TF0227(1/2/3/5)

Dual High Speed Low-Side Gate Driver

TF Semiconductor Solutions

Features

- **Efficient, low-cost solution for driving MOSFETs and IGBTs**
- **Wide supply voltage operating range: 4.5V to 18V**
- **A wide range (1.5A-4A) of source/sink output current capability offerings**
- **Fast propagation delays (35ns typical)**
- **Fast rise and fall times**
- **Logic input (IN) 3.3V capability**
- **Extended temperature range: -40°C to +125°C**

Description

The TF0227(x), dual, high speed, low side MOSFET and IGBT drivers are capable of driving a range of source/sink peak capabilities. The TF0227(x) logic inputs are compatible with standard TTL and CMOS levels (down to 3.3V) to interface easily with MCUs. Fast and well matched propagation delays allow high speed operation, enabling a smaller, more compact power switching design using smaller associated components.

The TF0227(x) is offered in an SOIC-8(N) package and it operates over an extended -40 °C to +125 °C temperature range.

Applications

- Switch mode power supplies
- Motor Drive
- Line Drivers
- DC-DC Converters

SOIC-8(N)

Ordering Information

PART NUMBER	PACKAGE	PACK / Qty	MARK
TF0227-TAU	SOIC-8(N)	Tube / 100	YYWW
TF0227-TAH	SOIC-8(N)	T&R / 2500	TF0227 Lot ID

Typical Application

Pin Diagrams
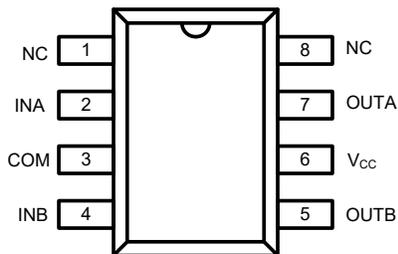
Top View: SOIC8

Pin Descriptions

PIN NAME	PIN NUMBER	PIN DESCRIPTION
NC	1, 8	No Connect
INA	2	Logic input for A phase, in phase with OUTA.
COM	3	Supply return
INB	4	Logic input for B phase, in phase with OUTB.
OUTB	5	Gate driver output B phase
V_{CC}	6	Supply input
OUTA	7	Gate driver output A phase

Functional Block Diagram
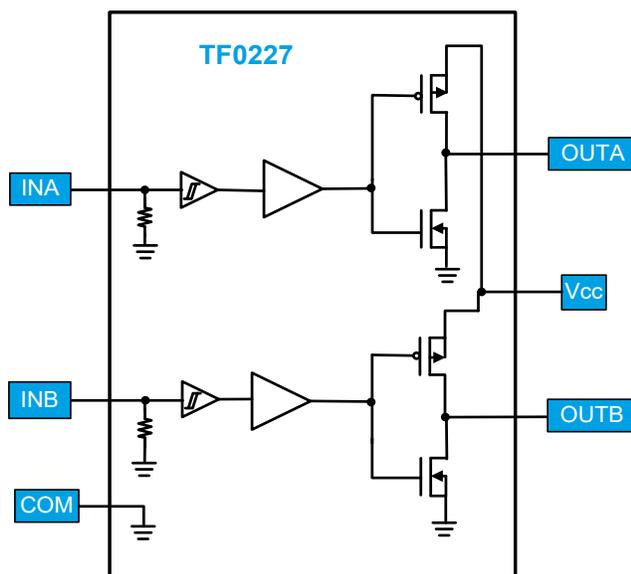
Absolute Maximum Ratings *(NOTE1)*

V_{CC} - Low-side fixed supply voltage..............................-0.3V to +22V
V_{OUT} - Output voltage (OUTA/OUTB)....................-0.3V to V_{CC} +0.3V
V_{IN} - Logic input voltage (INA, INB).......................-0.3V to V_{CC} +0.3V
ESD Protection on all pins..2kV (HBM)

P_D - Package power dissipation at $T_A \leq 25$ °C
  SOIC8 ....0.625W
SOIC8 Thermal Resistance *(NOTE2)*
  θ_{JA}...200 °C/W

T_J - Junction operating temperature.......................................+150 °C
T_L - Lead Temperature (soldering, 10 seconds)......................+300 °C
T_{stg} - Storage temerature ....-55 to 150 °C

NOTE1 *Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.*

NOTE2 *When mounted on a standard JEDEC 2-layer FR-4 board.*

Recommended Operating Conditions

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	Supply voltage	4.5	18	V
V_{OUT}	Output voltage (OUTA/OUTB)	0	V_{CC}	V
V_{IN}	Logic input voltage (INA, INB)	0	5	V
T_A	Ambient temperature	-40	125	°C

TF0227(1/2/3/5)

Dual High Speed Low-Side Gate Driver

Electrical Characteristics *(NOTE3)*

V_{BIAS} (4.5V<V_{CC}<18V), T_A = 25 °C , unless otherwise specified.

