



# TIG074E8

## N-Channel IGBT 400V, 150A, VCE(sat); 3.8V Single ECH8

ON Semiconductor®

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### Features

- Low-saturation voltage
- Enhancement type
- Mounting Height 0.9mm, Mounting Area 8.12mm<sup>2</sup>
- Halogen free compliance
- Low voltage drive (2.5V)
- Built-in Gate to Emitter protection diode
- dv / dt guarantee\*

### Application

- Light-Controlling Flash Applications

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

| Parameter                            | Symbol           | Conditions   | P-channel   | Unit   |
|--------------------------------------|------------------|--|-------------|--------|
| Collector to Emitter Voltage         | V <sub>CES</sub> |  | 400         | V      |
| Gate to Emitter Voltage (DC)         | V <sub>GES</sub> |  | ±4          | V      |
| Gate to Emitter Voltage (Pulse)      | V <sub>GES</sub> | PW≤1ms   | ±5          | V      |
| Collector Current (Pulse)            | I <sub>CP</sub>  | V <sub>GE</sub> =2.5V, C <sub>M</sub> =200μF   | 150         | A      |
| Maximum Collector to Emitter dv / dt | dv / dt          | Turn off I <sub>C</sub> =150A, V <sub>CE</sub> ≤320V, starting T <sub>ch</sub> =25°C | 400         | V / μs |
| Channel Temperature                  | T <sub>j</sub>   |  | 150         | °C     |
| Storage Temperature                  | T <sub>stg</sub> |  | -40 to +150 | °C     |

\* : Concerning dv / dt (slope of Collector Voltage at the time of Turn-OFF), will be 100% screen-detected in the circuit shown as Fig. 1.

