Ordering number : ENA2209

TIG074E8

N-Channel IGBT
400V, 150A, V_{CE}(sat); 3.8V Single ECH8

ON Semiconductor®
http://onsemi.com

Features

- Low-saturation voltage
- Enhansment type
- Mounting Height 0.9mm, Mounting Area 8.12mm^2
- 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_{CES}		400	V
Gate to Emitter Voltage (DC)	V_{GES}		±4	V
Gate to Emitter Voltage (Pulse)	V_{GES}	PW≤1ms	±5	V
Collector Current (Pulse)	I_{CP}	V_{GE}=2.5V, C_M=200μF	150	A
Maximum Collector to Emitter dv / dt	dv / dt	Turn off I_C=150A, V_{CE}≤320V, starting Tch=25°C	400	V / μs
Channel Temperature	Tj		150	°C
Storage Temperature	Tstg		-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.

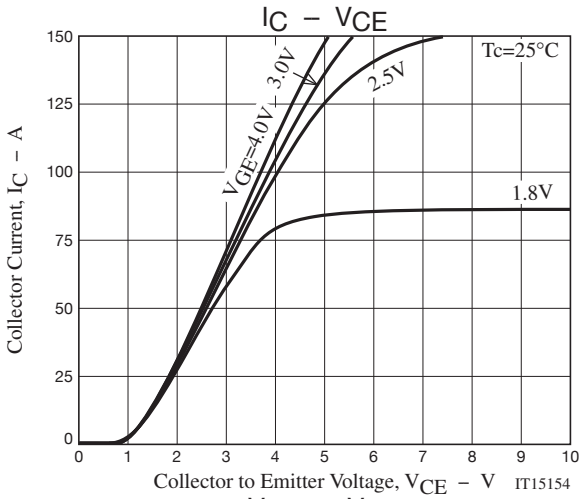
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

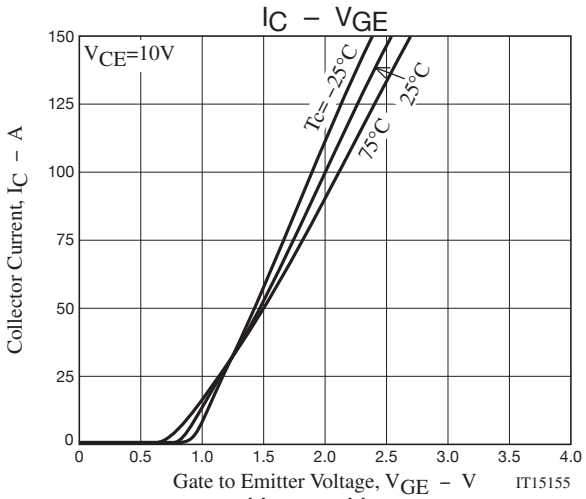
Electrical Characteristics at Ta=25°C

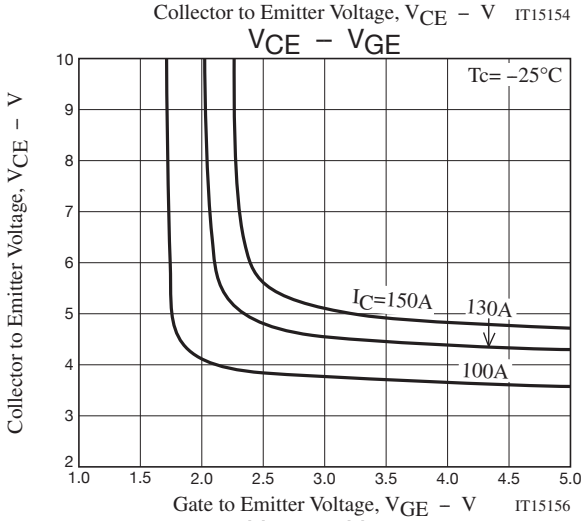
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector to Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=2mA, V_{GE}=0V	400			V
Collector to Emitter Cutoff Current	I_{CES}	V_{CE}=320V, V_{GE}=0V			10	μA
Gate to Emitter Leakage Current	I_{GES}	V_{GE}=±4V, V_{CE}=0V			±10	μA
Gate to Emitter Threshold Voltage	V_{GE}(off)	V_{CE}=10V, I_C=1mA	0.4		0.9	V
Collector to Emitter Saturation Voltage	V_{CE}(sat)	I_C=100A, V_{GE}=2.5V		3.8	5.4	V
Input Capacitance	Cies	V_{CE}=10V, f=1MHz		3100		pF
Output Capacitance	Coes			32		pF
Reverse Transfer Capacitance	Cres			24		pF

