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High Voltage Isolated Gate Drivers

Public Information

High Voltage Gate Drivers Selection Guide

	Specs/Features								Target Applications				Availability	
									Automotive					
	No. of channels	Package	Isolation	Differential Input	DESAT w/ FLT	Miller Clamp	VEE	Split output	Traction	PTC	OBC	HV DC-DC	Sample	RTM
Non-Isolated Gate Drivers														
NCV5700 /2	1	SOIC−16			V	V	V	V	V	V			V	V
NCV5701 /3A	1	SOIC−8			V	V			V	V	V	V	V	V
NCV5701 /3B	1	SOIC−8			V		V		V	V	V	V	V	V
NCV5701 /3C	1	SOIC−8			V			V	V	V	V	V	V	V
Half Bridge Isolated Gate Driver														
NCV57200 /1	2	SOIC−8									V	V	V	V
Isolated Gate Drivers														
NCV57000 /1	1	SOIC-16(W)*	V	V	V	V	V	V	V	V			V	V
NCV57080A	1	SOIC-8	V	V		V					V	V	V	V
NCV57080B	1	SOIC-8	V	V			V				V	V	V	Apr 2020
NCV57080C	1	SOIC-8	V	V				V			V	V	V	V
NCV57090A	1	SOIC-8(W)*	V	V		V					V	V	V	Apr 2020
NCV57090B	1	SOIC-8(W)*	V	V			V				V	V	V	Apr 2020
NCV57090C	1	SOIC-8(W)*	V	V				V			V	V	V	Apr 2020
NCV57084	1	SOIC-8	V		V					V			V	June 2020
NCV57085	1	SOIC-8	V		CS w/FLT					V			V	June 2020
NCV5725x	2	SOIC-16(W)*	V								V	V	V	May 2020

* (W) – Wide body New Product (V)- Automotive (D)- Industrial

NCV570X0 - 8-pin Isolated Gate Driver

- Key Features:
  - High output current (+8A/-8A)
  - Short propagation delays w/ accurate matching
  - CMTI > 100kV/us @ 1500V
  - Tight UVLO on both power supplies
  - Miller Clamp/Bipolar drive/Split output versions
- Target Applications:
  - Automotive

- OBC
- xEV Charging stations
- Automotive power supplies

NCV570X0 - General Information

NCV57080 Description

NCV57080(A/B/C) are high−current single channel IGBT gate drivers with 3.75 kVrms internal galvanic isolation, designed for high system efficiency and reliability in high power applications. The devices accept complementary inputs and depending on the pin configuration, offer options such as Active Miller Clamp (NCV57080A), negative power supply (NCV57080B) and separate high and low (OUTH and OUTL) driver outputs (NCV57080C) for system design convenience. NCV57080 (A/B/C) accommodate wide range of input bias voltage and signal levels from 3.3V to 20V. NCV57080 (A/B/C) are available in narrow-body SOIC-8 package.

Features

- High Peak Output Current (+8A/−8 A)
- 3.75 kVrms Galvanic Isolation
- Short Propagation Delays with Accurate Matching
- IGBT Gate Clamping during Short Circuit
- IGBT Gate Active Pull Down
- Tight UVLO Thresholds for Bias Flexibility
- Wide Bias Voltage Range including Negative VEE2 (NCV57080B)
- 3.3V, 5V, and 15V Logic Input
- Designed for AEC-Q100 certification
- High transient immunity

