

TECHNICAL DATA  
 DATA SHEET 548, REV. -

## Three-Phase MOSFET/IGBT Bridge Driver

### Absolute Maximum Ratings

Absolute Maximum Rating indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to COM. The thermal resistance is specified under board mounted and still air conditions.

| PARAMETER   | SYMBOL       | MIN               | TYP | MAX                | UNIT          |
|---|--------------|-------------------|-----|--------------------|---------------|
| High Side Floating Supply Voltage   | $V_{B1,2,3}$ | -0.3              | -   | 325                | V             |
| High Side Floating Supply Voltage   | $V_{S1,2,3}$ | $V_{B1,2,3} - 25$ | -   | $V_{B1,2,3} + 0.3$ | V             |
| Supply Voltage  | $V_{CC}$     | -0.3              | -   | 25                 | V             |
| Logic Ground  | $V_{SS}$     | - 0.3             | -   | $V_{CC} + 0.3$     | V             |
| Logic Input Voltage ( $\overline{HIN}$ , $\overline{LIN}$ , ITRIP<br>$\overline{FLT-CLR}$ , SD) | $V_{IN}$     | $V_{SS} - 0.3$    | -   | $V_{CC} + 0.3$     | V             |
| Op-Amp Input Voltage  | $V_{IN-Amp}$ | $V_{SS} - 0.3$    | -   | $V_{CC} + 0.3$     | V             |
| FAULT Output Voltage  | $V_{FLT}$    | $V_{SS} - 0.3$    | -   | $V_{CC} + 0.3$     | V             |
| Thermal Resistance  | $R_{thJA}$   |                   | -   | 80                 | $^{\circ}C/W$ |
| Junction Temperature  | $T_j$        | -55               | -   | 150                | $^{\circ}C$   |
| Lead Soldering Temperature, 10 sec  | $T_L$        | -                 | -   | 250                | $^{\circ}C$   |

### Recommended Operating Conditions

| PARAMETER   | SYMBOL       | MIN               | TYP | MAX               | UNIT |
|---|--------------|-------------------|-----|-------------------|------|
| High Side Floating Supply Voltage   | $V_{B1,2,3}$ | $V_{S1,2,3} + 10$ | -   | $V_{S1,2,3} + 20$ | V    |
| High Side Floating Supply Voltage   | $V_{S1,2,3}$ | -5                | -   | 300               | V    |
| Supply Voltage  | $V_{CC}$     | 10                | -   | 20                | V    |
| Logic Ground  | $V_{SS}$     | - 5               | -   | 5                 | V    |
| Logic Input Voltage ( $\overline{HIN}$ , $\overline{LIN}$ , ITRIP<br>$\overline{FLT-CLR}$ , SD) | $V_{IN}$     | $V_{SS}$          | -   | $V_{SS} + 5$      | V    |
| Op-Amp Input Voltage  | $V_{IN-Amp}$ | $V_{SS}$          | -   | $V_{SS} + 5$      | V    |
| FAULT Output Voltage  | $V_{FLT}$    | $V_{SS}$          | -   | $V_{CC}$          | V    |

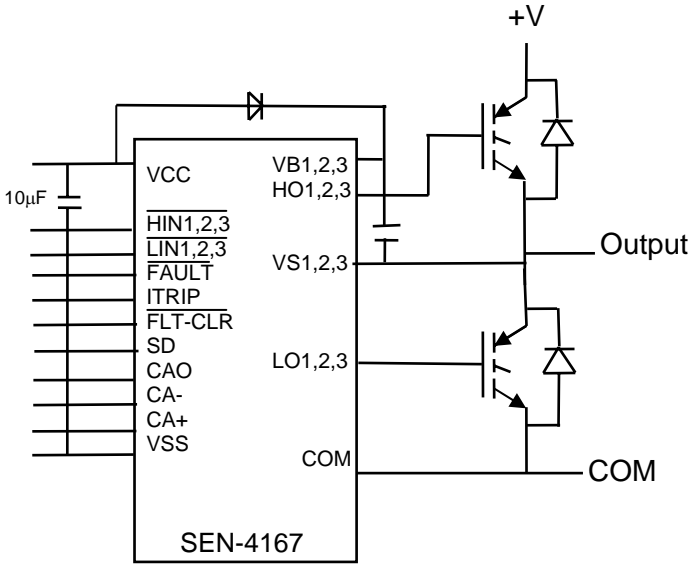
**Dynamic Characteristics** $V_{CC}=V_{BS1,2,3} = 15V, V_{S1,2,3} = V_{SS}, C_L = 1 \text{ nF}$ 

| PARAMETER   | TEST CONDITIONS  | SYMBOL      | MIN | TYP | MAX | UNIT |
|---|--|-------------|-----|-----|-----|------|
| Turn-On Propagation Delay                                       | $V_{IN} = 0 \text{ \& } 5V$<br>$V_{S1,2,3} = 0 \text{ to } 300V$ | $t_{on}$    | -   | 700 | -   | nsec |
| Turn-Off Propagation Delay                                      |  | $t_{off}$   | -   | 700 | -   | nsec |
| Turn-On Rise Time   |  | $t_r$       | -   | 75  | -   | nsec |
| Turn-Off Fall Time  |  | $t_f$       | -   | 35  | -   | nsec |
| SD to Output Shutdown Propagation Delay                         | $V_{IN}, V_{ITRIP} = 0V,$<br>$V_{SD} = 0 \text{ \& } 5V$         | $t_{sd}$    | -   | 700 | -   | nsec |
| ITRIP to Output Shutdown Propagation Delay                      | $V_{IN} = 0V,$<br>$V_{ITRIP} = 0 \text{ \& } 5V$                 | $t_{itrip}$ | -   | 700 | -   | nsec |
| ITRIP Blanking Time   | $V_{ITRIP} = 1V$   | $t_{bl}$    | -   | 400 | -   | nsec |
| ITRIP to FAULT Shutdown Propagation Delay                       | $V_{IN} = 0V,$<br>$V_{ITRIP} = 0 \text{ \& } 5V$                 | $t_{flt}$   | -   | 500 | -   | nsec |
| Input Filter Time ( $\overline{HIN}$ , $\overline{LIN}$ , & SD) | $V_{IN} = 0 \text{ \& } 5V$                                      | $t_{fil}$   |     | 310 |     | nsec |
| Deadtime, LS Turn-Off to HS Turn-on & HS Turn-Off to LS Turn-On | $V_{IN} = 0 \text{ \& } 5V$                                      | DT          | -   | 200 | -   | nsec |