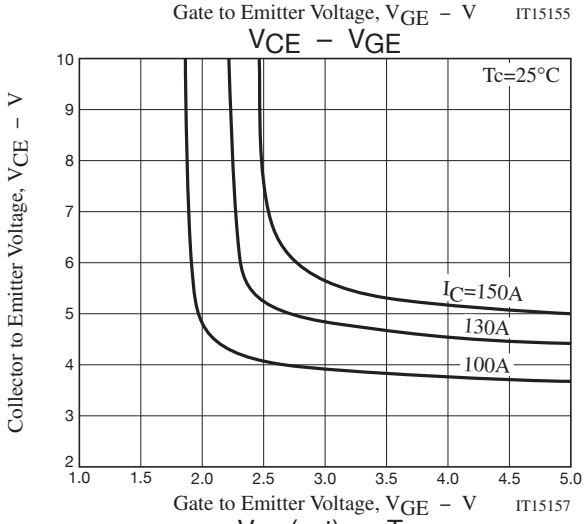
ORDERING INFORMATION
See detailed ordering and shipping information on page 5 of this data sheet.

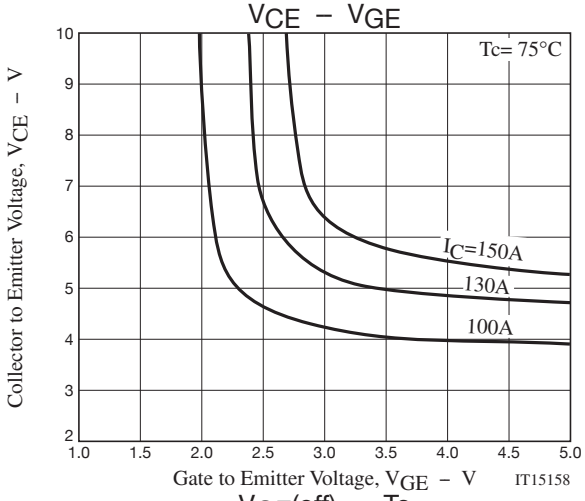
Semiconductor Components Industries, LLC, 2013
September, 2013

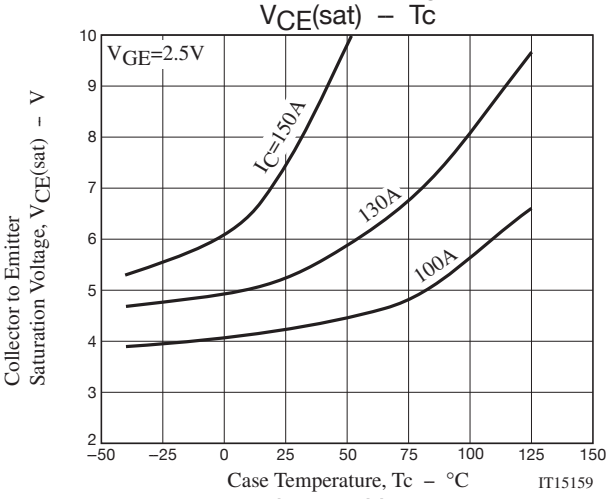

IC – VCE
Tc=25°C
VGE=4.0V
3.0V
2.5V
1.8V
Collector Current, IC – A
Collector to Emitter Voltage, VCE – V
IT15154

