - | 27 | 13.3 | 1910 | U-MOSIX-H |
| | TPN2R304PL | 40 | +/-20 | 100[SL] | 2.3 | - | - | 4 | - | - | - | - | 41 | 19.4 | 2750 | U-MOSIX-H |
| | TPN2R805PL | 45 | +/-20 | 139[SL] | 2.8 | - | - | 5 | - | - | - | - | 39 | 19 | 2450 | U-MOSIX-H |
| | TPN22006NH | 60 | +/-20 | 21[SL] | 22 | 64 | - | - | - | - | - | - | 12 | - | 710 | U-MOSVIII-H |
| | TPN14006NH | 60 | +/-20 | 33[SL] | 14 | 41 | - | - | - | - | - | - | 15 | - | 1000 | U-MOSVIII-H |
| | TPN11006NL | 60 | +/-20 | 37[SL] | 11.4 | - | - | 17 | - | - | - | - | 23 | 11.2 | 1500 | U-MOSVIII-H |
| | TPN11006PL | 60 | +/-20 | 54[SL] | 11.4 | - | - | 18.1 | - | - | - | - | 17 | 9 | 1250 | U-MOSIX-H |
| | TPN7R506NH | 60 | +/-20 | 53[SL] | 7.5 | 16 | - | - | - | - | - | - | 22 | - | 1410 | U-MOSVIII-H |
| | TPN7R006PL | 60 | +/-20 | 76[SL] | 7 | - | - | 13.5 | - | - | - | - | 20 | 9.8 | 1440 | U-MOSIX-H |
| | TPN4R806PL | 60 | +/-20 | 105[SL] | 4.8 | - | - | 9.1 | - | - | - | - | 29 | 14 | 2130 | U-MOSIX-H |
| | TPN30008NH | 80 | +/-20 | 22[SL] | 30 | - | - | - | - | - | - | - | 11 | - | 710 | U-MOSVIII-H |
| | TPN19008QM☆ | 80 | +/-20 | 38[SL] | 19 | - | 28 | - | - | - | - | - | 16 | 9.7(@6V) | 1020 | U-MOSX-H |
| | TPN13008NH | 80 | +/-20 | 40[SL] | 13.3 | - | - | - | - | - | - | - | 18 | - | 1230 | U-MOSVIII-H |
| | TPN12008QM☆ | 80 | +/-20 | 60[SL] | 12.3 | - | 17.7 | - | - | - | - | - | 22 | 13.9(@6V) | 1280 | U-MOSX-H |
| | TPN8R408QM☆ | 80 | +/-20 | 77[SL] | 8.4 | - | 12.4 | - | - | - | - | - | 28 | 17(@6V) | 1750 | U-MOSX-H |
| | TPN3300ANH | 100 | +/-20 | 21[SL] | 33 | - | - | - | - | - | - | - | 11 | - | 680 | U-MOSVIII-H |
| | TPN1600ANH | 100 | +/-20 | 36[SL] | 16 | - | - | - | - | - | - | - | 19 | - | 1230 | U-MOSVIII-H |
| | TPN1200APL $ | 100 | +/-20 | 66[SL] | 11.5 | - | - | 20 | - | - | - | - | 24 | 12 | 1425 | U-MOSIX-H |
| | TPN5900CNH | 150 | +/-20 | 18[SL] | 59 | - | - | - | - | - | - | - | 7 | - | 460 | U-MOSVIII-H |
| | TPN1110ENH | 200 | +/-20 | 13[SL] | 114 | - | - | - | - | - | - | - | 7 | - | 460 | U-MOSVIII-H |
| | TPN2010FNH | 250 | +/-20 | 9.9[SL] | 198 | - | - | - | - | - | - | - | 7 | - | 460 | U-MOSVIII-H |
| N-ch | TPN6R303NC | 30 | +/-20 | 43[SL] | 6.3 | - | - | 8.4 | - | - | - | - | 24 | - | 1370 | U-MOSVIII |
| | TPN4R203NC | 30 | +/-20 | 53[SL] | 4.2 | - | - | 6.4 | - | - | - | - | 24 | - | 1370 | U-MOSVIII |
| | TPN2R203NC | 30 | +/-20 | 100[SL] | 2.2 | - | - | 3.6 | - | - | - | - | 34 | - | 2230 | U-MOSVIII |
| P-ch | TPCC8136 | -20 | +/-12 | -9.4 | - | - | - | 16 | - | 22 | 37 | 60 | - | 36(@5V) | 2350 | U-MOSVI |
| | TPCC8137 | -20 | +/-12 | -13 | - | - | - | 10 | - | 16 | 30 | 52 | - | 43(@5V) | 2990 | U-MOSVI |
| | TPCC8138 | -20 | +/-12 | -18 | - | - | - | 7.5 | - | 11 | 21 | 42 | - | 63(@5V) | 4165 | U-MOSVI |
| | TPN4R712MD | -20 | +/-12 | -36 | - | - | - | 4.7 | - | 8.1 | - | - | - | 65(@5V) | 4300 | U-MOSVI |
| | TPCC8131 | -30 | +20/-25 | -10 | 17.6 | - | - | 23 | - | - | - | - | 40 | - | 1700 | U-MOSVI |
| | TPCC8104 | -30 | +20/-25 | -20 | 8.8 | - | - | 12.4 | - | - | - | - | 58 | - | 2260 | U-MOSVI |
| | TPCC8105 | -30 | +20/-25 | -23 | 7.8 | - | - | 10.4 | - | - | - | - | 76 | - | 3240 | U-MOSVI |

☆ New Products, $ With protection Zener diode between gate and source, [SL] $I_{D\,(DC)}$ (Silicon Limit)
Note(1) : High-speed switching type

## SOP-8 ( SO-8 ) ( 5x6 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=4.5V | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=4.5V | | |
| N-ch Note(1) | TP89R103NL | 30 | +/-20 | 15[SL] | 9.1 | 12.9 | 9.8 | 4.4 | 630 | U-MOSVIII-H |
| | TP86R203NL | 30 | +/-20 | 19[SL] | 6.2 | 8.5 | 17 | 8.2 | 1050 | U-MOSVIII-H |
| P-ch | TPC8129 | -30 | +20/-25 | -9 | 22 | 28 | 39 | - | 1650 | U-MOSVI |
| | TPC8125 | -30 | +20/-25 | -10 | 13 | 17 | 64 | - | 2580 | U-MOSVI |
| | TPC8134 | -40 | +20/-25 | -5 | 52 | 66 | 20 | - | 890 | U-MOSVI |
| | TPC8132 | -40 | +20/-25 | -7 | 25 | 33 | 34 | - | 1580 | U-MOSVI |
| | TPC8133 | -40 | +20/-25 | -9 | 15 | 18 | 64 | - | 2900 | U-MOSVI |
| N-ch + P-ch | TPC8408 | 40 | +/-20 | 6.1 | 32 | 36 | 14 | - | 850 | U-MOSVI-H |
| | | -40 | +/-20 | -5.3 | 43 | 53 | 24 | - | 1105 | U-MOSVI |

## SOP Advance ( 5x6 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$= 10V | $\|V_{GS}\|$= 6.5V | $\|V_{GS}\|$= 6V | $\|V_{GS}\|$= 4.5V | $\|V_{GS}\|$= 2.5V | $\|V_{GS}\|$= 10V | $\|V_{GS}\|$= 4.5V | | |
| N-ch Note(1) | TPH11003NL | 30 | +/-20 | 32[SL] | 11 | - | - | 16 | - | 7.5 | 3.3 | 510 | U-MOSVIII-H |
| | TPH8R903NL | 30 | +/-20 | 38[SL] | 8.9 | - | - | 12.7 | - | 9.8 | 4.4 | 630 | U-MOSVIII-H |
| | TPH6R003NL | 30 | +/-20 | 57[SL] | 6 | - | - | 8.3 | - | 17 | 8.2 | 1050 | U-MOSVIII-H |
| | TPH4R803PL | 30 | +/-20 | 90[SL] | 4.8 | - | - | 6.2 | - | 22 | 10 | 1520 | U-MOSIX-H |
| | TPH4R003NL | 30 | +/-20 | 68[SL] | 4 | - | - | 6.2 | - | 14.8 | 6.8 | 1110 | U-MOSVIII-H |
| | TPH3R203NL | 30 | +/-20 | 84[SL] | 3.2 | - | - | 4.7 | - | 21 | 9.5 | 1600 | U-MOSVIII-H |
| | TPH3R003PL | 30 | +/-20 | 134[SL] | 3 | - | - | 4.2 | - | 50 | 24 | 2940 | U-MOSIX-H |
| | TPH2R903PL | 30 | +/-20 | 124[SL] | 2.9 | - | - | 4.1 | - | 26 | 12 | 1780 | U-MOSIX-H |
| | TPH2R003PL | 30 | +/-20 | 180[SL] | 2 | - | - | 2.6 | - | 86 | 41 | 4930 | U-MOSIX-H |
| | TPH1R403NL ¥ | 30 | +/-20 | 150[SL] | 1.4 | - | - | 2.1 | - | 46 | 20 | 3400 | U-MOSVIII-H |
| | TPHR9203PL ¥ | 30 | +/-20 | 280[SL] | 0.92 | - | - | 1.29 | - | 81 | 38 | 5800 | U-MOSIX-H |
| | TPHR9003NL ¥ | 30 | +/-20 | 220[SL] | 0.9 | - | - | 1.4 | - | 74 | 32 | 5300 | U-MOSVIII-H |
| | TPHR6503PL ¥ | 30 | +/-20 | 393[SL] | 0.65 | - | - | 0.89 | - | 110 | 52 | 7700 | U-MOSIX-H |
| | TPH7R204PL | 40 | +/-20 | 72[SL] | 7.2 | - | - | 9.7 | - | 24 | 12 | 1570 | U-MOSIX-H |
| | TPH6R004PL | 40 | +/-20 | 87[SL] | 6 | - | - | 8.4 | - | 30 | 15 | 2100 | U-MOSIX-H |
| | TPH3R704PL | 40 | +/-20 | 92 | 3.7 | - | - | 6 | - | 27 | 13.3 | 1910 | U-MOSIX-H |
| | TPH3R704PC | 40 | +/-20 | 118[SL] | 3.7 | - | - | 5.8 | - | 47 | 23 | 2780 | U-MOSIX-H |
| | TPH2R104PL | 40 | +/-20 | 180[SL] | 2.1 | - | - | 3.1 | - | 78 | 37 | 4790 | U-MOSIX-H |
| | TPH1R204PL ¥ | 40 | +/-20 | 246[SL] | 1.24 | - | - | 2.1 | - | 74 | 34 | 5500 | U-MOSIX-H |
| | TPH1R204PB | 40 | +/-20 | 240[SL] | 1.2 | - | 1.96 | - | - | 62 | - | 4400 | U-MOSIX-H (Low Spike) |
| | TPHR8504PL ¥ | 40 | +/-20 | 340[SL] | 0.85 | - | - | 1.4 | - | 103 | 49 | 7370 | U-MOSIX-H |
| | TPH2R805PL | 45 | +/-20 | 150[SL] | 2.8 | - | - | 3.9 | - | 73 | 37 | 3980 | U-MOSIX-H |
| | TPH1R405PL | 45 | +/-20 | 232[SL] | 1.4 | - | - | 2.3 | - | 74 | 36 | 4830 | U-MOSIX-H |
| | TPH1R005PL ¥ | 45 | +/-20 | 280[SL] | 1.04 | - | - | 1.7 | - | 122 | 59 | 7700 | U-MOSIX-H |
| | TPH14006NH | 60 | +/-20 | 34[SL] | 14 | 33 | - | - | - | 16 | - | 1000 | U-MOSVIII-H |
| | TPH11006NL | 60 | +/-20 | 40[SL] | 11.4 | - | - | 17 | - | 23 | 11.2 | 1500 | U-MOSVIII-H |
| | TPH9R506PL | 60 | +/-20 | 68[SL] | 9.5 | - | - | 15 | - | 21 | 11 | 1470 | U-MOSIX-H |

[SL] $I_{D\ (DC)}$ (Silicon Limit)
¥ The package can be selected according to your preference. For details, please contact your TOSHIBA sales representative.
Note(1) : High-speed switching type