Symbol	Parameter	Conditions	MIN	TYP	MAX	Unit
DC Characteristics						
V_{IH}	Logic "1" input voltage		2.4			V
V_{IL}	Logic "0" input voltage				0.7	
I_{IN+}	Logic "1" input bias current	V_{IN} = 3.3V			10	μA
I_{IN-}	Logic "0" input bias current	V_{IN} = 0V			10	
V_{OH}	High level output voltage, V_{BIAS} - V_O	I_{OUT} = -10mA		30	100	mV
V_{OL}	Low level output voltage	I_{OUT} = 10mA		16	50	
I_{CCQ}	V_{CC} quiescent supply current	V_{IN} = 0V or 3.3V		40	100	μA
I_{O+}	Output high short circuit pulsed current	TF0227, V_{CC} = 14V		4.0		A
I_{O-}	Output low short circuit pulsed current	TF0227, V_{CC} = 14V		4.0		A
I_{O+}	Output high short circuit pulsed current	TF02271, V_{CC} = 14V		1.5		A
I_{O-}	Output low short circuit pulsed current	TF02271, V_{CC} = 14V		1.5		A
I_{O+}	Output high short circuit pulsed current	TF02272, V_{CC} = 14V		2.5		A
I_{O-}	Output low short circuit pulsed current	TF02272, V_{CC} = 14V		2.5		A
I_{O+}	Output high short circuit pulsed current	TF02273, V_{CC} = 14V		2.3		A
I_{O-}	Output low short circuit pulsed current	TF02273, V_{CC} = 14V		3.3		A
I_{O+}	Output high short circuit pulsed current	TF02275, V_{CC} = 18V		2.5		A
I_{O-}	Output low short circuit pulsed current	TF02275, V_{CC} = 18V		5.0		A
R_{OH}	Output Resistance, High, TF0227	I_{OUT} = -10mA, V_{CC} = 14V		1.5		Ω
R_{OL}	Output Resistance, Low, TF0227	I_{OUT} = 10mA, V_{CC} = 14V		1		Ω
R_{OH}	Output Resistance, High, TF02271/3/5	I_{OUT} = -10mA, V_{CC} = 14V		TBD		
R_{OL}	Output Resistance, Low, TF02271/3/5	I_{OUT} = 10mA, V_{CC} = 14V		TBD		

NOTE3 *The V_{IN} and I_{IN} parameters are applicable to the logic input pin: INA and INB. The V_O and I_O parameters are applicable to the output pins: OUTA and OUTB.*

Switching Characteristics

t_r	Turn-on rise time, TF0227	$C_L = 1000pF$, $V_{CC} = 14V$		20	40	ns
t_f	Turn-off fall time, TF0227	$C_L = 1000pF$, $V_{CC} = 14V$		20	40	ns
t_r	Turn-on rise time, TF02271/3/5	$C_L = 1000pF$, $V_{CC} = 14V$		TBD		
t_f	Turn-off fall time, TF02271/3/5	$C_L = 1000pF$, $V_{CC} = 14V$		TBD		
t_{on}	Turn-on propogation delay	$C_L = 1000pF$, $V_{CC} = 14V$		40	100	ns
t_{off}	Turn-off propogation delay	$C_L = 1000pF$, $V_{CC} = 14V$		35	50	ns
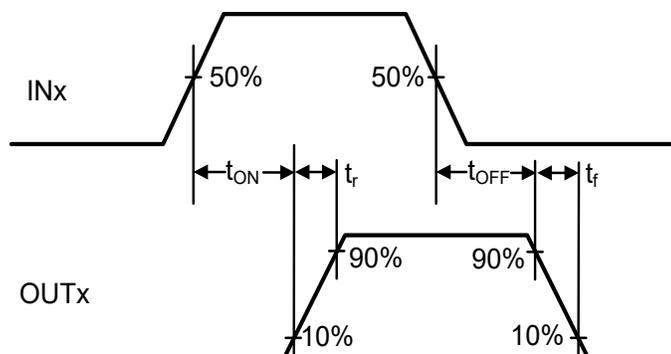
Figure 1. Switching Time Waveform Definitions

TF0227(1/2/3/5)

Dual High Speed Low-Side Gate Driver

Package Dimensions (SOIC-8 N)

Please contact support@tfsemi.com for package availability.