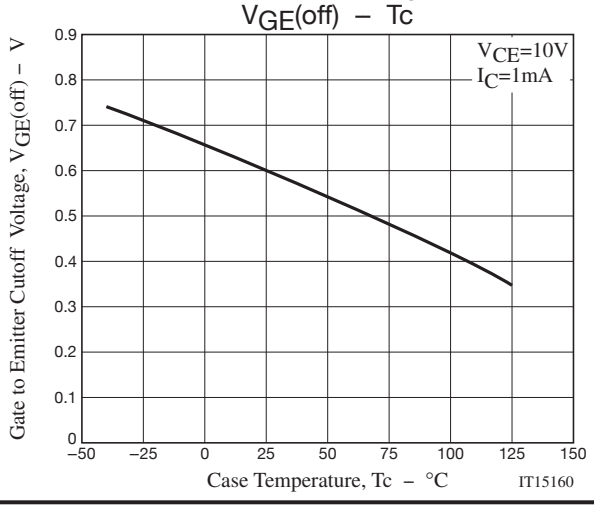

IC – VGE
VCE=10V
Tc=–25°C
25°C
75°C
Collector Current, IC – A
Gate to Emitter Voltage, VGE – V
IT15155

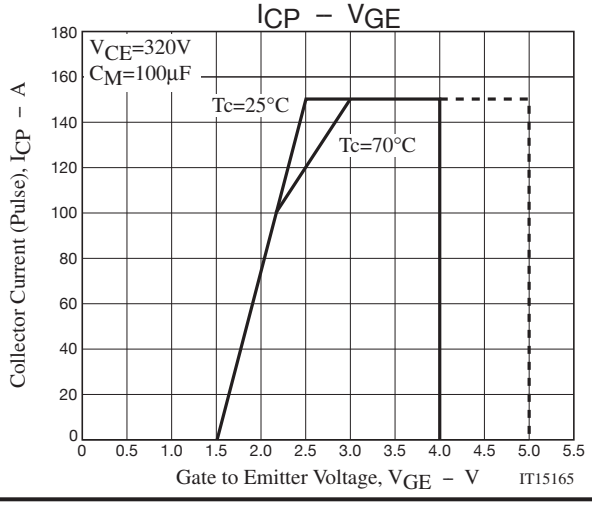

VCE – VGE
Tc=–25°C
IC=150A
130A
100A
Collector to Emitter Voltage, VCE – V
Gate to Emitter Voltage, VGE – V
IT15156


VCE – VGE
Tc=25°C
IC=150A
130A
100A
Collector to Emitter Voltage, VCE – V
Gate to Emitter Voltage, VGE – V
IT15157


VCE – VGE
Tc= 75°C
IC=150A
130A
100A
Collector to Emitter Voltage, VCE – V
Gate to Emitter Voltage, VGE – V
IT15158


VCE(sat) – Tc
VGE=2.5V
IC=150A
130A
100A
Collector to Emitter Saturation Voltage, VCE(sat) – V
Case Temperature, Tc – °C
IT15159


VGE(off) – Tc
VCE=10V
IC=1mA
Gate to Emitter Cutoff Voltage, VGE(off) – V
Case Temperature, Tc – °C
IT15160


ICP – VGE
VCE=320V
CM=100µF
Tc=25°C
Tc=70°C
Collector Current (Pulse), ICP – A
Gate to Emitter Voltage, VGE – V
IT15165

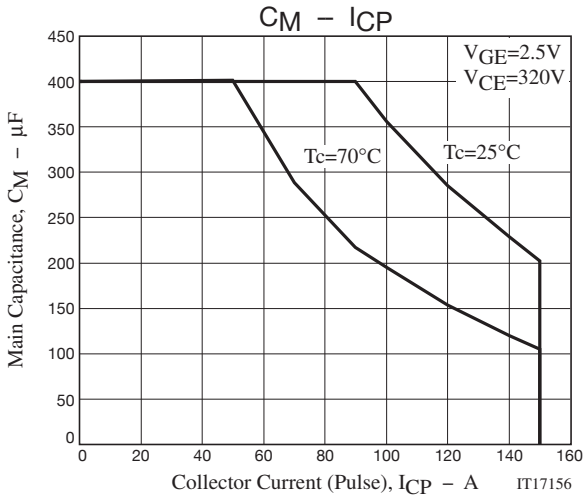
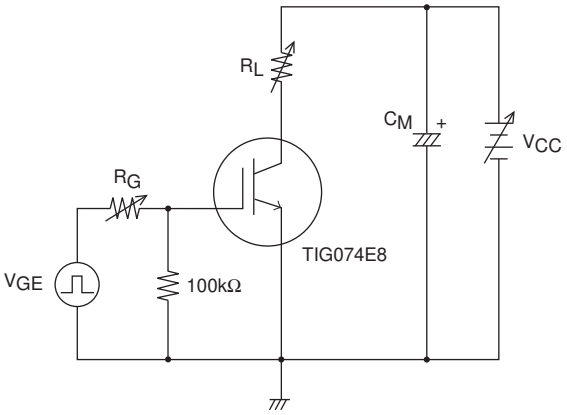