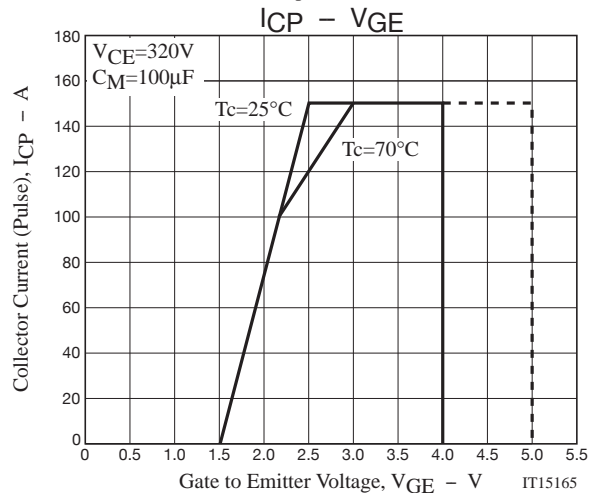
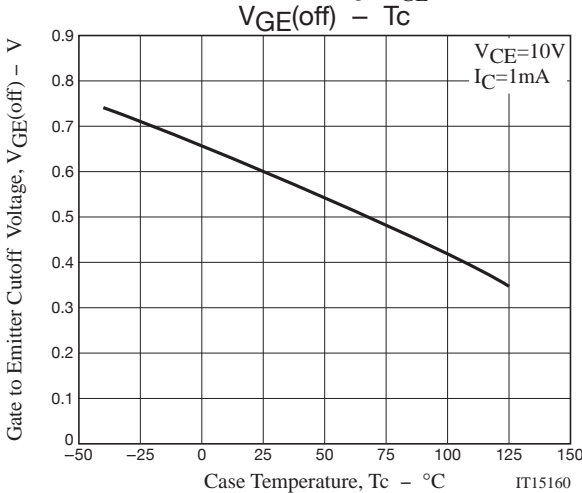
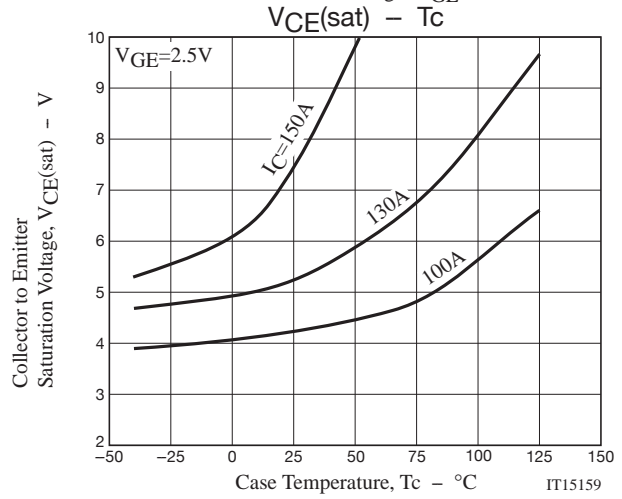
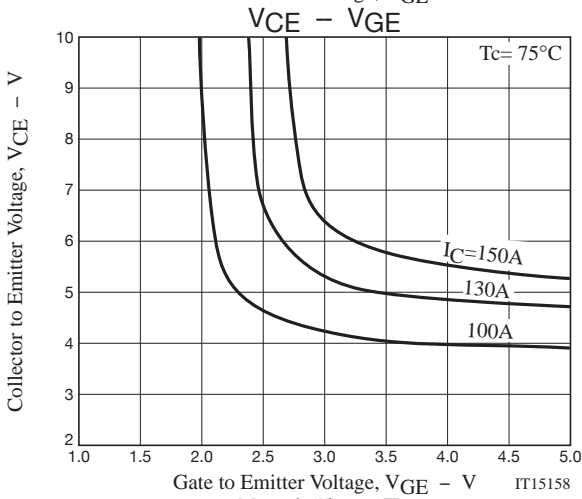
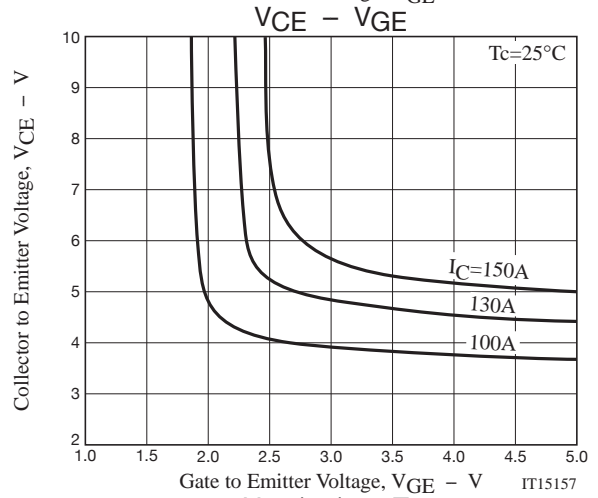
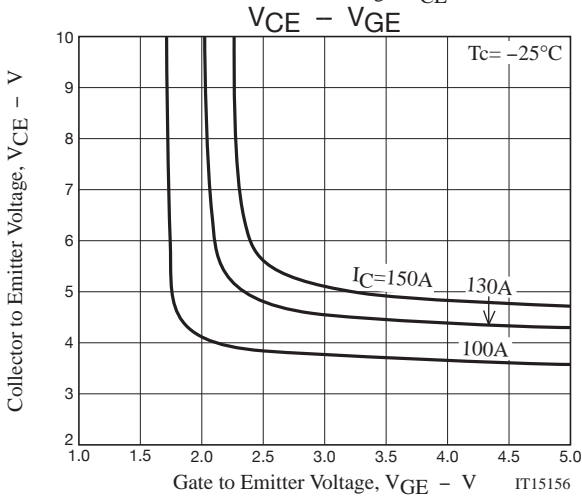
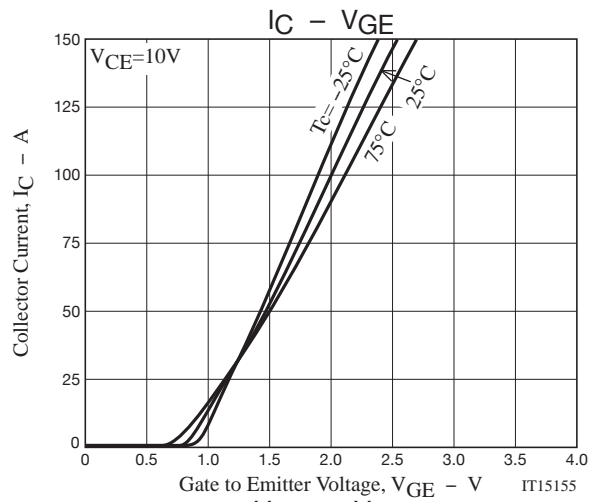
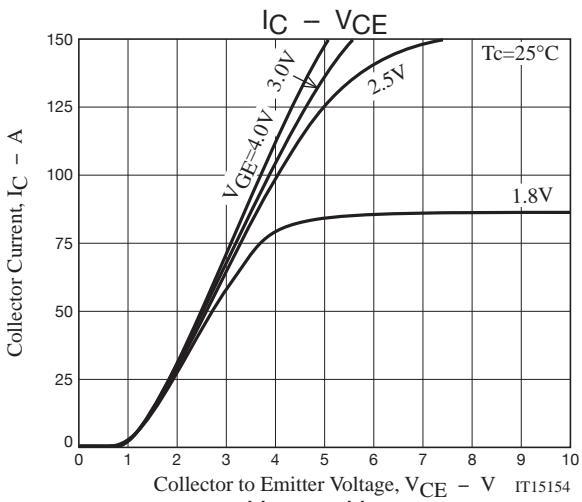
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