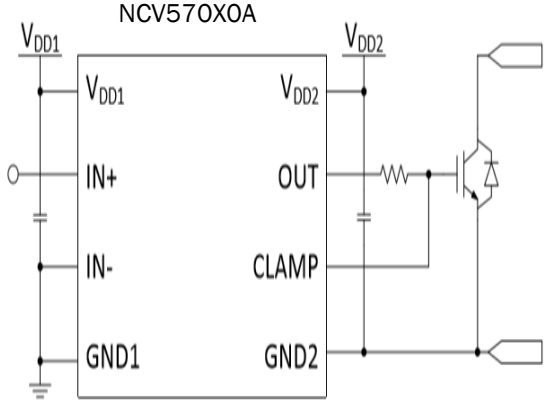
NCV57090 Description

NCV57090(A/B/C/D/E/F) are high−current single channel IGBT gate drivers with 5 kVrms internal galvanic isolation, designed for high system efficiency and reliability in high power applications. The devices accept complementary inputs and depending on the pin configuration, offer options such as Active Miller Clamp (NCV57090A), negative power supply (NCV57090B) and separate high and low (OUTH and OUTL) driver outputs (NCV57090C) for system design convenience. NCV57090 (A/B/C) accommodate wide range of input bias voltage and signal levels from 3.3V to 20V. NCV57080 (A/B/C) are available in Wide-body SOIC-8 package.

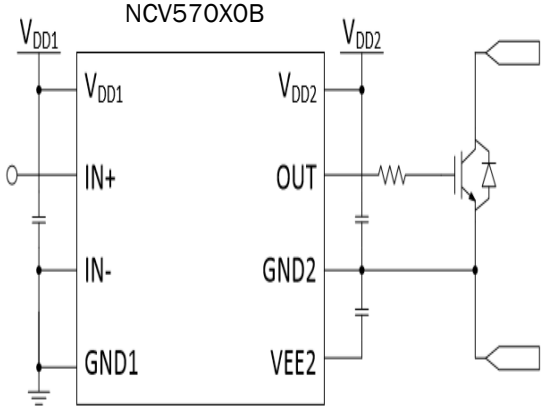
Features

- High Peak Output Current (+8A/−8 A)
- 5 kVrms Galvanic Isolation
- Short Propagation Delays with Accurate Matching
- IGBT Gate Clamping during Short Circuit
- IGBT Gate Active Pull Down
- Tight UVLO Thresholds for Bias Flexibility
- Wide Bias Voltage Range including Negative VEE2 (NCV57090B)
- 3.3V, 5V, and 15V Logic Input
- Designed for AEC-Q100 certification
- High transient immunity