Fig.1 Large Current R Load Switching Circuit

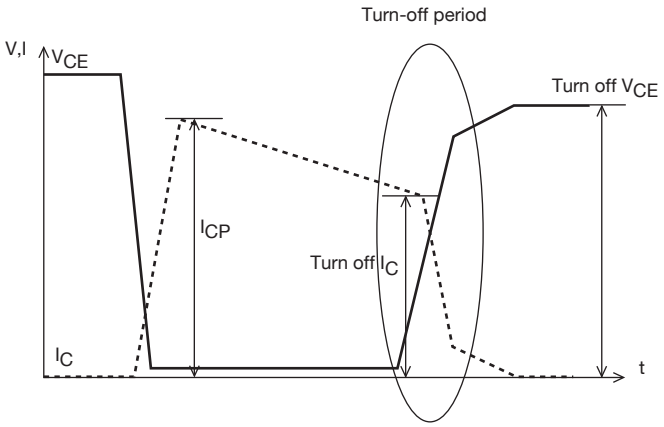


Note1. The collector voltage gradient dv / dt - Turn off Ic safety movement domain to protect the device of Gate-series resistor RG when it is turned off.

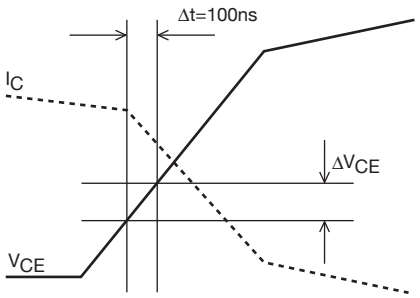
Definition of dv/dt

dv/dt is defined as the maximum slope of the below V_{CE} curve during turn-off period.
$dv/dt=\Delta V_{CE}/\Delta t=\Delta V_{CE}/100ns$