#### Electrical Characteristics at Ta=25°C

| Parameter                               | Symbol               | Conditions                                  | Ratings |      |     | Unit |
|---|----------------------|---|---------|------|-----|------|
|   |                      |   | min     | typ  | max |      |
| Collector to Emitter Breakdown Voltage  | V(BR)CES             | I <sub>C</sub> =2mA, V <sub>GE</sub> =0V    | 400     |      |     | V    |
| Collector to Emitter Cutoff Current     | I <sub>CES</sub>     | V <sub>CE</sub> =320V, V <sub>GE</sub> =0V  |         |      | 10  | μA   |
| Gate to Emitter Leakage Current         | I <sub>GES</sub>     | V <sub>GE</sub> =±4V, V <sub>CE</sub> =0V   |         |      | ±10 | μA   |
| Gate to Emitter Threshold Voltage       | V <sub>GE(off)</sub> | V <sub>CE</sub> =10V, I <sub>C</sub> =1mA   | 0.4     |      | 0.9 | V    |
| Collector to Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =100A, V <sub>GE</sub> =2.5V |         | 3.8  | 5.4 | V    |
| Input Capacitance                       | C <sub>ies</sub>     | V <sub>CE</sub> =10V, f=1MHz                |         | 3100 |     | pF   |
| Output Capacitance                      | C <sub>oes</sub>     |   |         |      | 32  | pF   |
| Reverse Transfer Capacitance            | C <sub>res</sub>     |   |         |      | 24  | pF   |

### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.



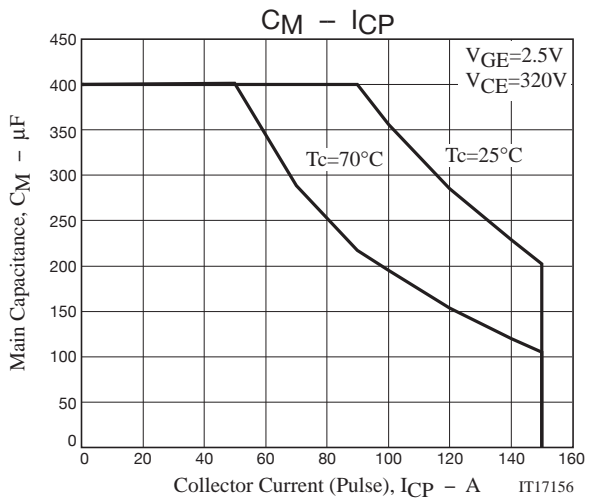
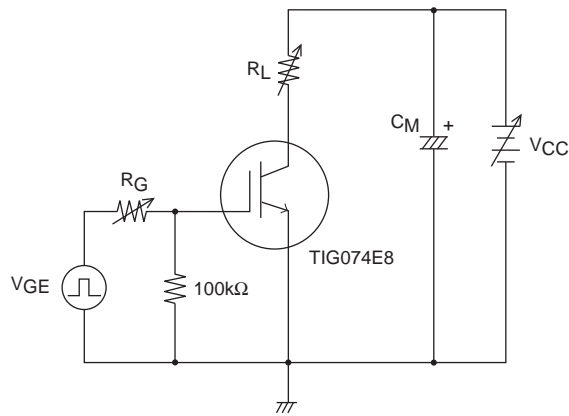