## SOP Advance （5x6）

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | \|$V_{GS}$\|= 10V | \|$V_{GS}$\|= 6.5V | \|$V_{GS}$\|= 6V | \|$V_{GS}$\|= 4.5V | \|$V_{GS}$\|= 2.5V | \|$V_{GS}$\|= 10V | \|$V_{GS}$\|= 4.5V | | |
| N-ch Note(1) | TPH7R506NH | 60 | +/-20 | 55$^{SL}$ | 7.5 | 19 | - | - | - | 31 | - | 1785 | U-MOSVIII-H |
| | TPH7R006PL | 60 | +/-20 | 79$^{SL}$ | 7 | - | - | 13.5 | - | 22 | 11 | 1440 | U-MOSIX-H |
| | TPH5R906NH | 60 | +/-20 | 71$^{SL}$ | 5.9 | 14 | - | - | - | 38 | - | 2340 | U-MOSVIII-H |
| | TPH4R606NH | 60 | +/-20 | 85$^{SL}$ | 4.6 | 11 | - | - | - | 49 | - | 3050 | U-MOSVIII-H |
| | TPH3R506PL | 60 | +/-20 | 135$^{SL}$ | 3.5 | - | - | 6.7 | - | 55 | 27 | 3400 | U-MOSIX-H |
| | TPH2R506PL ¥ | 60 | +/-20 | 160$^{SL}$ | 2.5 | - | - | 4.4 | - | 60 | 32 | 4180 | U-MOSIX-H |
| | TPH2R306NH ¥ | 60 | +/-20 | 130$^{SL}$ | 2.3 | 4.7 | - | - | - | 72 | - | 4700 | U-MOSVIII-H |
| | TPH1R306PL ¥ | 60 | +/-20 | 260$^{SL}$ | 1.34 | - | - | 2.3 | - | 91 | 44 | 6250 | U-MOSIX-H |
| | TPH1R306P1 ☆ | 60 | +/-20 | 260$^{SL}$ | 1.28 | - | - | 2.3 | - | 91 | 44 | 6250 | U-MOSIX-H (Low Spike) |
| | TPH2R608NH | 75 | +/-20 | 168$^{SL}$ | 2.6 | - | - | - | - | 72 | - | 4600 | U-MOSVIII-H |
| | TPH12008NH | 80 | +/-20 | 44$^{SL}$ | 12.3 | - | - | - | - | 22 | - | 1490 | U-MOSVIII-H |
| | TPH8R008NH | 80 | +/-20 | 63$^{SL}$ | 8 | - | - | - | - | 35 | - | 2300 | U-MOSVIII-H |
| | TPH4R008NH ¥ | 80 | +/-20 | 100$^{SL}$ | 4 | - | - | - | - | 59 | - | 4100 | U-MOSVIII-H |
| | TPH2R408QM☆ ¥ | 80 | +/-20 | 200$^{SL}$ | 2.43 | - | 3.5 | - | - | 87 | 55(@6V) | 5870 | U-MOSX-H |
| | TPH1400ANH | 100 | +/-20 | 42$^{SL}$ | 13.6 | - | - | - | - | 22 | - | 1440 | U-MOSVIII-H |
| | TPH8R80ANH | 100 | +/-20 | 59$^{SL}$ | 8.8 | - | - | - | - | 33 | - | 2180 | U-MOSVIII-H |
| | TPH6R30ANL $ | 100 | +/-20 | 66$^{SL}$ | 6.3 | - | - | 10.3 | - | 55 | 27 | 3300 | U-MOSVIII-H |
| | TPH5R60APL | 100 | +/-20 | 110$^{SL}$ | 5.6 | - | - | 9.5 | - | 52 | 26 | 3300 | U-MOSIX-H |
| | TPH4R50ANH ¥ | 100 | +/-20 | 93$^{SL}$ | 4.5 | - | - | - | - | 58 | - | 4000 | U-MOSVIII-H |
| | TPH4R10ANL | 100 | +/-20 | 92$^{SL}$ | 4.1 | - | - | 6.6 | - | 75 | 37 | 4850 | U-MOSVIII-H |
| | TPH3R70APL ¥ | 100 | +/-20 | 150$^{SL}$ | 3.7 | - | - | 6.2 | - | 67 | 33 | 4850 | U-MOSIX-H |
| | TPH5900CNH | 150 | +/-20 | 18$^{SL}$ | 59 | - | - | - | - | 7 | - | 460 | U-MOSVIII-H |
| | TPH3300CNH | 150 | +/-20 | 29$^{SL}$ | 33 | - | - | - | - | 10.6 | - | 810 | U-MOSVIII-H |
| | TPH1500CNH ¥ | 150 | +/-20 | 50$^{SL}$ | 15.4 | - | - | - | - | 22 | - | 1700 | U-MOSVIII-H |
| | TPH1110ENH | 200 | +/-20 | 13$^{SL}$ | 114 | - | - | - | - | 7 | - | 460 | U-MOSVIII-H |
| | TPH6400ENH | 200 | +/-20 | 21$^{SL}$ | 64 | - | - | - | - | 11.2 | - | 810 | U-MOSVIII-H |
| | TPH2900ENH | 200 | +/-20 | 36$^{SL}$ | 29 | - | - | - | - | 22 | - | 1700 | U-MOSVIII-H |
| | TPH2010FNH | 250 | +/-20 | 10$^{SL}$ | 198 | - | - | - | - | 7 | - | 460 | U-MOSVIII-H |
| | TPH1110FNH | 250 | +/-20 | 15$^{SL}$ | 112 | - | - | - | - | 11 | - | 810 | U-MOSVIII-H |
| | TPH5200FNH | 250 | +/-20 | 27$^{SL}$ | 52 | - | - | - | - | 22 | - | 1700 | U-MOSVIII-H |
| N-ch | TPHR9003NC | 30 | +/-20 | 220$^{SL}$ | 0.9 | - | - | 1.4 | - | 75 | 32 | 5300 | U-MOSVIII |
| P-ch | TPH1R712MD | -20 | +/-12 | -60 | - | - | - | 1.7 | 2.7 | - | 182(@-5V) | 10900 | U-MOSVI |
| | TPCA8131 | -30 | +20/-25 | -13 | 17 | - | - | 22 | - | 40 | - | 1700 | U-MOSVI |
| | TPCA8109 | -30 | +20/-25 | -24 | 9 | - | - | 13 | - | 56 | - | 2400 | U-MOSVI |
| | TPCA8128 | -30 | +20/-25 | -34 | 4.8 | - | - | 6.7 | - | 115 | - | 4800 | U-MOSVI |
| | TPCA8120 | -30 | +20/-25 | -45 | 3 | - | - | 4 | - | 190 | - | 7420 | U-MOSVI |

☆ New Products, $^{SL}$ $I_{D\,(DC)}$ (Silicon Limit)
$ With protection Zener diode between gate and source,
¥ The package can be selected according to your preference. For details, please contact your TOSHIBA sales representative.
Note(1) : High-speed switching type

## SOP Advance (N) ( 4.9x6.1 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Rth (ch-c) max (°C/W) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | \|$V_{GS}$\|= 10V | \|$V_{GS}$\|= 6.5V | \|$V_{GS}$\|= 6V | \|$V_{GS}$\|= 4.5V | \|$V_{GS}$\|= 2.5V | \|$V_{GS}$\|= 10V | \|$V_{GS}$\|= 4.5V | | | |
| N-ch Note(1) | TPH1R403NL ¥ | 30 | +/-20 | 150[SL] | 1.4 | - | - | 2.1 | - | 46 | 20 | 3400 | 1.95 | U-MOSVIII-H |
| | TPH1R403NL1 ☆ | 30 | +/-20 | 230[SL] | 1.4 | - | - | 2.1 | - | 46 | 20 | 3400 | 0.88 | U-MOSVIII-H |
| | TPHR9203PL ¥ | 30 | +/-20 | 280[SL] | 0.92 | - | - | 1.29 | - | 81 | 38 | 5800 | 1.13 | U-MOSIX-H |
| | TPHR9203PL1 ☆ | 30 | +/-20 | 320[SL] | 0.92 | - | - | 1.29 | - | 81 | 38 | 5800 | 0.88 | U-MOSIX-H |
| | TPHR9003NL ¥ | 30 | +/-20 | 220[SL] | 0.9 | - | - | 1.4 | - | 74 | 32 | 5300 | 1.6 | U-MOSVIII-H |
| | TPHR9003NL1 ☆ | 30 | +/-20 | 320[SL] | 0.9 | - | - | 1.4 | - | 74 | 32 | 5300 | 0.71 | U-MOSVIII-H |
| | TPHR6503PL ¥ | 30 | +/-20 | 393[SL] | 0.65 | - | - | 0.89 | - | 110 | 52 | 7700 | 0.88 | U-MOSIX-H |
| | TPHR6503PL1 ☆ | 30 | +/-20 | 430[SL] | 0.65 | - | - | 0.89 | - | 110 | 52 | 7700 | 0.71 | U-MOSIX-H |
| | TPH1R204PL ¥ | 40 | +/-20 | 246[SL] | 1.24 | - | - | 2.1 | - | 74 | 34 | 5500 | 1.13 | U-MOSIX-H |
| | TPH1R204PL1 ☆ | 40 | +/-20 | 270[SL] | 1.24 | - | - | 2.1 | - | 74 | 34 | 5500 | 0.88 | U-MOSIX-H |
| | TPHR8504PL ¥ | 40 | +/-20 | 340[SL] | 0.85 | - | - | 1.4 | - | 103 | 49 | 7370 | 0.88 | U-MOSIX-H |
| | TPHR8504PL1 ☆ | 40 | +/-20 | 370[SL] | 0.85 | - | - | 1.4 | - | 103 | 49 | 7370 | 0.71 | U-MOSIX-H |
| | TPH1R005PL ☆ ¥ | 45 | +/-20 | 280[SL] | 1.04 | - | - | 1.7 | - | 122 | 59 | 7700 | 0.88 | U-MOSIX-H |
| | TPH2R506PL ¥ | 60 | +/-20 | 160[SL] | 2.5 | - | - | 4.4 | - | 60 | 32 | 4180 | 1.13 | U-MOSIX-H |
| | TPH2R306PL1 ☆ | 60 | +/-20 | 180[SL] | 2.3 | - | - | 4.2 | - | 60 | 32 | 4180 | 0.88 | U-MOSIX-H |
| | TPH2R306NH ¥ | 60 | +/-20 | 130[SL] | 2.3 | 4.7 | - | - | - | 72 | - | 4700 | 1.6 | U-MOSVIII-H |
| | TPH2R306NH1 ☆ | 60 | +/-20 | 190[SL] | 2.3 | 4.7 | - | - | - | 72 | - | 4700 | 0.71 | U-MOSVIII-H |
| | TPH1R306PL ¥ | 60 | +/-20 | 260[SL] | 1.34 | - | - | 2.3 | - | 91 | 44 | 6250 | 0.88 | U-MOSIX-H |
| | TPH1R306PL1 ☆ | 60 | +/-20 | 280[SL] | 1.34 | - | - | 2.3 | - | 91 | 44 | 6250 | 0.71 | U-MOSIX-H |
| | TPH4R008NH ¥ | 80 | +/-20 | 100[SL] | 4 | - | - | - | - | 59 | - | 4100 | 1.6 | U-MOSVIII-H |
| | TPH4R008NH1 ☆ | 80 | +/-20 | 147[SL] | 4 | - | - | - | - | 59 | - | 4100 | 0.71 | U-MOSVIII-H |
| | TPH4R008QM ☆ | 80 | +/-20 | 140[SL] | 4 | - | 5.6 | - | - | 57 | 35(@6V) | 3750 | 0.88 | U-MOSX-H |
| | TPH2R408QM ☆ ¥ | 80 | +/-20 | 200[SL] | 2.43 | - | 3.5 | - | - | 87 | 55(@6V) | 5870 | 0.71 | U-MOSX-H |
| | TPH4R50ANH ¥ | 100 | +/-20 | 93[SL] | 4.5 | - | - | - | - | 58 | - | 4000 | 1.6 | U-MOSVIII-H |
| | TPH4R50ANH1 ☆ | 100 | +/-20 | 138[SL] | 4.5 | - | - | - | - | 58 | - | 4000 | 0.71 | U-MOSVIII-H |
| | TPH3R70APL ¥ | 100 | +/-20 | 150[SL] | 3.7 | - | - | 6.2 | - | 67 | 33 | 4850 | 0.88 | U-MOSIX-H |
| | TPH3R70APL1 ☆ | 100 | +/-20 | 170[SL] | 3.7 | - | - | 6.2 | - | 67 | 33 | 4850 | 0.71 | U-MOSIX-H |
| | TPH1500CNH ¥ | 150 | +/-20 | 50[SL] | 15.4 | - | - | - | - | 22 | - | 1700 | 1.6 | U-MOSVIII-H |
| | TPH1500CNH1 ☆ | 150 | +/-20 | 74[SL] | 15.4 | - | - | - | - | 22 | - | 1700 | 0.71 | U-MOSVIII-H |

☆ New Products, [SL] $I_{D\,(DC)}$ (Silicon Limit)
¥ The package can be selected according to your preference. For details, please contact your TOSHIBA sales representative.
Note(1) : High-speed switching type

## DSOP Advance （5x6）

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=4.5V | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=4.5V | | |
| N-ch Note(1) | TPWR8503NL | 30 | +/-20 | 300[SL] | 0.85 | 1.3 | 74 | 32 | 5300 | U-MOSVIII-H |
| | TPWR6003PL | 30 | +/-20 | 412[SL] | 0.6 | 0.84 | 110 | 52 | 7700 | U-MOSIX-H |
| | TPWR8004PL | 40 | +/-20 | 340[SL] | 0.8 | 1.35 | 103 | 49 | 7370 | U-MOSIX-H |
| | TPW1R005PL | 45 | +/-20 | 300[SL] | 0.99 | 1.65 | 122 | 59 | 7700 | U-MOSIX-H |
| | TPW1R306PL | 60 | +/-20 | 260[SL] | 1.29 | 2.3 | 91 | 44 | 6250 | U-MOSIX-H |
| | TPW2R508NH | 75 | +/-20 | 170[SL] | 2.5 | - | 72 | - | 4600 | U-MOSVIII-H |
| | TPW4R008NH | 80 | +/-20 | 116 | 4 | - | 59 | - | 4100 | U-MOSVIII-H |
| | TPW4R50ANH | 100 | +/-20 | 92 | 4.5 | - | 58 | - | 4000 | U-MOSVIII-H |
| | TPW3R70APL ☆ | 100 | +/-20 | 150[SL] | 3.7 | 6.2 | 67 | 33 | 4850 | U-MOSIX-H |
| | TPW1500CNH | 150 | +/-20 | 50[SL] | 15.4 | - | 22 | - | 1700 | U-MOSVIII-H |
| | TPW2900ENH | 200 | +/-20 | 36[SL] | 29 | - | 22 | - | 1700 | U-MOSVIII-H |
| | TPW5200FNH | 250 | +/-20 | 27[SL] | 52 | - | 22 | - | 1700 | U-MOSVIII-H |

## DPAK+

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6.0V | $\|V_{GS}\|$=4.5V | | | |
| N-ch Note(1) | TK33S10N1H $ | 100 | +/-20 | 33 | 9.7 | - | - | 28 | 2050 | U-MOSVIII-H |