Overall waveform

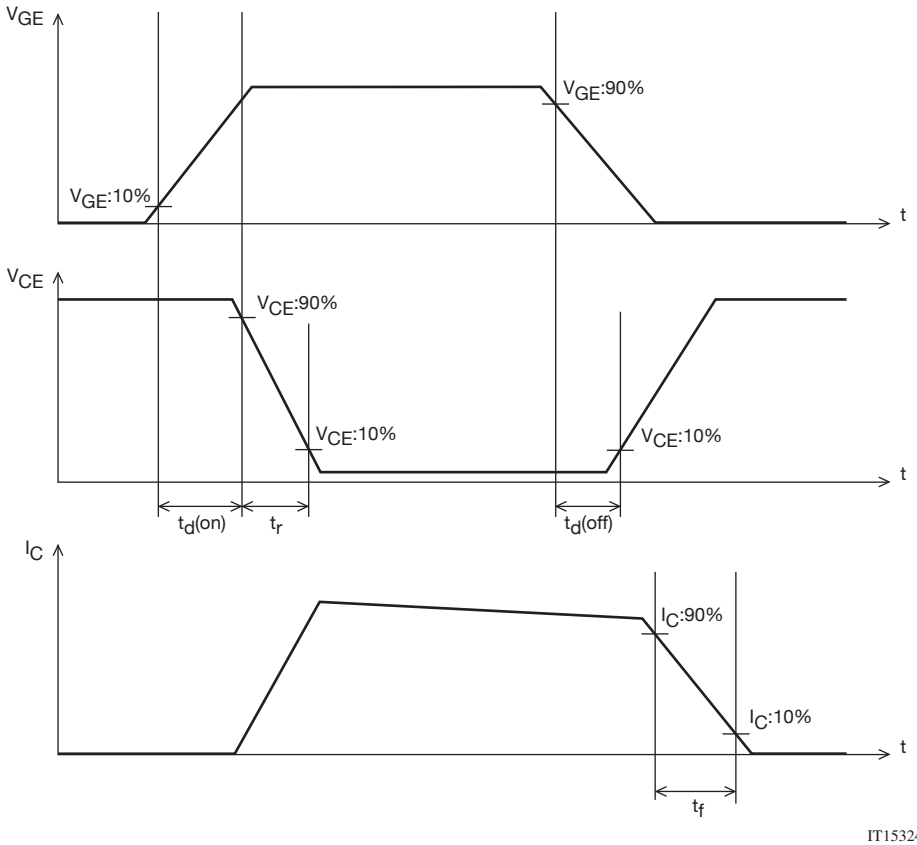


Enlarged picture of turn-off period



IT15323

Definition of Switching Time

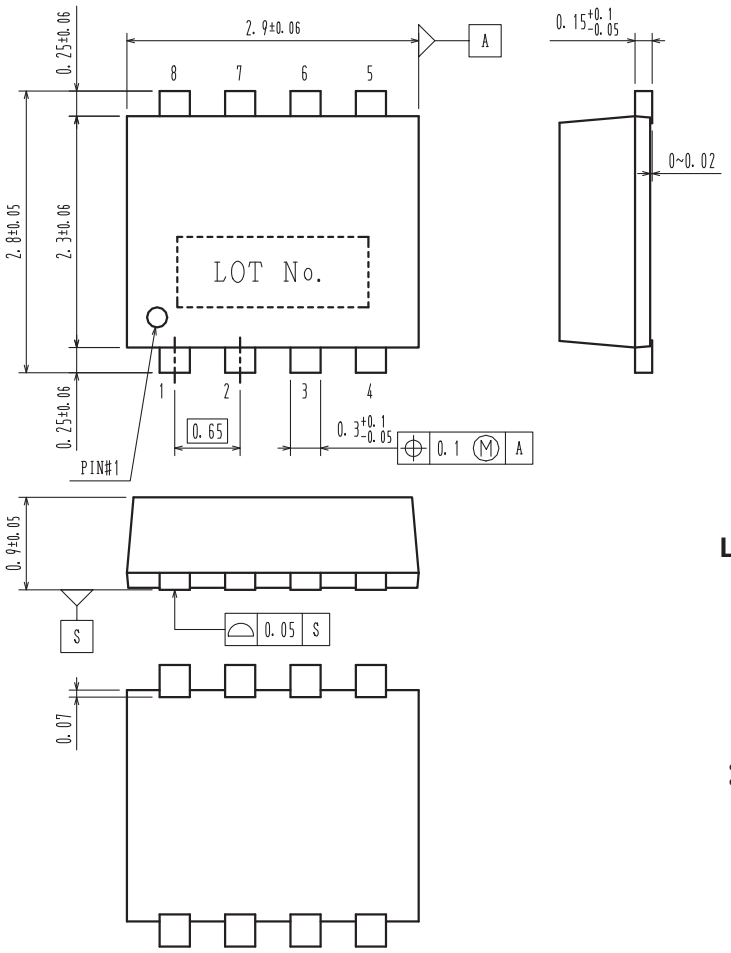


IT15324

Package Dimensions

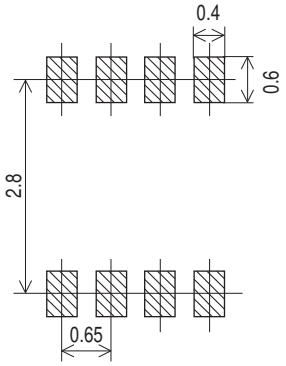
TIG074E8-TL-H

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

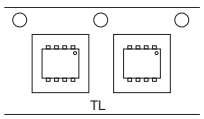
Land Pattern Example



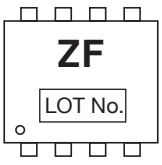
Ordering & Package Information

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

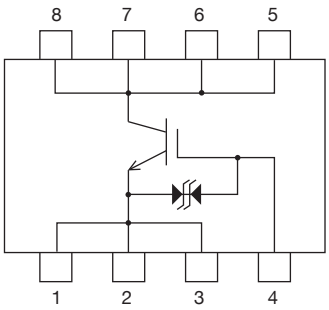
Packing Type: TL



Marking



Electrical Connection



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