Fig.1 Large Current R Load Switching Circuit



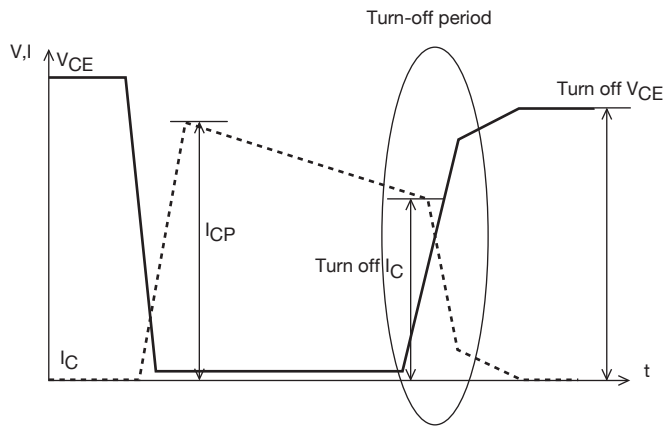
Note1. The collector voltage gradient  $dv / dt$  - Turn off  $I_c$  safety movement domain to protect the device of Gate-series resistor  $R_G$  when it is turned off.

**Definition of dv/dt**

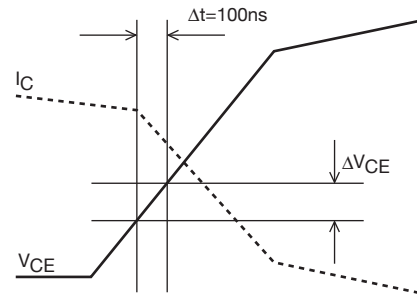
dv/dt is defined as the maximum slope of the below V<sub>CE</sub> curve during turn-off period.