## DPAK（TO-252）/ New PW-Mold

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6V | $\|V_{GS}\|$=4.5V | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=4.5V | | |
| N-ch Note(1) | TK3R1P04PL | 40 | +/-20 | 130[SL] | 3.1 | - | 4.3 | 60 | 30 | 4670 | U-MOSIX-H |
| | TK6R7P06PL | 60 | +/-20 | 74[SL] | 6.7 | - | 11.1 | 26 | 13 | 1990 | U-MOSIX-H |
| | TK4R4P06PL | 60 | +/-20 | 106[SL] | 4.4 | - | 7.1 | 48.2 | 23.9 | 3280 | U-MOSIX-H |
| | TK6R9P08QM ☆ | 80 | +/-20 | 83[SL] | 6.9 | 9.6 | - | 39 | 24(@6V) | 2700 | U-MOSX-H |
| | TK5R1P08QM ☆ | 80 | +/-20 | 105[SL] | 5.1 | 7 | - | 56 | 34(@6V) | 3980 | U-MOSX-H |
| | TK110P10PL ☆ | 100 | +/-20 | 60[SL] | 10.6 | - | 16 | 33 | 17 | 2040 | U-MOSIX-H |
| | TK7R7P10PL ☆ | 100 | +/-20 | 79[SL] | 7.7 | - | 11.5 | 44 | 21 | 2800 | U-MOSIX-H |
| P-ch | TJ15P04M3 | -40 | +/-20 | -15 | 36 | - | 48 | 26 | - | 1100 | U-MOSVI |

☆ New Products, $ With protection Zener diode between gate and source, [SL] $I_{D\,(DC)}$ (Silicon Limit)
Note(1) : High-speed switching type

## TO-220

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | $V_{GS}$=6V | $V_{GS}$=4.5V | $V_{GS}$=10V | $V_{GS}$=4.5V | | |
| N-ch Note(1) | TK3R1E04PL | 40 | +/-20 | 128[SL] | 3.1 | - | 3.8 | 63.4 | 29.7 | 4670 | U-MOSIX-H |
| | TK30E06N1 | 60 | +/-20 | 43[SL] | 15 | - | - | 16 | - | 1050 | U-MOSVIII-H |
| | TK40E06N1 | 60 | +/-20 | 60[SL] | 10.4 | - | - | 23 | - | 1700 | U-MOSVIII-H |
| | TK8R2E06PL | 60 | +/-20 | 75[SL] | 8.2 | - | 11.4 | 28 | 15 | 1990 | U-MOSIX-H |
| | TK58E06N1 | 60 | +/-20 | 105[SL] | 5.4 | - | - | 46 | - | 3400 | U-MOSVIII-H |
| | TK5R1E06PL | 60 | +/-20 | 98[SL] | 5.1 | - | 8.8 | 36 | 18 | 2380 | U-MOSIX-H |
| | TK4R3E06PL | 60 | +/-20 | 106[SL] | 4.3 | - | 7.2 | 48.2 | 23.9 | 3280 | U-MOSIX-H |
| | TK3R2E06PL | 60 | +/-20 | 160[SL] | 3.2 | - | 4.7 | 71 | 35 | 5000 | U-MOSIX-H |
| | TK100E06N1 | 60 | +/-20 | 263[SL] | 2.3 | - | - | 140 | - | 10500 | U-MOSVIII-H |
| | TK35E08N1 | 80 | +/-20 | 55 | 12.2 | - | - | 25 | - | 1700 | U-MOSVIII-H |
| | TK46E08N1 | 80 | +/-20 | 80 | 8.4 | - | - | 37 | - | 2500 | U-MOSVIII-H |
| | TK7R0E08QM ☆ | 80 | +/-20 | 82[SL] | 7 | 9.7 | - | 39 | 24(@6V) | 2700 | U-MOSX-H |
| | TK5R3E08QM ☆ | 80 | +/-20 | 126[SL] | 5.3 | 7.3 | - | 55 | 33(@6V) | 3980 | U-MOSX-H |
| | TK72E08N1 | 80 | +/-20 | 157[SL] | 4.3 | - | - | 81 | - | 5500 | U-MOSVIII-H |
| | TK3R3E08QM ☆ | 80 | +/-20 | 200[SL] | 3.3 | 4.2 | - | 110 | 67(@6V) | 7670 | U-MOSX-H |
| | TK100E08N1 | 80 | +/-20 | 214[SL] | 3.2 | - | - | 130 | - | 9000 | U-MOSVIII-H |
| | TK2R4E08QM ☆ | 80 | +/-20 | 290[SL] | 2.44 | 3.2 | - | 178 | 109(@6V) | 13000 | U-MOSX-H |
| | TK22E10N1 | 100 | +/-20 | 52 | 13.8 | - | - | 28 | - | 1800 | U-MOSVIII-H |
| | TK110E10PL ☆ | 100 | +/-20 | 64[SL] | 10.7 | - | 16 | 33 | 17 | 2040 | U-MOSIX-H |
| | TK34E10N1 | 100 | +/-20 | 75 | 9.5 | - | - | 38 | - | 2600 | U-MOSVIII-H |
| | TK40E10N1 | 100 | +/-20 | 90 | 8.2 | - | - | 49 | - | 3000 | U-MOSVIII-H |
| | TK7R2E10PL ☆ | 100 | +/-20 | 94[SL] | 7.2 | - | 11 | 44 | 21 | 2800 | U-MOSIX-H |
| | TK6R4E10PL ☆ | 100 | +/-20 | 112[SL] | 6.4 | - | 9.7 | 58 | 30 | 3455 | U-MOSIX-H |
| | TK65E10N1 | 100 | +/-20 | 148[SL] | 4.8 | - | - | 81 | - | 5400 | U-MOSVIII-H |
| | TK3R9E10PL ☆ | 100 | +/-20 | 180[SL] | 3.9 | - | 5.8 | 96 | 49 | 6320 | U-MOSIX-H |
| | TK100E10N1 | 100 | +/-20 | 207[SL] | 3.4 | - | - | 140 | - | 8800 | U-MOSVIII-H |
| | TK2R9E10PL ☆ | 100 | +/-20 | 240[SL] | 2.9 | - | 4.1 | 161 | 83 | 9500 | U-MOSIX-H |
| | TK32E12N1 | 120 | +/-20 | 60 | 13.8 | - | - | 34 | - | 2000 | U-MOSVIII-H |
| | TK42E12N1 | 120 | +/-20 | 88 | 9.4 | - | - | 52 | - | 3100 | U-MOSVIII-H |
| | TK56E12N1 | 120 | +/-20 | 112[SL] | 7 | - | - | 69 | - | 4200 | U-MOSVIII-H |
| | TK72E12N1 | 120 | +/-20 | 179[SL] | 4.4 | - | - | 130 | - | 8100 | U-MOSVIII-H |

☆ New Products, [SL] $I_{D\,(DC)}$ (Silicon Limit)
Note(1) : High-speed switching type

## TO-220SIS

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ.(nC) | | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | \|$V_{GS}$\|=10V | \|$V_{GS}$\|=6V | \|$V_{GS}$\|=4.5V | \|$V_{GS}$\|=10V | \|$V_{GS}$\|=4.5V | | |
| N-ch Note(1) | TK3R1A04PL | 40 | +/-20 | 82 | 3.1 | - | 3.8 | 63.4 | 29.7 | 4670 | U-MOSIX-H |
| | TK30A06N1 | 60 | +/-20 | 43[SL] | 15 | - | - | 16 | - | 1050 | U-MOSVIII-H |
| | TK40A06N1 | 60 | +/-20 | 60[SL] | 10.4 | - | - | 23 | - | 1700 | U-MOSVIII-H |
| | TK8R2A06PL | 60 | +/-20 | 50 | 8.2 | - | 11.4 | 28 | 15 | 1990 | U-MOSIX-H |
| | TK58A06N1 | 60 | +/-20 | 105[SL] | 5.4 | - | - | 46 | - | 3400 | U-MOSVIII-H |
| | TK5R3A06PL | 60 | +/-20 | 62[SL] | 5.3 | - | 9.3 | 36 | 18 | 2380 | U-MOSIX-H |
| | TK4R3A06PL | 60 | +/-20 | 68 | 4.3 | - | 7.2 | 48.2 | 23.9 | 3280 | U-MOSIX-H |
| | TK3R3A06PL | 60 | +/-20 | 88[SL] | 3.3 | - | 4.9 | 71 | 35 | 5000 | U-MOSIX-H |
| | TK100A06N1 | 60 | +/-20 | 263[SL] | 2.7 | - | - | 140 | - | 10500 | U-MOSVIII-H |
| | TK35A08N1 | 80 | +/-20 | 55[SL] | 12.2 | - | - | 25 | - | 1700 | U-MOSVIII-H |
| | TK46A08N1 | 80 | +/-20 | 80[SL] | 8.4 | - | - | 37 | - | 2500 | U-MOSVIII-H |
| | TK6R8A08QM ★ | 80 | +/-20 | 58 | 6.8 | 9.5 | - | 39 | 23(@6V) | 2700 | U-MOSX-H |
| | TK5R1A08QM ★ | 80 | +/-20 | 71[SL] | 5.1 | 7.1 | - | 54 | 32(@6V) | 3980 | U-MOSX-H |
| | TK72A08N1 | 80 | +/-20 | 157[SL] | 4.5 | - | - | 81 | - | 5500 | U-MOSVIII-H |
| | TK3R2A08QM ★ | 80 | +/-20 | 92 | 3.2 | 4.1 | - | 102 | 58(@6V) | 7670 | U-MOSX-H |
| | TK100A08N1 | 80 | +/-20 | 214[SL] | 3.2 | - | - | 130 | - | 9000 | U-MOSVIII-H |
| | TK2R4A08QM ★ | 80 | +/-20 | 116[SL] | 2.44 | 3.1 | - | 179 | 102(@6V) | 13000 | U-MOSX-H |
| | TK22A10N1 | 100 | +/-20 | 52[SL] | 13.8 | - | - | 28 | - | 1800 | U-MOSVIII-H |
| | TK110A10PL ☆ | 100 | +/-20 | 41[SL] | 10.8 | - | 16 | 33 | 17 | 2040 | U-MOSIX-H |
| | TK34A10N1 | 100 | +/-20 | 75[SL] | 9.5 | - | - | 38 | - | 2600 | U-MOSVIII-H |
| | TK40A10N1 | 100 | +/-20 | 90[SL] | 8.2 | - | - | 49 | - | 3000 | U-MOSVIII-H |
| | TK7R4A10PL ☆ | 100 | +/-20 | 50 | 7.4 | - | 11.2 | 44 | 21 | 2800 | U-MOSIX-H |
| | TK6R7A10PL ☆ | 100 | +/-20 | 56 | 6.7 | - | 10.1 | 58 | 30 | 3455 | U-MOSIX-H |
| | TK65A10N1 | 100 | +/-20 | 148[SL] | 4.8 | - | - | 81 | - | 5400 | U-MOSVIII-H |
| | TK4R1A10PL ☆ | 100 | +/-20 | 85[SL] | 4.1 | - | 5.9 | 104 | 53 | 6320 | U-MOSIX-H |
| | TK100A10N1 | 100 | +/-20 | 207[SL] | 3.8 | - | - | 140 | - | 8800 | U-MOSVIII-H |
| | TK3R2A10PL ☆ | 100 | +/-20 | 106[SL] | 3.2 | - | 4.3 | 161 | 83 | 9500 | U-MOSIX-H |
| | TK32A12N1 | 120 | +/-20 | 60[SL] | 13.8 | - | - | 34 | - | 2000 | U-MOSVIII-H |
| | TK42A12N1 | 120 | +/-20 | 88[SL] | 9.4 | - | - | 52 | - | 3100 | U-MOSVIII-H |
| | TK56A12N1 | 120 | +/-20 | 112[SL] | 7.5 | - | - | 69 | - | 4200 | U-MOSVIII-H |
| | TK72A12N1 | 120 | +/-20 | 179[SL] | 4.5 | - | - | 130 | - | 8100 | U-MOSVIII-H |

☆ New Products, ★ Under Development (The specification is subject to change without notice.), [SL] $I_{D\,(DC)}$ (Silicon Limit)
Note(1) : High-speed switching type