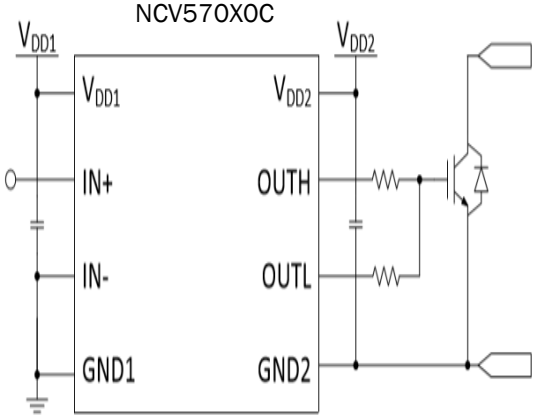
NCV570X0A



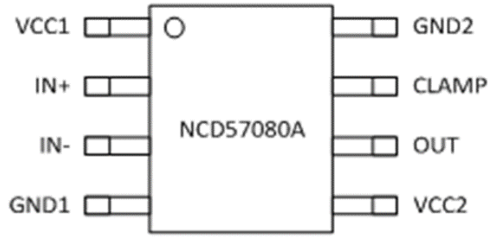
NCV570X0B

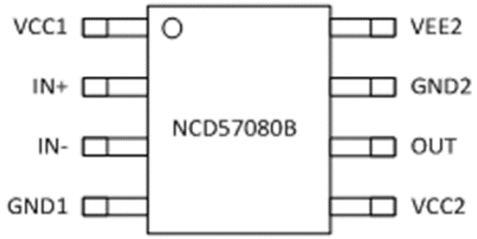


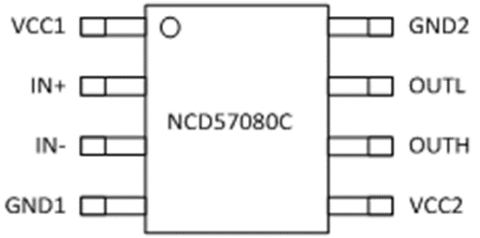
NCV570X0C



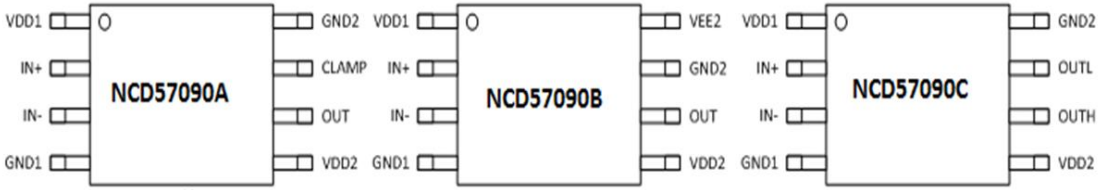
NCV57080/90 - Product details and Line up

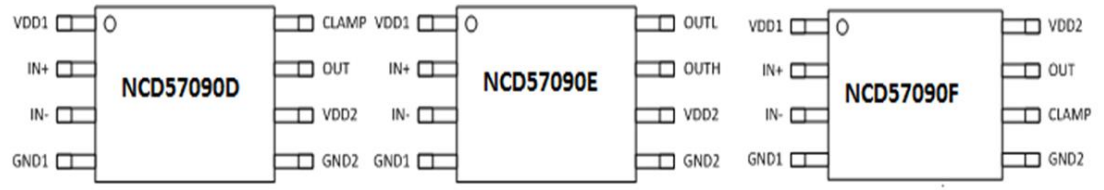






NCV57080A/B/C 8-pin Narrow Body





NCV57090A/B/C 8-pin wide Body

Part#	P2P Xref
NCV570X0	1EDCxxI12AH 1EDI10/20/30I12 UCC53X0, ADuM4121

NCV57084/85 - 8-pin Isolated Gate Driver

- Key Features:
  - High output current (+8A/-8A)
  - Short propagation delays w/ accurate matching
  - CMTI > 100kV/us @ 1500V
  - Tight UVLO on both power supplies
  - DESAT or Current sense comparator with FLT feedback
- Target Applications:
  - Automotive

- xEV PTC heater
- xEV Coolant heater
- Automotive power supplies

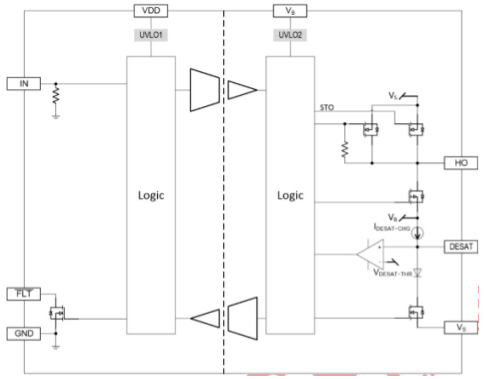
NCV5708X - General Information

NCV57084 Description

NCV57084 is a high current single channel IGBT gate driver with 3 kVrms internal galvanic isolation designed for high system efficiency and reliability in high power applications. The driver includes DESAT short circuit protection with soft turn off and fault reporting in a narrow body SOIC−8 package. NCV57084 accommodates wide range of input bias voltage and signal levels from 3.3 V to 20 V, and wide range of output bias voltage up to 32 V.