RECOMMENDED LAND PATTERN
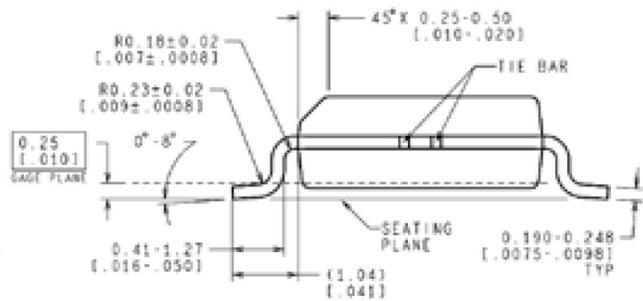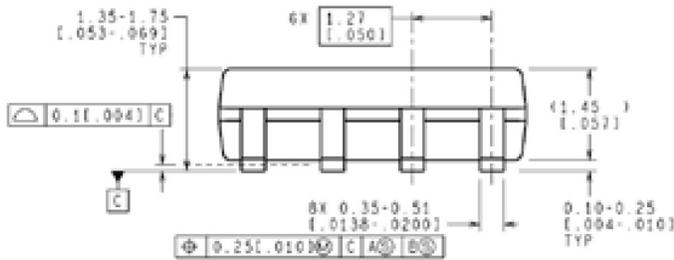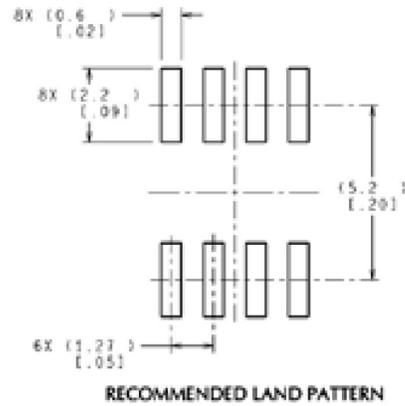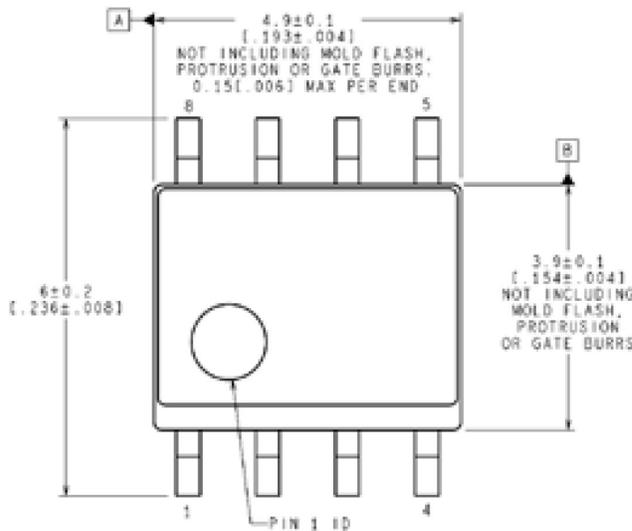
NOTES: UNLESS OTHERWISE SPECIFIED

1. REFERENCE JEDEC REGISTRATION MS-012, VARIATION AA.

CONTROLLING DIMENSION IS MILLIMETER
VALUES IN [ ] ARE INCHES
DIMENSIONS IN [ ] FOR REFERENCE ONLY

Revision History

Rev.	Change	Owner	Date
1.0	First release, Advance Info datasheet	Keith Spaulding	9/15/2017
1.1	Spec change match to early production data	Keith Spaulding	2/2/2018

For additional information please contact support@tfsemi.com or visit www.tfsemi.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Gate Drivers *category:*

Click to view products by TF Semi *manufacturer:*

Other Similar products are found below :

00053P0231 56956 57.404.7355.5 LT4936 57.904.0755.0 5811-0902 5882900001 00600P0005 00-9050-LRPP 00-9090-RDPP 5951900000 0131700000 00-2240 LTP70N06 LVP640 5J0-1000LG-SIL LY2-US-AC240 LY3-UA-DC24 00576P0020 00600P0010 LZN4-UA-DC12 LZNQ2M-US-DC5 LZNQ2-US-DC12 LZP40N10 00-8196-RDPP 00-8274-RDPP 00-8275-RDNP 00-8609-RDPP 00-8722-RDPP 00-8728-WHPP 00-8869-RDPP 00-9051-RDPP 00-9091-LRPP 00-9291-RDPP 0207100000 0207400000 60100564 60249-1-CUT-TAPE 0134220000 60713816 M15730061 61161-90 61278-0020 6131-204-23149P 6131-205-17149P 6131-209-15149P 6131-218-17149P 6131-220-21149P 6131-260-2358P 6131-265-11149P