# 2. Mid-High Voltage MOSFET Series

## DPAK(TO-252)/New PW-Mold

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK10P50W | 500 | +/-30 | 9.7 | 0.43 | 20 | 700 | DTMOSIV |
| | TK12P50W | 500 | +/-30 | 11.5 | 0.34 | 25 | 890 | DTMOSIV |
| | TK6P60W | 600 | +/-30 | 6.2 | 0.82 | 12 | 390 | DTMOSIV |
| | TK560P60Y | 600 | +/-30 | 7 | 0.56 | 14.5 | 380 | DTMOSV |
| | TK7P60W | 600 | +/-30 | 7 | 0.6 | 15 | 490 | DTMOSIV |
| | TK7P60W5 & | 600 | +/-30 | 7 | 0.67 | 16 | 490 | DTMOSIV(HSD) |
| | TK8P60W5 & | 600 | +/-30 | 8 | 0.56 | 22 | 590 | DTMOSIV(HSD) |
| | TK8P60W | 600 | +/-30 | 8 | 0.5 | 18.5 | 570 | DTMOSIV |
| | TK10P60W | 600 | +/-30 | 9.7 | 0.43 | 20 | 700 | DTMOSIV |
| | TK380P60Y | 600 | +/-30 | 9.7 | 0.38 | 20 | 590 | DTMOSV |
| | TK12P60W | 600 | +/-30 | 11.5 | 0.34 | 25 | 890 | DTMOSIV |
| | TK290P60Y | 600 | +/-30 | 11.5 | 0.29 | 25 | 730 | DTMOSV |
| | TK6P65W | 650 | +/-30 | 5.8 | 1.05 | 11 | 390 | DTMOSIV |
| | TK7P65W | 650 | +/-30 | 6.8 | 0.8 | 15 | 490 | DTMOSIV |
| | TK560P65Y | 650 | +/-30 | 7 | 0.56 | 14.5 | 380 | DTMOSV |
| | TK8P65W | 650 | +/-30 | 7.8 | 0.67 | 16 | 570 | DTMOSIV |
| | TK9P65W | 650 | +/-30 | 9.3 | 0.56 | 20 | 700 | DTMOSIV |
| | TK380P65Y | 650 | +/-30 | 9.7 | 0.38 | 20 | 590 | DTMOSV |
| | TK11P65W | 650 | +/-30 | 11.1 | 0.44 | 25 | 890 | DTMOSIV |
| | TK290P65Y | 650 | +/-30 | 11.5 | 0.29 | 25 | 730 | DTMOSV |
| N-ch | TK8P25DA | 250 | +/-20 | 7.5 | 0.5 | 16 | 550 | π-MOSVII |
| | TK13P25D | 250 | +/-20 | 13 | 0.25 | 25 | 1100 | π-MOSVII |
| | TK3P50D | 500 | +/-30 | 3 | 3 | 7 | 280 | π-MOSVII |
| | TK4P50D | 500 | +/-30 | 4 | 2 | 9 | 380 | π-MOSVII |
| | TK5P50D | 500 | +/-30 | 5 | 1.5 | 11 | 490 | π-MOSVII |
| | TK7P50D | 500 | +/-30 | 7 | 1.22 | 12 | 600 | π-MOSVII |
| | TK5P53D | 525 | +/-30 | 5 | 1.5 | 11 | 540 | π-MOSVII |
| | TK6P53D | 525 | +/-30 | 6 | 1.3 | 12 | 600 | π-MOSVII |
| | TK4P55DA | 550 | +/-30 | 3.5 | 2.45 | 9 | 380 | π-MOSVII |
| | TK4P55D | 550 | +/-30 | 4 | 1.88 | 11 | 490 | π-MOSVII |
| | TK2P60D | 600 | +/-30 | 2 | 4.3 | 7 | 280 | π-MOSVII |
| | TK4P60DA | 600 | +/-30 | 3.5 | 2.2 | 11 | 490 | π-MOSVII |
| | TK4P60DB | 600 | +/-30 | 3.7 | 2 | 11 | 540 | π-MOSVII |
| | TK4P60D | 600 | +/-30 | 4 | 1.7 | 12 | 600 | π-MOSVII |
| | TK3P80E | 800 | +/-30 | 3 | 4.9 | 12 | 500 | π-MOSVIII |
| | TK2P90E | 900 | +/-30 | 2 | 5.9 | 12 | 500 | π-MOSVIII |

& High Speed Diode type

## DFN 8x8

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK10V60W | 600 | +/-30 | 9.7 | 0.38 | 20 | 700 | DTMOSIV |
| | TK12V60W | 600 | +/-30 | 11.5 | 0.3 | 25 | 890 | DTMOSIV |
| | TK16V60W5 & | 600 | +/-30 | 15.8 | 0.245 | 43 | 1350 | DTMOSIV(HSD) |
| | TK16V60W | 600 | +/-30 | 15.8 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK20V60W5 & | 600 | +/-30 | 20 | 0.19 | 55 | 1800 | DTMOSIV(HSD) |
| | TK20V60W | 600 | +/-30 | 20 | 0.17 | 48 | 1680 | DTMOSIV |
| | TK25V60X5 & | 600 | +/-30 | 25 | 0.15 | 60 | 2400 | DTMOSIV-H(HSD) |
| | TK25V60X | 600 | +/-30 | 25 | 0.135 | 40 | 2400 | DTMOSIV-H |
| | TK31V60W5 & | 600 | +/-30 | 30.8 | 0.109 | 105 | 3000 | DTMOSIV(HSD) |
| | TK31V60W | 600 | +/-30 | 30.8 | 0.098 | 86 | 3000 | DTMOSIV |
| | TK31V60X | 600 | +/-30 | 30.8 | 0.098 | 65 | 3000 | DTMOSIV-H |
| | TK14V65W | 650 | +/-30 | 13.7 | 0.28 | 35 | 1300 | DTMOSIV |
| | TK210V65Z ☆ | 650 | +/-30 | 15 | 0.21 | 25 | 1370 | DTMOSVI |
| | TK17V65W | 650 | +/-30 | 17.3 | 0.21 | 45 | 1800 | DTMOSIV |
| | TK170V65Z ☆ | 650 | +/-30 | 18 | 0.17 | 29 | 1635 | DTMOSVI |
| | TK22V65X5 & | 650 | +/-30 | 22 | 0.17 | 50 | 2400 | DTMOSIV-H(HSD) |
| | TK28V65W5 & | 650 | +/-30 | 27.6 | 0.14 | 90 | 3000 | DTMOSIV(HSD) |
| | TK125V65Z ☆ | 650 | +/-30 | 24 | 0.125 | 40 | 2250 | DTMOSVI |
| | TK28V65W | 650 | +/-30 | 27.6 | 0.12 | 75 | 3000 | DTMOSIV |
| | TK099V65Z ☆ | 650 | +/-30 | 30 | 0.099 | 47 | 2780 | DTMOSVI |

## D2PAK

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK16G60W5 & | 600 | +/-30 | 15.8 | 0.23 | 43 | 1350 | DTMOSIV(HSD) |
| | TK16G60W | 600 | +/-30 | 15.8 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK20G60W | 600 | +/-30 | 20 | 0.155 | 48 | 1680 | DTMOSIV |
| | TK14G65W5 & | 650 | +/-30 | 13.7 | 0.3 | 40 | 1300 | DTMOSIV(HSD) |
| | TK14G65W | 650 | +/-30 | 13.7 | 0.25 | 35 | 1300 | DTMOSIV |

## TOLL

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK190U65Z ☆ | 650 | +/-28 | 15 | 0.19 | 25 | 1370 | DTMOSVI |
| | TK155U65Z ☆ | 650 | +/-29 | 18 | 0.155 | 29 | 1635 | DTMOSVI |
| | TK110U65Z ☆ | 650 | +/-30 | 24 | 0.11 | 40 | 2250 | DTMOSVI |
| | TK090U65Z ☆ | 650 | +/-30 | 30 | 0.09 | 47 | 2780 | DTMOSVI |
| | TK065U65Z ☆ | 650 | +/-30 | 38 | 0.065 | 62 | 3650 | DTMOSVI |

☆ New Products
& High Speed Diode type

## IPAK/New PW-Mold2

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK6Q60W | 600 | +/-30 | 6.2 | 0.82 | 12 | 390 | DTMOSIV |
| | TK7Q60W | 600 | +/-30 | 7 | 0.6 | 15 | 490 | DTMOSIV |
| | TK8Q60W | 600 | +/-30 | 8 | 0.5 | 18.5 | 570 | DTMOSIV |
| | TK10Q60W | 600 | +/-30 | 9.7 | 0.43 | 20 | 700 | DTMOSIV |
| | TK12Q60W | 600 | +/-30 | 11.5 | 0.34 | 25 | 890 | DTMOSIV |
| | TK6Q65W | 650 | +/-30 | 5.8 | 1.05 | 11 | 390 | DTMOSIV |
| | TK7Q65W | 650 | +/-30 | 6.8 | 0.8 | 15 | 490 | DTMOSIV |
| | TK8Q65W | 650 | +/-30 | 7.8 | 0.67 | 16 | 570 | DTMOSIV |
| | TK9Q65W | 650 | +/-30 | 9.3 | 0.56 | 20 | 700 | DTMOSIV |
| | TK11Q65W | 650 | +/-30 | 11.1 | 0.44 | 25 | 890 | DTMOSIV |
| N-ch | TK2Q60D | 600 | +/-30 | 2 | 4.3 | 7 | 280 | π-MOSVII |
| | TK4Q60DA | 600 | +/-30 | 3.5 | 2.2 | 11 | 490 | π-MOSVII |
| | TK1Q90A $ | 900 | +/-30 | 1 | 9 | 13 | 320 | π-MOSIV |

## TO-220

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK10E60W | 600 | +/-30 | 9.7 | 0.38 | 20 | 700 | DTMOSIV |
| | TK12E60W | 600 | +/-30 | 11.5 | 0.3 | 25 | 890 | DTMOSIV |
| | TK16E60W5 & | 600 | +/-30 | 15.8 | 0.23 | 43 | 1350 | DTMOSIV(HSD) |
| | TK16E60W | 600 | +/-30 | 15.8 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK20E60W5 & | 600 | +/-30 | 20 | 0.175 | 55 | 1800 | DTMOSIV(HSD) |
| | TK20E60W | 600 | +/-30 | 20 | 0.155 | 48 | 1680 | DTMOSIV |
| | TK25E60X5 & | 600 | +/-30 | 25 | 0.14 | 60 | 2400 | DTMOSIV-H(HSD) |
| | TK25E60X | 600 | +/-30 | 25 | 0.125 | 40 | 2400 | DTMOSIV-H |
| | TK31E60W | 600 | +/-30 | 30.8 | 0.088 | 86 | 3000 | DTMOSIV |
| | TK31E60X | 600 | +/-30 | 30.8 | 0.088 | 65 | 3000 | DTMOSIV-H |
| | TK14E65W5 & | 650 | +/-30 | 13.7 | 0.3 | 40 | 1300 | DTMOSIV(HSD) |
| | TK14E65W | 650 | +/-30 | 13.7 | 0.25 | 35 | 1300 | DTMOSIV |
| | TK17E65W | 650 | +/-30 | 17.3 | 0.2 | 45 | 1800 | DTMOSIV |
| | TK28E65W | 650 | +/-30 | 27.6 | 0.11 | 75 | 3000 | DTMOSIV |
| | TK7E80W | 800 | +/-20 | 6.5 | 0.95 | 13 | 700 | DTMOSIV |
| | TK10E80W | 800 | +/-20 | 9.5 | 0.55 | 19 | 1150 | DTMOSIV |
| | TK12E80W | 800 | +/-20 | 11.5 | 0.45 | 23 | 1400 | DTMOSIV |
| | TK17E80W | 800 | +/-20 | 17 | 0.29 | 32 | 2050 | DTMOSIV |
| N-ch | TK13E25D | 250 | +/-20 | 13 | 0.25 | 25 | 1100 | π-MOSVII |

& High Speed Diode type
$ With protection Zener diode between gate and source

## TO-220SIS

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK10A50W | 500 | +/-30 | 9.7 | 0.38 | 20 | 700 | DTMOSIV |
| | TK12A50W | 500 | +/-30 | 11.5 | 0.3 | 25 | 890 | DTMOSIV |
| | TK19A50W | 500 | +/-30 | 18.5 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK6A60W | 600 | +/-30 | 6.2 | 0.75 | 12 | 390 | DTMOSIV |
| | TK7A60W5 & | 600 | +/-30 | 7 | 0.65 | 16 | 490 | DTMOSIV(HSD) |
| | TK7A60W | 600 | +/-30 | 7 | 0.6 | 15 | 490 | DTMOSIV |
| | TK560A60Y | 600 | +/-30 | 7 | 0.56 | 14.5 | 380 | DTMOSV |
| | TK8A60W5 & | 600 | +/-30 | 8 | 0.54 | 22 | 590 | DTMOSIV(HSD) |
| | TK8A60W | 600 | +/-30 | 8 | 0.5 | 18.5 | 570 | DTMOSIV |
| | TK10A60W5 & | 600 | +/-30 | 9.7 | 0.45 | 25 | 720 | DTMOSIV(HSD) |
| | TK10A60W | 600 | +/-30 | 9.7 | 0.38 | 20 | 700 | DTMOSIV |
| | TK380A60Y | 600 | +/-30 | 9.7 | 0.38 | 20 | 590 | DTMOSV |
| | TK12A60W | 600 | +/-30 | 11.5 | 0.3 | 25 | 890 | DTMOSIV |
| | TK290A60Y | 600 | +/-30 | 11.5 | 0.29 | 25 | 730 | DTMOSV |
| | TK16A60W5 & | 600 | +/-30 | 15.8 | 0.23 | 43 | 1350 | DTMOSIV(HSD) |
| | TK16A60W | 600 | +/-30 | 15.8 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK20A60W5 & | 600 | +/-30 | 20 | 0.175 | 55 | 1800 | DTMOSIV(HSD) |
| | TK20A60W | 600 | +/-30 | 20 | 0.155 | 48 | 1680 | DTMOSIV |
| | TK25A60X5 & | 600 | +/-30 | 25 | 0.14 | 60 | 2400 | DTMOSIV-H(HSD) |
| | TK25A60X | 600 | +/-30 | 25 | 0.125 | 40 | 2400 | DTMOSIV-H |
| | TK31A60W | 600 | +/-30 | 30.8 | 0.088 | 86 | 3000 | DTMOSIV |
| | TK39A60W | 600 | +/-30 | 38.8 | 0.065 | 110 | 4100 | DTMOSIV |
| | TK6A65W | 650 | +/-30 | 5.8 | 1 | 11 | 390 | DTMOSIV |
| | TK7A65W | 650 | +/-30 | 6.8 | 0.78 | 15 | 490 | DTMOSIV |
| | TK560A65Y | 650 | +/-30 | 7 | 0.56 | 14.5 | 380 | DTMOSV |
| | TK8A65W | 650 | +/-30 | 7.8 | 0.65 | 16 | 570 | DTMOSIV |
| | TK9A65W | 650 | +/-30 | 9.3 | 0.5 | 20 | 700 | DTMOSIV |
| | TK380A65Y | 650 | +/-30 | 9.7 | 0.38 | 20 | 590 | DTMOSV |
| | TK11A65W | 650 | +/-30 | 11.1 | 0.39 | 25 | 890 | DTMOSIV |
| | TK290A65Y | 650 | +/-30 | 11.5 | 0.29 | 25 | 730 | DTMOSV |
| | TK14A65W5 & | 650 | +/-30 | 13.7 | 0.3 | 40 | 1300 | DTMOSIV(HSD) |
| | TK14A65W | 650 | +/-30 | 13.7 | 0.25 | 35 | 1300 | DTMOSIV |
| | TK17A65W5 & | 650 | +/-30 | 17.3 | 0.23 | 50 | 1800 | DTMOSIV(HSD) |
| | TK17A65W | 650 | +/-30 | 17.3 | 0.2 | 45 | 1800 | DTMOSIV |
| | TK190A65Z ☆ | 650 | +/-30 | 15 | 0.19 | 25 | 1370 | DTMOSVI |
| | TK22A65X5 & | 650 | +/-30 | 22 | 0.16 | 50 | 2400 | DTMOSIV-H(HSD) |
| | TK155A65Z ☆ | 650 | +/-30 | 18 | 0.155 | 29 | 1635 | DTMOSVI |
| | TK22A65X | 650 | +/-30 | 22 | 0.15 | 50 | 2400 | DTMOSIV-H |
| | TK110A65Z ☆ | 650 | +/-30 | 24 | 0.11 | 40 | 2250 | DTMOSVI |
| | TK28A65W | 650 | +/-30 | 27.6 | 0.11 | 75 | 3000 | DTMOSIV |
| | TK35A65W5 & | 650 | +/-30 | 35 | 0.095 | 115 | 4100 | DTMOSIV(HSD) |
| | TK090A65Z ☆ | 650 | +/-30 | 30 | 0.09 | 47 | 2780 | DTMOSVI |
| | TK35A65W | 650 | +/-30 | 35 | 0.08 | 100 | 4100 | DTMOSIV |
| | TK7A80W | 800 | +/-20 | 6.5 | 0.95 | 13 | 700 | DTMOSIV |
| | TK10A80W | 800 | +/-20 | 9.5 | 0.55 | 19 | 1150 | DTMOSIV |
| | TK12A80W | 800 | +/-20 | 11.5 | 0.45 | 23 | 1400 | DTMOSIV |
| | TK17A80W | 800 | +/-20 | 17 | 0.29 | 32 | 2050 | DTMOSIV |