Features

- High Peak Output Current (+8A/−8 A)
- Low Output Impedance for Enhanced IGBT Driving
- Short Propagation Delays with Accurate Matching
- DESAT Protection with Programmable Delay
- Negative Voltage (Down to −9 V) Capability for DESAT
- IGBT Gate Clamping during Short Circuit
- IGBT Gate Active Pull Down
- Soft Turn Off During IGBT Short Circuit
- Tight UVLO Thresholds for Bias Flexibility
- Output Partial Pulse Avoidance During UVLO/DESAT (Restart)
- 3.3. V, 5 V, and 15 V Logic Input
- 3 kVrms Galvanic Isolation
- High Transient Immunity
- High Electromagnetic Immunity

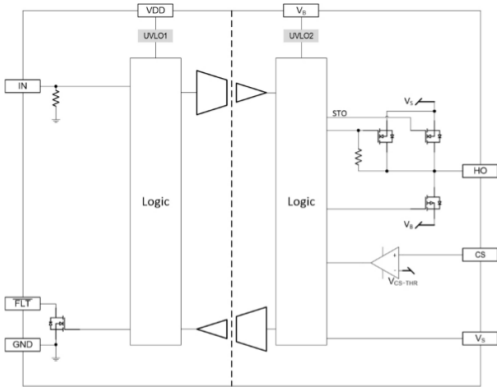


NCV57085 Description

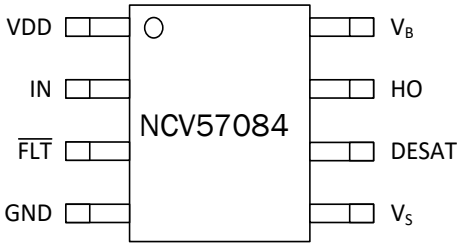
NCV57085 is high−current single channel IGBT gate drivers with 3 kVrms internal galvanic isolation, designed for high system efficiency and reliability in high power applications. This device includes Negative Voltage (Down to −9 V) Capability for CS Pin, with narrow−body SOIC−8 package. NCV57085 accommodates wide range of inputs bias voltage and signal levels from 3.3 V to 20 V, and wide range of output bias voltage up to 32 V.

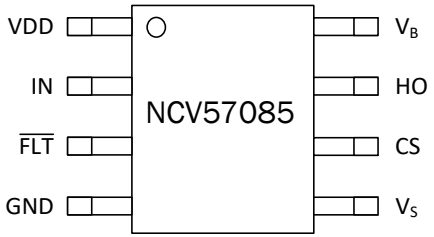
Features

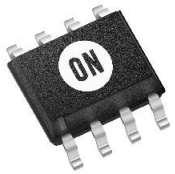
- High Peak Output Current (+8A/−8 A)
- Low Output Impedance for Enhanced IGBT Driving
- Short Propagation Delays with Accurate Matching
- IGBT Over Current Protection
- Negative Voltage (Down to −9 V) Capability for CS Pin
- IGBT Gate Clamping during Short Circuit
- IGBT Gate Active Pull Down
- Soft Turn Off During IGBT Over Current
- Tight UVLO Thresholds for Bias Flexibility
- Output Partial Pulse Avoidance During UVLO/CS (Restart)
- 3.3. V, 5 V, and 15 V Logic Input
- 3 kVrms Galvanic Isolation
- High Transient Immunity
- High Electromagnetic Immunity



NCV57084/85 - Product details and Line up







SOIC-8 Pin Narrow body

Part#	Key difference	Package	P2P Xref
NCV57084	DESAT	SOIC-8 Pin Narrow body	AUIRS21271S
NCV57085	CS	SOIC-8 Pin Narrow body	AUIRS21271S

NCV5725x - Dual Channel Isolated Gate Driver

- Key Features:
  - High current, (+8 A/−8 A) src/snk
  - Galvanic Isolation up to 3 or 5 kVrms
  - CMTI 100kV/us @ 1500V
  - Typical 60ns propagation delays
  - Tight UVLOs on all three power supplies
  - DT pin
  - ANB function
- Target Applications:
  - Automotive

- OBC
- xEV Charging stations
- Automotive power supplies

NCV5725x - General Information

NCV57252 Description

NCV57252 is a high−current two channel isolated IGBT gate driver with 5 kVrms internal galvanic isolation from input to each output and functional isolation between the two output channels. The device accepts 3.3 V to 20 V bias voltage and signal levels on the input side and up to 32 V bias voltage on the output side. The device accepts complementary inputs and offers separate pins for Disable and Dead Time control for system design convenience. NCV57252 is available in wide body SOIC−16 package.

