



TF23892M

3-Phase Half-Bridge Gate Driver

Features

- Three floating high-side drivers in bootstrap operation to 600V
- 350mA source / 650mA sink output current capability
- Outputs tolerant to negative transients, dV/dt immune
- Logic input 3.3V capability
- Internal deadtime of 290ns to protect MOSFETs
- Wide gate driver supply voltage range: 10V to 20V
- Matched prop delay for all channels
- Outputs out of phase with inputs
- Schmitt triggered logic inputs
- Cross conduction prevention logic
- Undervoltage lockout for all channels
- Overcurrent protection shuts down drivers
- Extended temperature range: -40°C to +125°C

Applications

- 3-Phase Motor Inverter Driver
- White Goods - Air Conditioner, Washing Machine, Refrigerator
- Industrial Motor Inverter - Power Tools, Robotics
- General Purpose 3-Phase Inverter

SOIC-28



Description

The TF23892M is a three-phase gate driver IC designed for high voltage, high speed applications, driving N-channel MOSFETs and IGBTs in a half-bridge configuration. TF Semiconductor's high voltage process enables the TF23892M high sides to switch to 600V in a bootstrap operation.

The TF23892M logic inputs are compatible with standard TTL and CMOS levels (down to 3.3V) to interface easily with controlling devices and are enabled low to better function in high noise environments. The driver outputs feature high pulse current buffers designed for minimum driver cross conduction.

The TF23892M offers numerous protection functions. A shoot-through protection logic prevents both outputs being high with both inputs high (fault state), an undervoltage lockout (UVLO) for V_{CC} shuts down all drivers through an internal fault control, and a UVLO for V_{BS} shuts down the respective high side output. Also an overcurrent protection will terminate the six outputs. Both the V_{CC} UVLO and the overcurrent protection trip an automatic fault clear with a timing that is adjustable with an external capacitor.

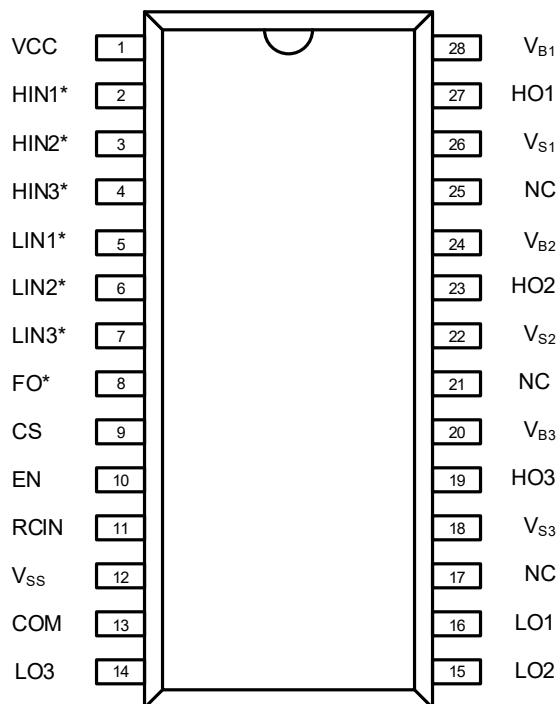
The TF23892M is offered in SOIC 28 package and operates over an extended -40 °C to +125 °C temperature range.

Ordering Information

PART NUMBER	PACKAGE	PACK / Qty	MARK
TF23892M-TLS	SOIC-28	Tube / 25	YYWW TF23892M
TF23892M-TLH	SOIC-28	T&R / 1500	Lot ID



Pin Diagrams



Top View: SOIC-28

Pin Descriptions

PIN NAME	PIN NUMBER	PIN DESCRIPTION
VCC	1	Low-side and logic fixed supply
HIN1*, HIN2*, HIN3*	2, 3, 4	Logic input for high-side gate driver output, out of phase with HO.
LIN1*, LIN2*, LIN3*	5, 6, 7	Logic input for low-side gate driver output, out of phase with LO.
FO*	8	Fault output with open drain (fault with over-current and VCC UVLO)
CS	9	Analog input for over-current shutdown
EN	10	Logic input for functionality, I/O logic functions when EN is high.
RCIN	11	An external RC network input used to define FAULT CLEAR delay
V _{SS}	12	Logic ground
COM	13	Low-side driver return
LO3, LO2, LO1	14, 15, 16	Low-side gate driver output
NC	17, 21, 25	No Connect
V _{S3} , V _{S2} , V _{S1}	18, 22, 26	High-side floating supply return
HO3, HO2, HO1	19, 23, 27	High-side gate driver output
V _{B3} , V _{B2} , V _{B1}	20, 24, 28	High-side floating supply



Revision History

Rev.	Change	Owner	Date
1.0	First Release AI datasheet	D. Walton	12/8/2022

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