☆ New products, & High Speed Diode type

## TO-220SIS

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK9A20DA | 200 | +/-20 | 8.5 | 0.4 | 14 | 550 | π-MOSVII |
| | TK15A20D | 200 | +/-20 | 15 | 0.18 | 26 | 1050 | π-MOSVII |
| | TK20A20D | 200 | +/-20 | 20 | 0.109 | 43 | 1650 | π-MOSVII |
| | TK25A20D | 200 | +/-20 | 25 | 0.07 | 60 | 2550 | π-MOSVII |
| | TK8A25DA | 250 | +/-20 | 7.5 | 0.5 | 16 | 550 | π-MOSVII |
| | TK13A25D | 250 | +/-20 | 13 | 0.25 | 25 | 1100 | π-MOSVII |
| | TK17A25D | 250 | +/-20 | 17 | 0.15 | 43 | 1650 | π-MOSVII |
| | TK20A25D | 250 | +/-20 | 20 | 0.1 | 55 | 2550 | π-MOSVII |
| | TK18A30D | 300 | +/-20 | 18 | 0.139 | 60 | 2600 | π-MOSVII |
| | TK5A45DA | 450 | +/-30 | 4.5 | 1.75 | 9 | 380 | π-MOSVII |
| | TK6A45DA | 450 | +/-30 | 5.5 | 1.35 | 11 | 490 | π-MOSVII |
| | TK7A45DA | 450 | +/-30 | 6.5 | 1.2 | 11 | 540 | π-MOSVII |
| | TK8A45D | 450 | +/-30 | 8 | 0.9 | 16 | 700 | π-MOSVII |
| | TK9A45D | 450 | +/-30 | 9 | 0.77 | 16 | 800 | π-MOSVII |
| | TK11A45D | 450 | +/-30 | 11 | 0.62 | 20 | 1050 | π-MOSVII |
| | TK12A45D | 450 | +/-30 | 12 | 0.52 | 24 | 1200 | π-MOSVII |
| | TK13A45D | 450 | +/-30 | 13 | 0.46 | 25 | 1350 | π-MOSVII |
| | TK19A45D | 450 | +/-30 | 19 | 0.25 | 45 | 2600 | π-MOSVII |
| | TK4A50D | 500 | +/-30 | 4 | 2 | 9 | 380 | π-MOSVII |
| | TK5A50D | 500 | +/-30 | 5 | 1.5 | 11 | 490 | π-MOSVII |
| | TK6A50D | 500 | +/-30 | 6 | 1.4 | 11 | 540 | π-MOSVII |
| | TK7A50D | 500 | +/-30 | 7 | 1.22 | 12 | 600 | π-MOSVII |
| | TK8A50DA | 500 | +/-30 | 7.5 | 1.04 | 16 | 700 | π-MOSVII |
| | TK8A50D | 500 | +/-30 | 8 | 0.85 | 16 | 800 | π-MOSVII |
| | TK10A50D | 500 | +/-30 | 10 | 0.72 | 20 | 1050 | π-MOSVII |
| | TK11A50D | 500 | +/-30 | 11 | 0.6 | 24 | 1200 | π-MOSVII |
| | TK12A50D | 500 | +/-30 | 12 | 0.52 | 25 | 1350 | π-MOSVII |
| | TK13A50DA | 500 | +/-30 | 12.5 | 0.47 | 28 | 1550 | π-MOSVII |
| | TK13A50D | 500 | +/-30 | 13 | 0.4 | 38 | 1800 | π-MOSVII |
| | TK15A50D | 500 | +/-30 | 15 | 0.3 | 40 | 2300 | π-MOSVII |
| | TK18A50D | 500 | +/-30 | 18 | 0.27 | 45 | 2600 | π-MOSVII |
| | TK4A53D | 525 | +/-30 | 4 | 1.7 | 11 | 490 | π-MOSVII |
| | TK5A53D | 525 | +/-30 | 5 | 1.5 | 11 | 540 | π-MOSVII |
| | TK6A53D | 525 | +/-30 | 6 | 1.3 | 12 | 600 | π-MOSVII |
| | TK12A53D | 525 | +/-30 | 12 | 0.58 | 25 | 1350 | π-MOSVII |
| | TK4A55DA | 550 | +/-30 | 3.5 | 2.45 | 9 | 380 | π-MOSVII |
| | TK4A55D | 550 | +/-30 | 4 | 1.88 | 11 | 490 | π-MOSVII |
| | TK5A55D | 550 | +/-30 | 5 | 1.7 | 11 | 540 | π-MOSVII |
| | TK6A55DA | 550 | +/-30 | 5.5 | 1.48 | 12 | 600 | π-MOSVII |
| | TK7A55D | 550 | +/-30 | 7 | 1.25 | 16 | 700 | π-MOSVII |
| | TK8A55DA | 550 | +/-30 | 7.5 | 1.07 | 16 | 800 | π-MOSVII |
| | TK9A55DA | 550 | +/-30 | 8.5 | 0.86 | 20 | 1050 | π-MOSVII |
| | TK10A55D | 550 | +/-30 | 10 | 0.72 | 24 | 1200 | π-MOSVII |
| | TK11A55D | 550 | +/-30 | 11 | 0.63 | 25 | 1350 | π-MOSVII |
| | TK12A55D | 550 | +/-30 | 12 | 0.57 | 28 | 1550 | π-MOSVII |

## TO-220SIS

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK13A55DA | 550 | +/-30 | 12.5 | 0.48 | 38 | 1800 | π-MOSVII |
| | TK14A55D | 550 | +/-30 | 14 | 0.37 | 40 | 2300 | π-MOSVII |
| | TK16A55D | 550 | +/-30 | 16 | 0.33 | 45 | 2600 | π-MOSVII |
| | TK4K1A60F ☆ | 600 | +/-30 | 2 | 4.1 | 8 | 270 | π-MOSIX |
| | TK3A60DA | 600 | +/-30 | 2.5 | 2.8 | 9 | 380 | π-MOSVII |
| | TK2K2A60F ☆ | 600 | +/-30 | 3.5 | 2.2 | 13 | 450 | π-MOSIX |
| | TK1K9A60F ☆ | 600 | +/-30 | 3.7 | 1.9 | 14 | 490 | π-MOSIX |
| | TK1K7A60F ☆ | 600 | +/-30 | 4 | 1.7 | 16 | 560 | π-MOSIX |
| | TK5A60D | 600 | +/-30 | 5 | 1.43 | 16 | 700 | π-MOSVII |
| | TK1K2A60F ☆ | 600 | +/-30 | 6 | 1.2 | 21 | 740 | π-MOSIX |
| | TK1K0A60F ☆ | 600 | +/-30 | 7.5 | 1 | 24 | 890 | π-MOSIX |
| | TK9A60D | 600 | +/-30 | 9 | 0.83 | 24 | 1200 | π-MOSVII |
| | TK750A60F ☆ | 600 | +/-30 | 10 | 0.75 | 30 | 1130 | π-MOSIX |
| | TK650A60F ☆ | 600 | +/-30 | 11 | 0.65 | 34 | 1320 | π-MOSIX |
| | TK12A60D | 600 | +/-30 | 12 | 0.55 | 38 | 1800 | π-MOSVII |
| | TK430A60F ☆ | 600 | +/-30 | 13 | 0.43 | 49 | 1900 | π-MOSIX |
| | TK370A60F ☆ | 600 | +/-30 | 15 | 0.37 | 56 | 2200 | π-MOSIX |
| | TK2A65D | 650 | +/-30 | 2 | 3.26 | 9 | 380 | π-MOSVII |
| | TK3A65DA | 650 | +/-30 | 2.5 | 2.51 | 11 | 490 | π-MOSVII |
| | TK3A65D | 650 | +/-30 | 3 | 2.25 | 11 | 540 | π-MOSVII |
| | TK4A65DA | 650 | +/-30 | 3.5 | 1.9 | 12 | 600 | π-MOSVII |
| | TK5A65DA | 650 | +/-30 | 4.5 | 1.67 | 16 | 700 | π-MOSVII |
| | TK5A65D | 650 | +/-30 | 5 | 1.43 | 16 | 800 | π-MOSVII |
| | TK6A65D | 650 | +/-30 | 6 | 1.11 | 20 | 1050 | π-MOSVII |
| | TK7A65D | 650 | +/-30 | 7 | 0.98 | 24 | 1200 | π-MOSVII |
| | TK8A65D | 650 | +/-30 | 8 | 0.84 | 25 | 1350 | π-MOSVII |
| | TK11A65D | 650 | +/-30 | 11 | 0.7 | 30 | 1700 | π-MOSVII |
| | TK12A65D | 650 | +/-30 | 12 | 0.54 | 40 | 2300 | π-MOSVII |
| | TK13A65D | 650 | +/-30 | 13 | 0.47 | 45 | 2600 | π-MOSVII |
| | TK4A80E | 800 | +/-30 | 4 | 3.5 | 15 | 650 | π-MOSVIII |
| | TK5A80E | 800 | +/-30 | 5 | 2.4 | 20 | 950 | π-MOSVIII |
| | TK6A80E | 800 | +/-30 | 6 | 1.7 | 32 | 1350 | π-MOSVIII |
| | 2SK4013 | 800 | +/-30 | 6 | 1.7 | 45 | 1400 | π-MOSIV |
| | TK10A80E | 800 | +/-30 | 10 | 1 | 46 | 2000 | π-MOSVIII |
| | 2SK3566 | 900 | +/-30 | 2.5 | 6.4 | 12 | 470 | π-MOSIV |
| | TK3A90E | 900 | +/-30 | 2.5 | 4.6 | 15 | 650 | π-MOSVIII |
| | 2SK3564 | 900 | +/-30 | 3 | 4.3 | 17 | 700 | π-MOSIV |
| | 2SK3798 | 900 | +/-30 | 4 | 3.5 | 26 | 800 | π-MOSIV |
| | TK5A90E | 900 | +/-30 | 4.5 | 3.1 | 20 | 950 | π-MOSVIII |
| | 2SK3565 | 900 | +/-30 | 5 | 2.5 | 28 | 1150 | π-MOSIV |
| | 2SK3742 | 900 | +/-30 | 5 | 2.5 | 25 | 1150 | π-MOSIV |
| | 2SK4014 | 900 | +/-30 | 6 | 2 | 45 | 1400 | π-MOSIV |
| | TK7A90E | 900 | +/-30 | 7 | 2 | 32 | 1350 | π-MOSVIII |
| | 2SK3799 | 900 | +/-30 | 8 | 1.3 | 60 | 2200 | π-MOSIV |
| | TK9A90E | 900 | +/-30 | 9 | 1.3 | 46 | 2000 | π-MOSVIII |