Features

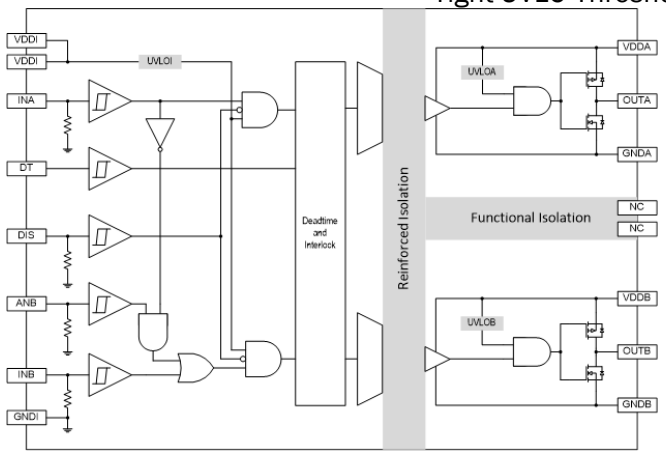
- High Peak Output Current (+8 A/−8 A)
- 5 kVrms Galvanic Isolation
- 3.3 V, 5 V, and 15 V Logic Input
- 1200 V Working Voltage (per VDE0884−11 Requirements)
- Configurable as a Dual Low−Side or Dual High−Side or Half−Bridge Driver
- Programmable Overlap or Dead Time control
- Disable Pin to Turn Off Outputs for Power Sequencing
- ANB Function to Offer Flexibility to Set up the Driver as Half−bridge Driver Operating with a Single Input Signal
- IGBT Gate Clamping during Short Circuit
- Short Propagation Delays with Accurate Matching
- Tight UVLO Thresholds on all Power Supplies

NCV57255 Description

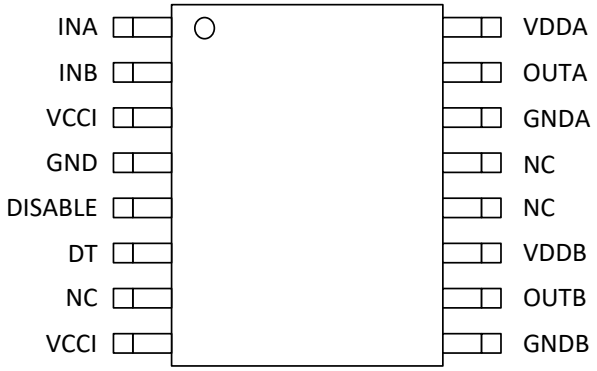
NCV57255 is a high−current two channel isolated gate driver with 3 kVrms internal galvanic isolation from input to each output and functional isolation between the two output channels. The device accepts 3.3V to 20V bias voltage and signal levels on the input side and up to 32V bias voltage on the output side. The device accepts complementary inputs and offers separate pins for Disable and Dead-Time control for system design convenience. NCV57255 is available in narrow body SOIC-16 package.

Features

- High Peak Output Current (+8 A/−8 A)
- 3 kVrms Galvanic Isolation
- 3.3 V, 5 V, and 15 V Logic Input
- 1200 V Working Voltage (per VDE0884−11 Requirements)
- Configurable as a Dual Low−Side or Dual High−Side or Half−Bridge Driver
- Programmable Overlap or Dead Time control
- Disable Pin to Turn Off Outputs for Power Sequencing
- ANB Function to Offer Flexibility to Set up the Driver as Half−bridge Driver Operating with a Single Input Signal
- IGBT Gate Clamping during Short Circuit
- Short Propagation Delays with Accurate Matching
- Tight UVLO Thresholds on all Power Supplies