$$dv/dt = \Delta V_{CE} / \Delta t = \Delta V_{CE} / 100ns$$

**Overall waveform**

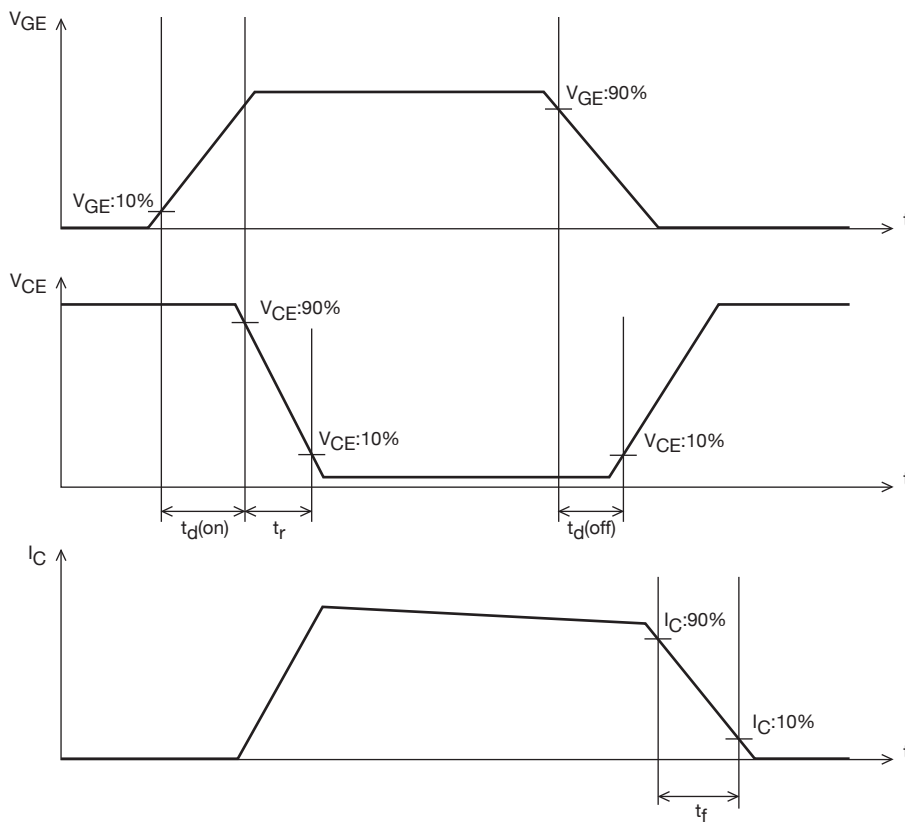


**Enlarged picture of turn-off period**



IT15323

**Definition of Switching Time**



IT15324

# TIG074E8

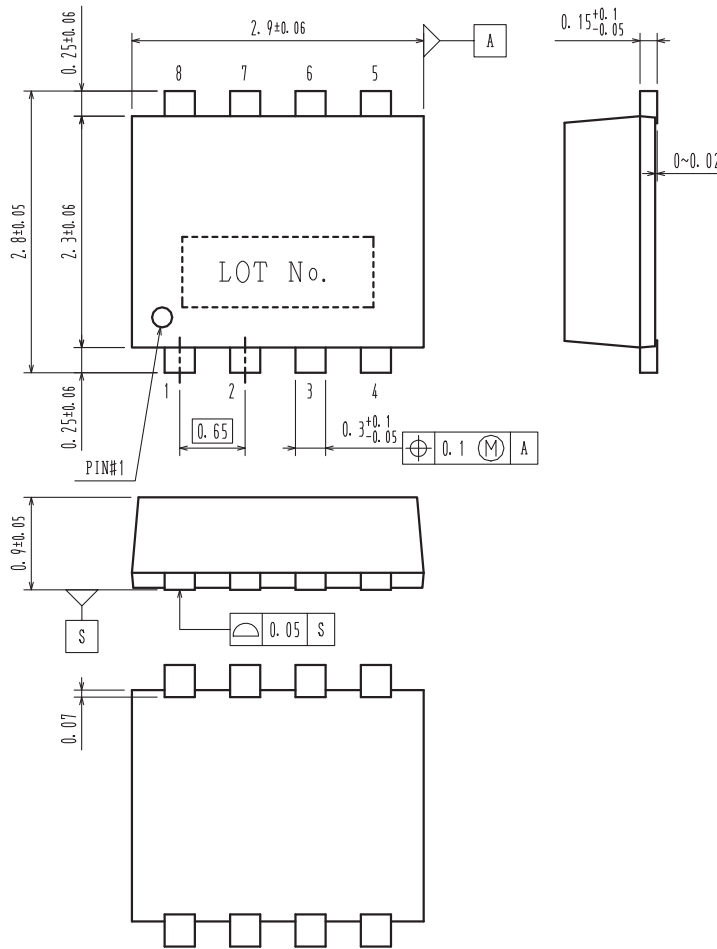
## Package Dimensions

TIG074E8-TL-H

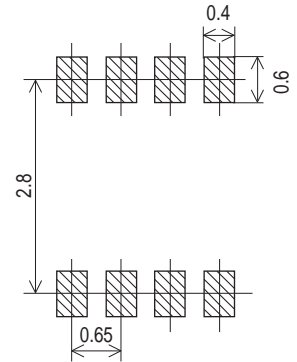
SOT-28FL/ECH8  
CASE 318BF  
ISSUE O

Unit : mm

- 1: Emitter
- 2: Emitter
- 3: Emitter
- 4: Gate
- 5: Collector
- 6: Collector
- 7: Collector
- 8: Collector



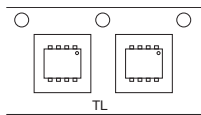
## Land Pattern Example



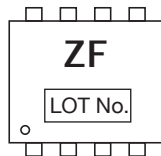
## Ordering & Package Information

| Device        | Package | Shipping        | memo                     |
|---------------|---------|-----------------|--------------------------|
| TIG074E8-TL-H | ECH8    | 3,000 pcs./reel | Pb-Free and Halogen Free |

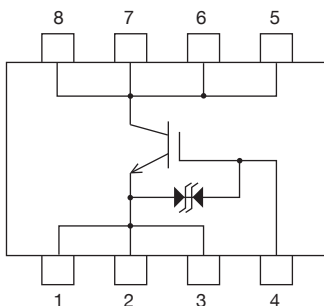
## Packing Type: TL



## Marking



## Electrical Connection



Note on usage : TIG074E8 has protection diode between gate and emitter but handling it requires sufficient care to be taken.

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