☆ New products

## TO-3P(N)

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK12J60W | 600 | +/-30 | 11.5 | 0.3 | 25 | 890 | DTMOSIV |
| | TK16J60W5 & | 600 | +/-30 | 15.8 | 0.23 | 43 | 1350 | DTMOSIV(HSD) |
| | TK16J60W | 600 | +/-30 | 15.8 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK20J60W5 & | 600 | +/-30 | 20 | 0.175 | 55 | 1800 | DTMOSIV(HSD) |
| | TK20J60W | 600 | +/-30 | 20 | 0.155 | 48 | 1680 | DTMOSIV |
| | TK31J60W5 & | 600 | +/-30 | 30.8 | 0.099 | 105 | 3000 | DTMOSIV(HSD) |
| | TK31J60W | 600 | +/-30 | 30.8 | 0.088 | 86 | 3000 | DTMOSIV |
| | TK39J60W5 & | 600 | +/-30 | 38.8 | 0.074 | 135 | 4100 | DTMOSIV(HSD) |
| | TK39J60W | 600 | +/-30 | 38.8 | 0.065 | 110 | 4100 | DTMOSIV |
| | TK62J60W5 & | 600 | +/-30 | 61.8 | 0.045 | 205 | 6500 | DTMOSIV(HSD) |
| | TK62J60W | 600 | +/-30 | 61.8 | 0.04 | 180 | 6500 | DTMOSIV |
| N-ch | TK40J20D | 200 | +/-20 | 40 | 0.044 | 100 | 4300 | π-MOSVII |
| | TK70J20D | 200 | +/-20 | 70 | 0.027 | 160 | 6950 | π-MOSVII |
| | TK30J25D | 250 | +/-20 | 30 | 0.06 | 100 | 4300 | π-MOSVII |
| | TK60J25D | 250 | +/-20 | 60 | 0.038 | 160 | 7000 | π-MOSVII |
| | TK50J30D | 300 | +/-20 | 50 | 0.052 | 160 | 7000 | π-MOSVII |
| | TK15J50D | 500 | +/-30 | 15 | 0.4 | 38 | 1800 | π-MOSVII |
| | TK20J50D | 500 | +/-30 | 20 | 0.27 | 45 | 2600 | π-MOSVII |
| | TK12J55D | 550 | +/-30 | 12 | 0.57 | 28 | 1550 | π-MOSVII |
| | TK16J55D | 550 | +/-30 | 16 | 0.37 | 40 | 2300 | π-MOSVII |
| | TK19J55D | 550 | +/-30 | 19 | 0.33 | 45 | 2600 | π-MOSVII |
| | 2SK3633 | 800 | +/-30 | 7 | 1.7 | 35 | 1500 | π-MOSIV |
| | TK10J80E | 800 | +/-30 | 10 | 1 | 46 | 2000 | π-MOSVIII |
| | 2SK3700 | 900 | +/-30 | 5 | 2.5 | 28 | 1150 | π-MOSIV |
| | 2SK4115 | 900 | +/-30 | 7 | 2 | 45 | 1650 | π-MOSIV |
| | TK7J90E | 900 | +/-30 | 7 | 2 | 32 | 1350 | π-MOSVIII |
| | TK9J90E | 900 | +/-30 | 9 | 1.3 | 46 | 2000 | π-MOSVIII |
| | 2SK4207 | 900 | +/-30 | 13 | 0.95 | 45 | 2790 | π-MOSIV |

& High Speed Diode type

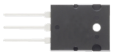
## TO-247

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK16N60W5 & | 600 | +/-30 | 15.8 | 0.23 | 43 | 1350 | DTMOSIV(HSD) |
| | TK16N60W | 600 | +/-30 | 15.8 | 0.19 | 38 | 1350 | DTMOSIV |
| | TK20N60W5 & | 600 | +/-30 | 20 | 0.175 | 55 | 1800 | DTMOSIV(HSD) |
| | TK20N60W | 600 | +/-30 | 20 | 0.155 | 48 | 1680 | DTMOSIV |
| | TK25N60X5 & | 600 | +/-30 | 25 | 0.14 | 60 | 2400 | DTMOSIV-H(HSD) |
| | TK25N60X | 600 | +/-30 | 25 | 0.125 | 40 | 2400 | DTMOSIV-H |
| | TK31N60W5 & | 600 | +/-30 | 30.8 | 0.099 | 105 | 3000 | DTMOSIV(HSD) |
| | TK31N60W | 600 | +/-30 | 30.8 | 0.088 | 86 | 3000 | DTMOSIV |
| | TK31N60X | 600 | +/-30 | 30.8 | 0.088 | 65 | 3000 | DTMOSIV-H |
| | TK39N60W5 & | 600 | +/-30 | 38.8 | 0.074 | 135 | 4100 | DTMOSIV(HSD) |
| | TK39N60W | 600 | +/-30 | 38.8 | 0.065 | 110 | 4100 | DTMOSIV |
| | TK39N60X | 600 | +/-30 | 38.8 | 0.065 | 85 | 4100 | DTMOSIV-H |
| | TK62N60W5 & | 600 | +/-30 | 61.8 | 0.045 | 205 | 6500 | DTMOSIV(HSD) |
| | TK62N60W | 600 | +/-30 | 61.8 | 0.04 | 180 | 6500 | DTMOSIV |
| | TK62N60X | 600 | +/-30 | 61.8 | 0.04 | 135 | 6500 | DTMOSIV-H |
| | TK14N65W5 & | 650 | +/-30 | 13.7 | 0.3 | 40 | 1300 | DTMOSIV(HSD) |
| | TK14N65W | 650 | +/-30 | 13.7 | 0.25 | 35 | 1300 | DTMOSIV |
| | TK17N65W | 650 | +/-30 | 17.3 | 0.2 | 45 | 1800 | DTMOSIV |
| | TK28N65W5 & | 650 | +/-30 | 27.6 | 0.13 | 90 | 3000 | DTMOSIV(HSD) |
| | TK110N65Z ☆ | 650 | +/-30 | 24 | 0.11 | 40 | 2250 | DTMOSVI |
| | TK28N65W | 650 | +/-30 | 27.6 | 0.11 | 75 | 3000 | DTMOSIV |
| | TK35N65W5 & | 650 | +/-30 | 35 | 0.095 | 115 | 4100 | DTMOSIV(HSD) |
| | TK090N65Z ☆ | 650 | +/-30 | 30 | 0.09 | 47 | 2780 | DTMOSVI |
| | TK35N65W | 650 | +/-30 | 35 | 0.08 | 100 | 4100 | DTMOSIV |
| | TK065N65Z ☆ | 650 | +/-30 | 38 | 0.065 | 62 | 3650 | DTMOSVI |
| | TK49N65W5 & | 650 | +/-30 | 49.2 | 0.057 | 185 | 6500 | DTMOSIV(HSD) |
| | TK49N65W | 650 | +/-30 | 49.2 | 0.055 | 160 | 6500 | DTMOSIV |
| | TK040N65Z ☆ | 650 | +/-30 | 57 | 0.04 | 105 | 6250 | DTMOSVI |

## TO-247-4L

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK25Z60X | 600 | +/-30 | 25 | 0.125 | 40 | 2400 | DTMOSIV-H |
| | TK31Z60X | 600 | +/-30 | 30.8 | 0.088 | 65 | 3000 | DTMOSIV-H |
| | TK39Z60X | 600 | +/-30 | 38.8 | 0.065 | 85 | 4100 | DTMOSIV-H |
| | TK62Z60X | 600 | +/-30 | 61.8 | 0.04 | 135 | 6500 | DTMOSIV-H |
| | TK110Z65Z ☆ | 650 | +/-30 | 24 | 0.11 | 40 | 2250 | DTMOSVI |
| | TK090Z65Z ☆ | 650 | +/-30 | 30 | 0.09 | 47 | 2780 | DTMOSVI |
| | TK065Z65Z ☆ | 650 | +/-30 | 38 | 0.065 | 62 | 3650 | DTMOSVI |
| | TK040Z65Z ☆ | 650 | +/-30 | 57 | 0.04 | 105 | 6250 | DTMOSVI |

## TO-3P(L)



| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(Ω) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | | | |
| N-ch | TK100L60W | 600 | +/-30 | 100 | 0.018 | 360 | 15000 | DTMOSIV |

☆ New products, & High Speed Diode type

# 3. Automotive

## PS-8 （2.9x2.8）

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6V | | | |
| N-ch | TPCP8011 # $ | 40 | +/-20 | 5 | 31.8 | 51.2 | 11.8 | 505 | U-MOSIV |
| | TPCP8010 # $ | 40 | +/-20 | 6 | 23.8 | 38.4 | 13.1 | 600 | U-MOSIV |
| | TPCP8009 # $ | 40 | +/-20 | 10 | 11.8 | 19.5 | 25.1 | 1250 | U-MOSIV |
| | TPCP8013 # $ | 60 | +/-20 | 4 | 51.8 | 77.9 | 12 | 515 | U-MOSIV |
| | TPCP8012 # $ | 60 | +/-20 | 8 | 20.2 | 29.1 | 26.6 | 1160 | U-MOSIV |
| P-ch | TPCP8109 # $ | -40 | +10/-20 | -4.5 | 52.3 | 76.8 | 18 | 810 | U-MOSVI |
| | TPCP8107 # $ | -40 | +10/-20 | -8 | 18 | 26.8 | 44.6 | 2160 | U-MOSVI |
| | TPCP8111 # $ | -60 | +10/-20 | -3 | 117 | 158.4 | 17 | 760 | U-MOSVI |
| | TPCP8110 # $ | -60 | +10/-20 | -5 | 39.5 | 53.2 | 45 | 2075 | U-MOSVI |
| N-ch x 2 | TPCP8207 # $ | 40 | +/-20 | 5 | 36.3 | 62.8 | 11.8 | 505 | U-MOSIV |
| N-ch + P-ch | TPCP8407 # $ | 40 | +/-20 | 5 | 36.3 | 62.8 | 11.8 | 505 | U-MOSIV |
| | | -40 | +10/-20 | -4 | 56.8 | 82.2 | 18 | 810 | U-MOSVI |

## DPAK+

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6.0V | $\|V_{GS}\|$=4.5V | | | |
| N-ch | TK15S04N1L # $ | 40 | +/-20 | 15 | 17.8 | - | 37 | 10 | 610 | U-MOSVIII-H |
| | TK35S04K3L # $ | 40 | +/-20 | 35 | 10.3 | 15 | - | 28 | 1370 | U-MOSIV |
| | TK65S04N1L # $ | 40 | +/-20 | 65 | 4.3 | - | 7.8 | 39 | 2550 | U-MOSVIII-H |
| | TK100S04N1L # | 40 | +/-20 | 100 | 2.3 | - | 4.5 | 76 | 5490 | U-MOSVIII-H |
| | TK1R4S04PB # | 40 | +/-20 | 120 | 1.35 | 1.9 | - | 103 | 5500 | U-MOSIX-H |
| | TK8S06K3L # $ | 60 | +/-20 | 8 | 54 | 80 | - | 10 | 400 | U-MOSIV |
| | TK25S06N1L # $ | 60 | +/-20 | 25 | 18.5 | - | 36.8 | 15 | 855 | U-MOSVIII-H |
| | TK40S06N1L # $ | 60 | +/-20 | 40 | 10.5 | - | 18 | 26 | 1650 | U-MOSVIII-H |
| | TK60S06K3L # $ | 60 | +/-20 | 60 | 8 | 12.3 | - | 60 | 2900 | U-MOSIV |
| | TK90S06N1L # | 60 | +/-20 | 90 | 3.3 | - | 5.2 | 81 | 5400 | U-MOSVIII-H |
| | TK7S10N1Z # $ | 100 | +/-20 | 7 | 48 | - | - | 7.1 | 470 | U-MOSVIII-H |
| | TK11S10N1L # $ | 100 | +/-20 | 11 | 28 | - | 50 | 15 | 850 | U-MOSVIII-H |
| | TK33S10N1L # $ | 100 | +/-20 | 33 | 9.7 | - | 16.2 | 33 | 2250 | U-MOSVIII-H |
| | TK33S10N1Z # $ | 100 | +/-20 | 33 | 9.7 | - | - | 28 | 2050 | U-MOSVIII-H |
| | TK55S10N1 # | 100 | +/-20 | 55 | 6.5 | - | - | 49 | 3280 | U-MOSVIII-H |
| | TK60S10N1L ☆ # | 100 | +/-20 | 60 | 6.11 | 9.25 | - | 60 | 4320 | U-MOSVIII-H |
| P-ch | TJ10S04M3L # $ | -40 | +10/-20 | -10 | 44 | 62 | - | 19 | 930 | U-MOSVI |
| | TJ20S04M3L # $ | -40 | +10/-20 | -20 | 22.2 | 32 | - | 37 | 1850 | U-MOSVI |
| | TJ40S04M3L # $ | -40 | +10/-20 | -40 | 9.1 | 13 | - | 83 | 4140 | U-MOSVI |
| | TJ60S04M3L # $ | -40 | +10/-20 | -60 | 6.3 | 9.4 | - | 125 | 6510 | U-MOSVI |
| | TJ80S04M3L # $ | -40 | +10/-20 | -80 | 5.2 | 7.9 | - | 158 | 7770 | U-MOSVI |
| | TJ90S04M3L # | -40 | +10/-20 | -90 | 4.3 | - | 6 | 172 | 7700 | U-MOSVI |
| | TJ8S06M3L # $ | -60 | +10/-20 | -8 | 104 | 130 | - | 19 | 890 | U-MOSVI |
| | TJ15S06M3L # $ | -60 | +10/-20 | -15 | 50 | 63 | - | 36 | 1770 | U-MOSVI |
| | TJ30S06M3L # $ | -60 | +10/-20 | -30 | 21.8 | 28 | - | 80 | 3950 | U-MOSVI |
| | TJ50S06M3L # $ | -60 | +10/-20 | -50 | 13.8 | 17.4 | - | 124 | 6290 | U-MOSVI |
| | TJ60S06M3L # $ | -60 | +10/-20 | -60 | 11.2 | 14.5 | - | 156 | 7760 | U-MOSVI |
| | TJ15S10M3 | -100 | +10/-20 | -15 | 130 | - | - | 69 | 3200 | U-MOSVI |

☆ New Products, # AEC-Q101 qualified, $ With protection Zener diode between gate and source