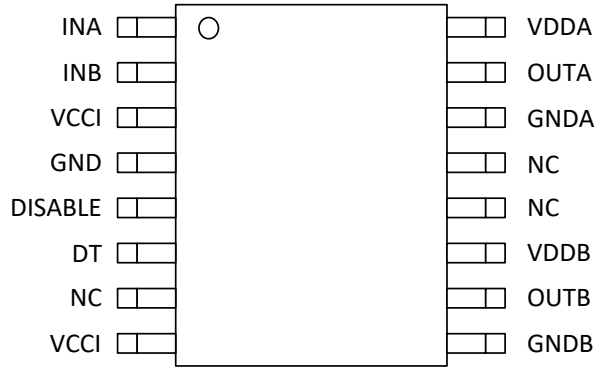


NCV5725x - Product details and Line up



NCV57252

SOIC-16 Wide Body



NCV57255

SOIC-16 Narrow Body

Part#	Package	P2P Xref
NCV57252	SOIC-16 wide body	UCC21520 Si823x ADuM4223
NCV57255	SOIC-16 narrow body	

Marketing Positioning

Exceptional dynamic performances by improved efficiency:

- 10% of E_{ON} reduction
  (600V, 3xIGBT40A in parallel, Double Pulse Test)
- 17% of E_{OFF} reduction for IH,
  (2kW IH system, single ended resonant topology, DC bus single phase voltage)
- 5% of E_{CON} reduction, or >0.1V $V_{CE(SAT)}$ reduction
  (Double Pulse Test)

Wide set of protections for higher reliability and function safety in design:

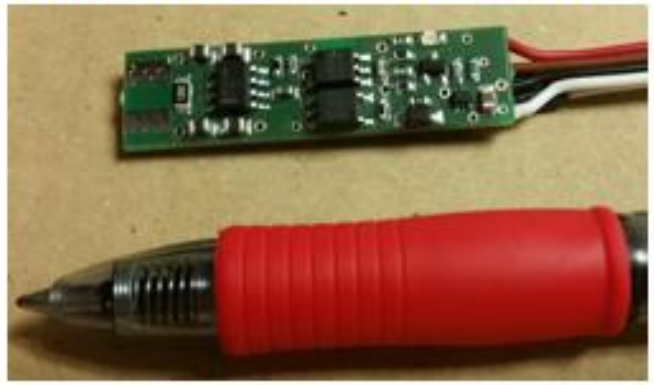
- DESAT w/ FLT & Soft Turn Off, Miller Clamp, UVLO, $V_{EE,}$ Enable
- Low pulse-width distortion, Low part-part variation in delay times

System level optimization and lower cost of ownership:

- Lower cost solutions with non-isolated drivers family
- Flexible and highly integrated solutions with isolated drivers
- Elimination of buffers for most applications

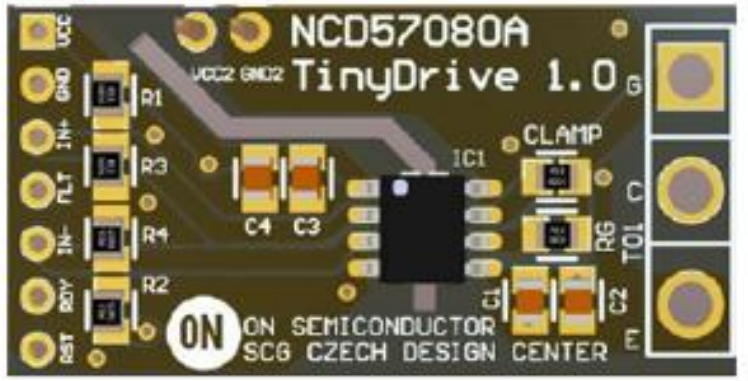
Reference Boards

TinyDrive Board for NCD5701B



Eval board for NCD57090

Eval Board for NCD57080



TinyDrive Board for NCD5700x

2-Ch Board for NCD5700x

Eval Board for NCV57200