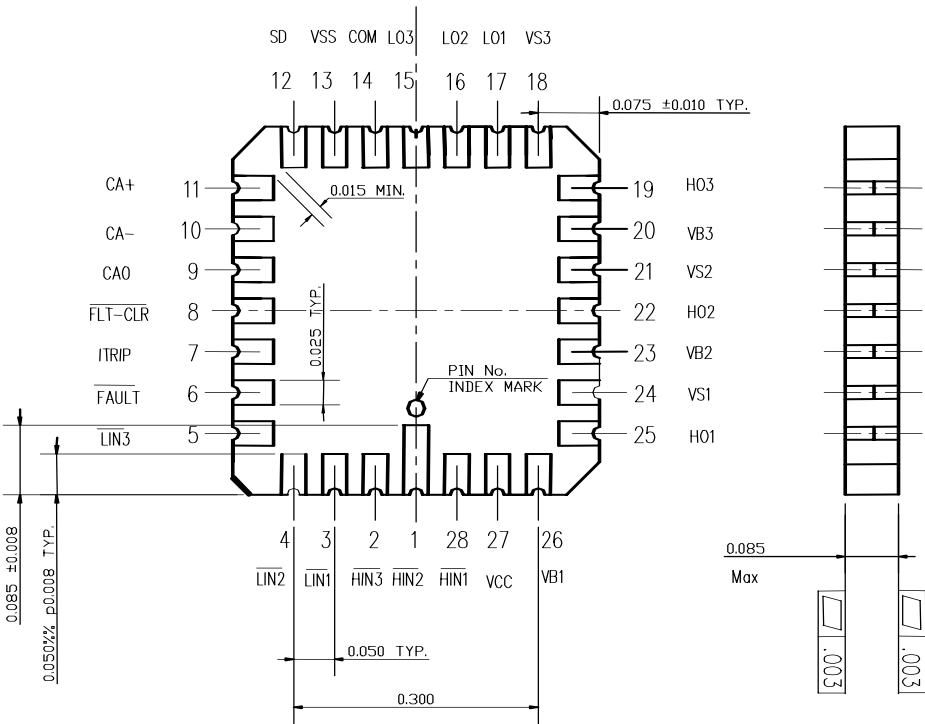
**Static Characteristics** $V_{CC}=V_{BS1,2,3} = 15V, V_{S1,2,3} = V_{SS}$ 

| PARAMETER                                     | TEST CONDITIONS  | SYMBOL                     | MIN | TYP   | MAX | UNIT |
|---|--|----------------------------|-----|-------|-----|------|
| Logic "0" Input Voltage (Output = LO)         |  | $V_{IH}$                   | 2.2 | -     | -   | V    |
| Logic "1" Input Voltage (Output = HI)         |  | $V_{IL}$                   | -   | -     | 0.8 | V    |
| Logic "0" Fault Clear Input Voltage           |  | $V_{FCLR,IH}$              | 2.2 | -     | -   | V    |
| Logic "1" Fault Clear Input Voltage           |  | $V_{FCLR,IL}$              | -   | -     | 0.8 | V    |
| SD Input Positive Going Threshold             |  | $V_{SD,TH+}$               | -   | 1.8   | -   | V    |
| SD Input Negative Going Threshold             |  | $V_{SD,TH-}$               | -   | 1.5   | -   | V    |
| ITRIP Input Positive Going Threshold          |  | $V_{IT,TH+}$               | -   | 0.485 | -   | V    |
| ITRIP Input Negative Going Threshold          |  | $V_{IT,TH-}$               | -   | 0.400 | -   | V    |
| Quiescent $V_{CC}$ Supply Current             | $V_{IN} = 0V, \text{ or } 5V$                                | $I_{QCC}$                  | -   | 4     | -   | mA   |
| Supply Under Voltage Positive Going Threshold |  | $V_{CCIU+}$<br>$V_{BSIU+}$ | -   | 10.4  | -   | V    |
| Supply Under Voltage Negative Going Threshold |  | $V_{CCIU-}$<br>$V_{BSIU-}$ | -   | 9.4   | -   | V    |
| Output High Short Circuit Pulsed Current      | $V_{OUT} = 0V,$<br>$V_{IN} = 0V,$<br>$t_p < 10\mu\text{sec}$ | $I_{O+}$                   | 200 | 250   | -   | mA   |
| Output Low Short Circuit Pulsed Current       | $V_{OUT} = 0V,$<br>$V_{IN} = 0V,$<br>$t_p < 10\mu\text{sec}$ | $I_{O-}$                   | 420 | 500   | -   | mA   |

Schematic Diagram



Package Layout:



**TECHNICAL DATA**

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