## TSON Advance(WF) ( 3.1x3.6 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6V | $\|V_{GS}\|$=4.5V | | | |
| N-ch | XPN7R104NC ☆◆ # $ | 40 | +/-20 | 20 | 7.1 | - | 14.2 | 21 | 1290 | U-MOSVIII-H |
| | XPN3R804NC ☆◆ # $ | 40 | +/-20 | 40 | 3.8 | - | 7.8 | 35 | 2230 | U-MOSVIII-H |
| | XPN12006NC ☆◆ # $ | 60 | +/-20 | 20 | 12 | - | 23.7 | 23 | 1100 | U-MOSVIII-H |
| | XPN6R706NC ☆◆ # $ | 60 | +/-20 | 40 | 6.7 | - | 13.3 | 35 | 2000 | U-MOSVIII-H |
| | XPN2400ANC ☆◆ # $ | 100 | +/-20 | 20 | 23.5 | - | 42.7 | 20 | 920 | U-MOSVIII-H |
| | XPN1300ANC ☆◆ # $ | 100 | +/-20 | 30 | 13.3 | - | 24.2 | 28 | 1470 | U-MOSVIII-H |
| P-ch | XPN9R614MC ◆ # | -40 | +10/-20 | -40 | 9.6 | - | 13.4 | 64 | 3000 | U-MOSVI |

## SOP Advance(WF) ( 5x6 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6V | $\|V_{GS}\|$=4.5V | | | |
| N-ch | XPH3R304PB ☆◆ # | 40 | +/-20 | 60 | 3.3 | 6.3 | - | 30 | 1660 | U-MOSIX-H |
| | XPH2R404PB ☆◆ # | 40 | +/-20 | 90 | 2.4 | 4.1 | - | 40 | 2500 | U-MOSIX-H |
| | TPH1R104PB ☆◆ # | 40 | +/-20 | 120 | 1.14 | 1.96 | - | 55 | 4560 | U-MOSIX-H |
| | TPHR7904PB ☆◆ # | 40 | +/-20 | 150 | 0.79 | 1.3 | - | 85 | 6650 | U-MOSIX-H |
| | XPH3R206NC ☆◆ # $ | 60 | +/-20 | 70 | 3.2 | - | 6.2 | 65 | 4180 | U-MOSVIII-H |
| | XPH2R106NC ☆◆ # | 60 | +/-20 | 110 | 2.1 | - | 4.1 | 104 | 6900 | U-MOSVIII-H |
| | XPH6R30ANB ☆◆ # $ | 100 | +/-20 | 45 | 6.3 | 9.5 | - | 52 | 3240 | U-MOSVIII-H |
| | XPH4R10ANB ☆◆ # | 100 | +/-20 | 70 | 4.1 | 6.2 | - | 75 | 4970 | U-MOSVIII-H |
| P-ch | XPH4R714MC ☆◆ # | -40 | +10/-20 | -60 | 4.7 | - | 6.9 | 160 | 5640 | U-MOSVI |
| | XPH3R114MC ☆◆ # | -40 | +10/-20 | -100 | 3.1 | - | 4.7 | 230 | 9500 | U-MOSVI |

## DSOP Advance(WF) ( 5x6 )

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6V | $\|V_{GS}\|$=4.5V | | | |
| N-ch | TPW1R104PB * ☆◆ # | 40 | +/-20 | 120 | 1.14 | 1.96 | - | 55 | 4560 | U-MOSIX-H |
| | TPWR7904PB ** ☆◆ # | 40 | +/-20 | 150 | 0.79 | 1.3 | - | 85 | 6650 | U-MOSIX-H |
| | XPW4R10ANB ** ☆◆ # | 100 | +/-20 | 70 | 4.1 | 6.2 | - | 75 | 4970 | U-MOSVIII-H |
| | XPW6R30ANB * ☆◆ # $ | 100 | +/-20 | 45 | 6.3 | 9.5 | - | 52 | 3240 | U-MOSVIII-H |

## D2PAK+

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=10V | $V_{GS}$=6V | | | |
| N-ch | TK1R5R04PB # | 40 | +/-20 | 160 | 1.5 | 2.05 | 103 | 5500 | U-MOSIX-H |

## TO-220SM(W)

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $\|V_{GS}\|$=10V | $\|V_{GS}\|$=6V | | | |
| N-ch | TK1R4F04PB ☆ # | 40 | +/-20 | 160 | 1.35 | 1.9 | 103 | 5500 | U-MOSIX-H |
| | TK200F04N1L ☆ # | 40 | +/-20 | 200 | 0.9 | 1.37 | 214 | 14920 | U-MOSVIII-H |
| | TKR74F04PB ☆ # | 40 | +/-20 | 250 | 0.74 | 0.98 | 227 | 14200 | U-MOSIX-H |
| | TK60F10N1L ☆ # | 100 | +/-20 | 60 | 6.11 | 9.25 | 60 | 4320 | U-MOSVIII-H |
| | TK160F10N1L # | 100 | +/-20 | 160 | 2.4 | 3.7 | 122 | 10100 | U-MOSVIII-H |
| | XK1R9F10QB ☆ # | 100 | +/-20 | 160 | 1.92 | 3.31 | 184 | 11500 | U-MOSX-H |
| P-ch | TJ200F04M3L # | -40 | +10/-20 | -200 | 1.8 | 2.6 | 460 | 12800 | U-MOSVI |

☆ New Products, # AEC-Q101 qualified, $ With protection Zener diode between gate and source, ◆ Wettable Flank Lead Terminal
* DSOP Advance(WF)M, ** DSOP Advance(WF)L

# 4. Silicon Carbide (SiC) MOSFET Series

## TO-3P(N)

| Circuit Configuration | Part Number | Absolute Maximum Ratings | | | $R_{DS(ON)}$ max(mΩ) | $Q_g$ typ. (nC) | $C_{iss}$ typ. (pF) | Remark |
|---|---|---|---|---|---|---|---|---|
| | | $V_{DSS}$(V) | $V_{GSS}$(V) | $I_D$(A) | $V_{GS}$=20V | | | |
| N-ch | TW070J120B ☆ | 1200 | +25/-10 | 36 | 0.09 | 70 | 1680 | |

☆ New Products

# 5. Part Naming Conventions

## Conventional Multi-Pin Series

Ex) TPC8 0 67 -H
① ② ③ ④

① Package
TPCP8: PS-8 Series TPC8: SOP-8 Series
TPCC8: TSON Advance Series TPCA8: SOP Advance Series
② Polarity / Configuration
0: N-channel, single 3: P-channel, dual
1: P-channel, single 4: N-channel and P-channel, dual
2: N-channel, dual J: P-channel and NPN
③ Serial number of the products
④ Additional information
H: High-speed type None: Low-on-resistance type

## New Multi-Pin Series

Ex) TPH 4R3 0 4 N C
① ② ③ ④ ⑤ ⑥

① Package
TPP: PS-8 Series TPH / XPH: SOP Advance Series
TPN / XPN: TSON Advance Series TP8: SOP-8 Series
TPW /XPW: DSOP Advance Series
② Max. on-resistance (at max drive conditions)
R79 = 0.79 mΩ 100 = 10 x $10^0$ = 10 mΩ
4R3 = 4.3 mΩ 101 = 10 x $10^1$ = 100 mΩ
③ Polarity / Configuration
0: Single N-ch 1: Single P-ch
④ Drain-source voltage ($V_{DSS}$)
2: 15 to 24V 7: 65 to 74V D: 180 to 199V
3: 25 to 34V 8: 75 to 84V E: 200 to 249V
4: 35 to 44V A: 95 to 124V F: 250 to 299V
5: 45 to 54V B: 125 to 149V
6: 55 to 64V C: 150 to 179V
⑤ Series
M: U-MOSⅥ N: U-MOSⅧ/U-MOSⅧ-H P: U-MOSⅨ-H
Q: U-MOSⅩ-H
⑥ Additional information
1 to 5: Serial number of the products
A: $V_{GS}$= 10V (Drive)
B:$V_{GS}$= 6V (Drive)
C: $V_{GS}$= 4.5V (Drive)
D: $V_{GS}$= 2.5V (Drive)
E: $V_{GS}$= 2.0V (Drive)
F: $V_{GS}$= 1.8V (Drive)
H: Low-rg, $V_{GS}$=10 V (Drive)
M: Low-rg, $V_{GS}$=6 V (Drive)
L: Low-rg, $V_{GS}$=4.5 V (Drive)
Q: $T_{ch(max)}$= Guaranteed up to 175℃+ZD
R: $T_{ch(max)}$= Guaranteed up to 150℃+ZD
S: $T_{ch(max)}$= Guaranteed up to 175℃
T: $T_{ch(max)}$= Guaranteed up to 150℃

## Silicon carbide (SiC) Series

Ex) TW 070 J 120 B
① ② ③ ④ ⑤

① Polarity
TW: N-channel
② Typ. on-resistance (at max drive conditions)
070 = 70 mΩ
③ Package
A: TO-220SIS N: TO-247
E: TO-220 V: DFN8x8
J: TO-3P(N) Z: TO-247-4L
④ Drain-source voltage $V_{DSS}$ : Display value ×10 times = $V_{DSS}$
120: $V_{DSS}$=1200V
⑤ Generation
B: 2nd Generation

## 3-Pin Series

Ex) TK 40 S 10 K 3 Z
① ② ③ ④ ⑤ ⑥ ⑦

① Polarity
TK: N-channel TJ: P-channel
② Drain current ($I_D$)
③ Package
A: TO-220SIS N: TO-247
E: TO-220 P: DPAK/New PW-Mold
F: TO-220SM(W) Q: IPAK/New PW-Mold2
G: D2PAK S: DPAK+
J: TO-3P(N) V: DFN8 x 8
L: TO-3P(L) Z: TO-247-4L
④ Drain-source voltage($V_{DSS}$) Display value ×10 = $V_{DSS}$
06: $V_{DSS}$=60 V 10: $V_{DSS}$=100 V
⑤ Series
A: π-MOSⅣ J: U-MOSⅢ U: DTMOSⅡ
C: π-MOSⅥ K: U-MOSⅣ V: DTMOSⅢ
D: π-MOSⅦ M: U-MOSⅥ W: DTMOSⅣ
E: π-MOSⅧ N: U-MOSⅧ X: DTMOSⅣ-H
⑥ Additional information (1)
1: Low-capacitance type 5: Fast body diode type
3 : Low-on-resistance type
⑦ Additional information (2)
L: $V_{GS}$= 4.5V (Drive) S: $V_{GS}$= 4.5V (Drive)
H: $V_{GS}$= 10 V(Drive) Z: With protection Zener diode
M: $V_{GS}$= 6 V (Drive) between gate and source

## New 3-Pin Series

Ex) TK R74 F 04 P B
① ② ③ ④ ⑤ ⑥

① Polarity
TK / XK: N-channel TJ / XJ: P-channel
② Max. on-resistance$V_{DSS}$= 400 V less than the product
(at max drive conditions)
R74 = 0.74 mΩ 100 = 10 x $10^0$ = 10 mΩ
8R2 = 8.2 mΩ 101 = 10 x $10^1$ = 100 mΩ
Max, on-resistance $V_{DSS}$= 400 V or more products
(at max drive conditions)
047 = 0.047 Ω 410 = 0.41 Ω 4K7 = 4.7 Ω
③ Package
A: TO-220SIS N: TO-247 V: DFN8 x 8
E: TO-220 P: DPAK/New PW-Mold Z: TO-247-4L
F: TO-220SM(W) Q: IPAK/New PW-Mold 2
G: D2PAK R: D2PAK+
J: TO-3P(N) S: DPAK+
L: TO-3P(L) U: TOLL
④ Drain-source voltage $V_{DSS}$ : Display value ×10 times = $V_{DSS}$
04: $V_{DSS}$=40V 10: $V_{DSS}$=100V
⑤ Series
F: π-MOSⅨ N: U-MOSⅧ-H Y: DTMOSⅤ
M: U-MOSⅥ P: U-MOSⅨ-H Z: DTMOSⅥ
⑥ Additional information
A: $V_{GS}$= 10 V (Drive) H: Low-rg, $V_{GS}$= 10 V (Drive)
B: $V_{GS}$= 6 V (Drive) M: Low-rg, $V_{GS}$=6 V (Drive)
C: $V_{GS}$= 4.5 V (Drive) L: Low-rg, $V_{GS}$=4.5 V (Drive)

## JEITA registration Item Series

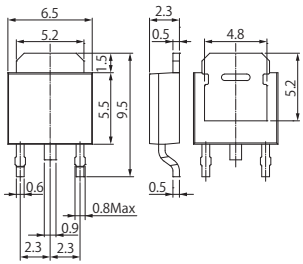
Ex) N-channel MOS P-channel MOS
2SK✻✻✻✻ 2SJ✻✻✻✻

# 6. Device Packages

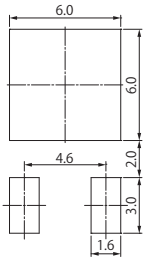
## Dimensional Out Line

### DPAK+ (6.5x9.5)

Package dimension unit : mm

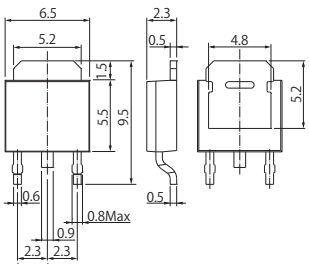



Land pattern example unit : mm

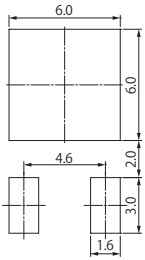



### New PW-Mold (6.5x9.5)

Package dimension unit : mm

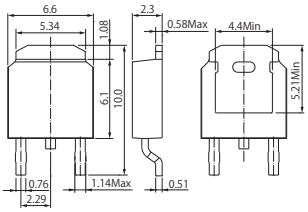



Land pattern example unit : mm

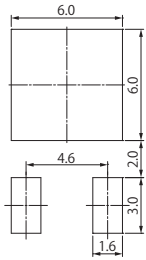



### DPAK 2-7K1S (TO-252) (6.6x10.0)

Package dimension unit : mm

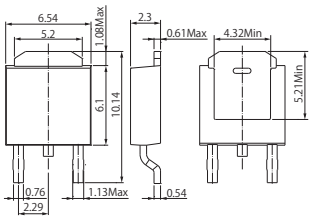



Land pattern example unit : mm

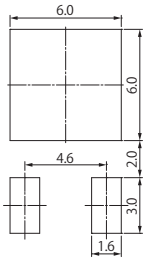



### DPAK 2-7N1S (TO-252)

Package dimension unit : mm

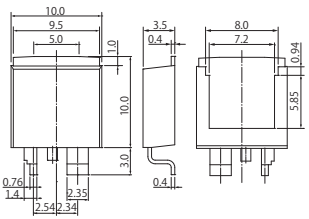



Land pattern example unit : mm

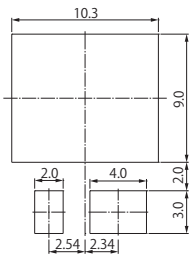



### TO-220SM(W) (10.0x13.0)

Package dimension unit : mm

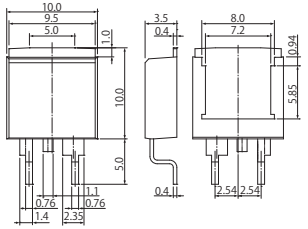



Land pattern example unit : mm

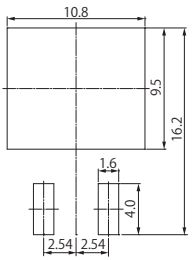



### D2PAK+ (10.0x15.0)

Package dimension unit : mm



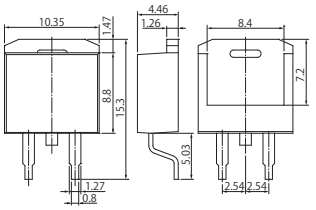

Land pattern example unit : mm



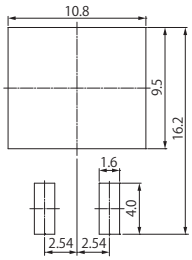
## Dimensional Out Line

### D2PAK (10.35x15.3)

Package dimension unit : mm

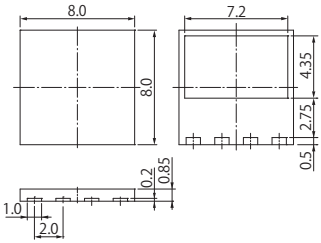



Land pattern example unit : mm

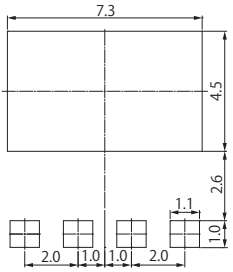



### DFN8X8 (8.0x8.0)

Package dimension unit : mm

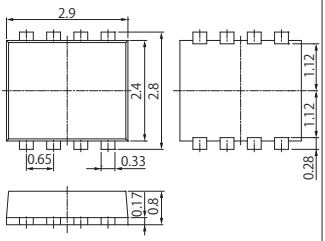



Land pattern example unit : mm

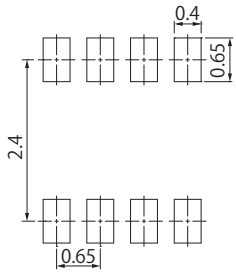



### PS-8 (2.9x2.8)

Package dimension unit : mm

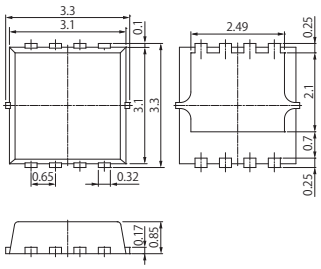



Land pattern example unit : mm

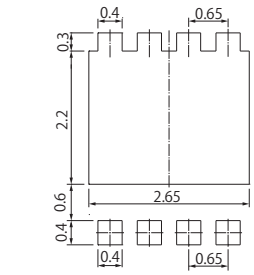



### TSON Advance (3.1x3.3)

Package dimension unit : mm

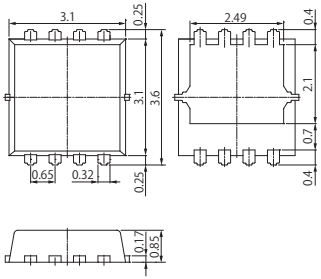



Land pattern example unit : mm

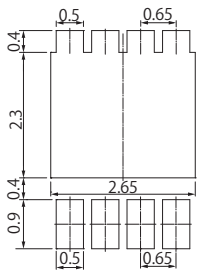



### TSON Advance (WF) (3.1x3.6) ★

Package dimension unit : mm

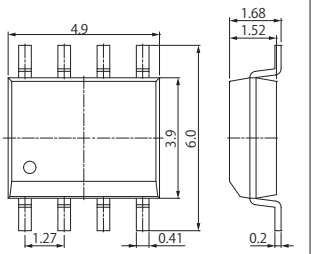



Land pattern example unit : mm

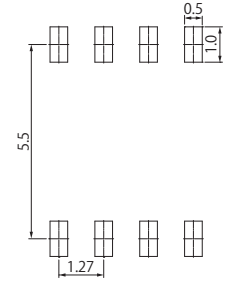



### SOP-8 2-5R1S (4.9x6.0)

Package dimension unit : mm




Land pattern example unit : mm

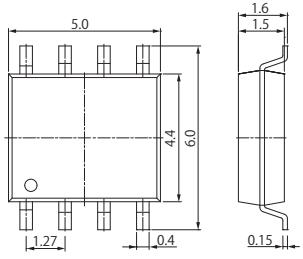



★ Wettable Flank Lead Terminal

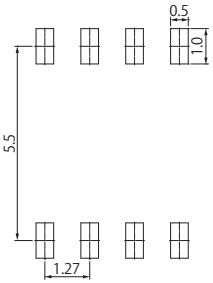
## Dimensional Out Line

### SOP-8 2-6J1S

Package dimension unit : mm

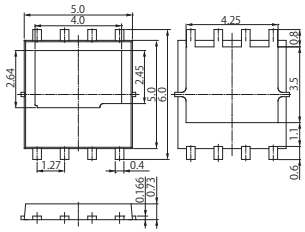



Land pattern example unit : mm

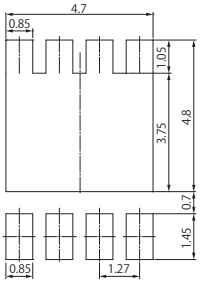



### DSOP Advance (5.0x6.0)

Package dimension unit : mm

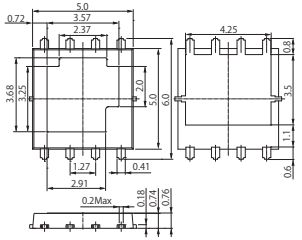



Land pattern example unit : mm

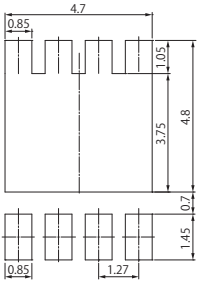



### DSOP Advance (WF)L (5.0x6.0) ★

Package dimension unit : mm



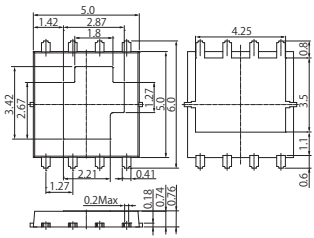

Land pattern example unit : mm



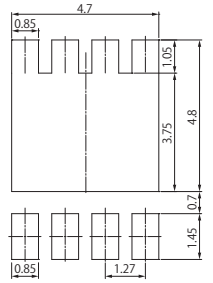

★ Wettable Flank Lead Terminal

### DSOP Advance (WF)M (5.0x6.0) ★

Package dimension unit : mm

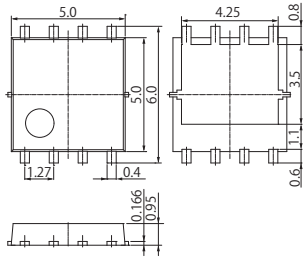



Land pattern example unit : mm

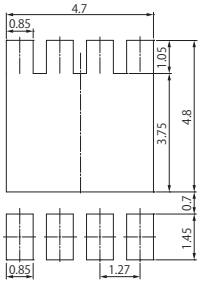



### SOP Advance (5.0x6.0)

Package dimension unit : mm

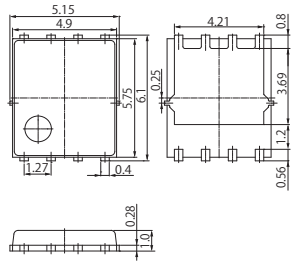



Land pattern example unit : mm

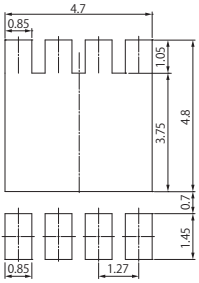



### SOP Advance(N) (4.9x6.1)

Package dimension unit : mm

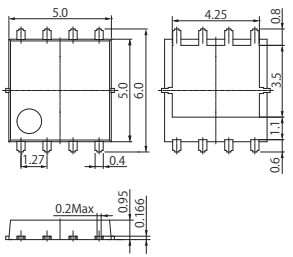
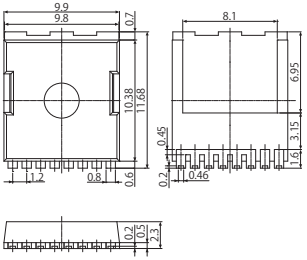
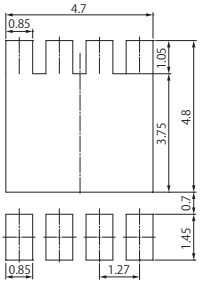



Land pattern example unit : mm




★ Wettable Flank Lead Terminal

## Dimensional Out Line

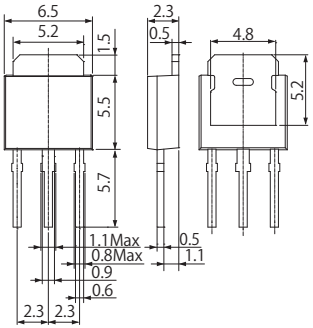
| SOP Advance(WF) (5.0x6.0) ★ | TOLL (9.9x11.68) |
|---|---|
| Package dimension unit : mm | Package dimension unit : mm |
|  |  |
| Land pattern example unit : mm | Land pattern example unit : mm |
|  | |

★ Wettable Flank Lead Terminal

## Dimensional Out Line

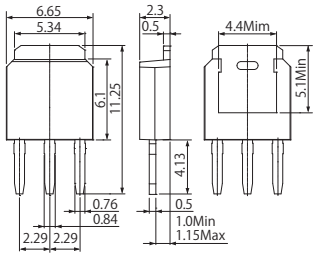
### New PW-Mold2 (6.5x5.5)

Package dimension unit : mm



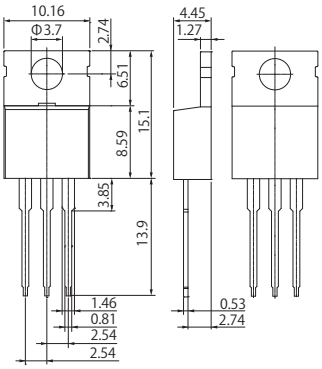

### IPAK (6.65x6.1)

Package dimension unit : mm



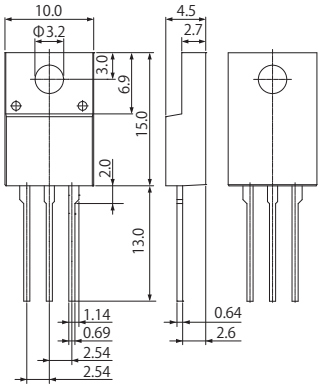

### TO-220 (10.16x15.1)

Package dimension unit : mm



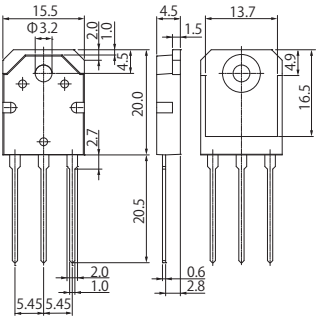

### TO-220SIS (SC-67) (10.0x15.0)

Package dimension unit : mm



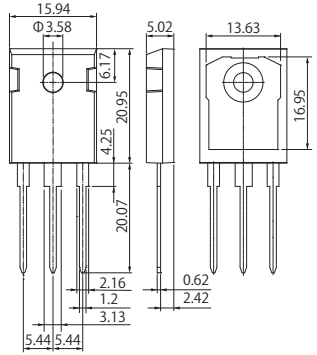

### TO-3P(N) (SC-65) (15.5x20.0)

Package dimension unit : mm



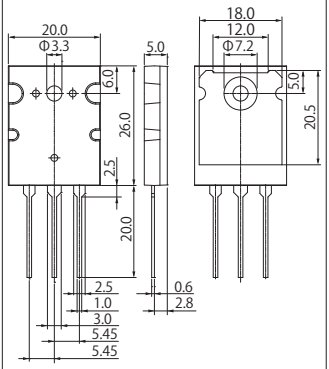

### TO-247 (15.94x20.95)

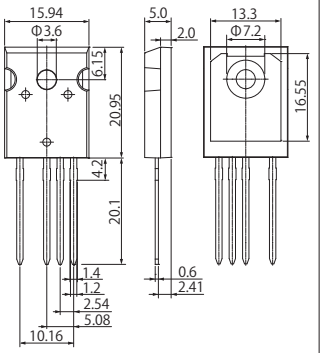
Package dimension unit : mm



## Dimensional Out Line

| TO-3P(L) (20.0x26.0) | TO-247-4L (15.94x20.95) |
|---|---|
| Package dimension unit : mm | Package dimension unit : mm |



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2021 Rev. 1.0