Ordering number : ENA1381

SANYO Semiconductors
DATA SHEET

TIG058E8 — N-Channel IGBT
Light-Controlling Flash Applications

Features

- Low-saturation voltage.
- Low voltage drive (4V).
- Enhansment type.
- Built-in Gate-to-Emitter protection diode.
- Mounting Height 0.9mm, Mounting Area 8.12mm^2.
- dv / dt guarantee*.
- Halogen free compliance.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Emitter Voltage	V_{CES}		400	V
Gate-to-Emitter Voltage (DC)	V_{GES}		±6	V
Gate-to-Emitter Voltage (Pulse)	V_{GES}	PW≤1ms	±8	V
Collector Current (Pulse)	I_{CP}	C_M=150μF, V_{GE}=4V	150	A
Maximum Collector-to-Emitter dv / dt	dV_{CE} / dt	V_{CE}≤320V, starting Tch=25°C	400	V / μs
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-40 to +150	°C

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}=±6V, V_{CE}=0V			±10	μA

Marking : ZB

Continued on next page.

* : Concerning dv / dt (slope of Collector Voltage at the time of Turn-OFF), dv / dt > 400V / μs will be 100% screen-detected in the circuit shown as Fig. 1.

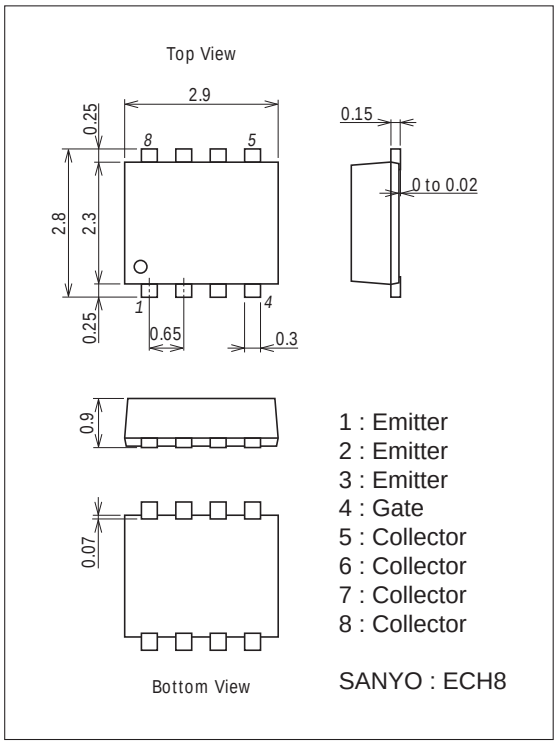
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
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}=4V		4.0	5.6	V
Input Capacitance	Cies	V_{CE}=10V, f=1MHz		2200		pF
Output Capacitance	Coes	V_{CE}=10V, f=1MHz		32		pF
Reverse Transfer Capacitance	Cres	V_{CE}=10V, f=1MHz		24		pF

Package Dimensions

unit : mm (typ)

7011A-004



Electrical Connection

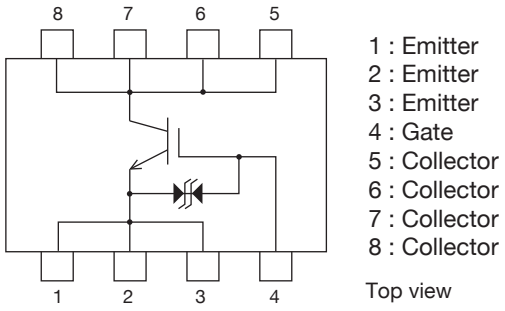
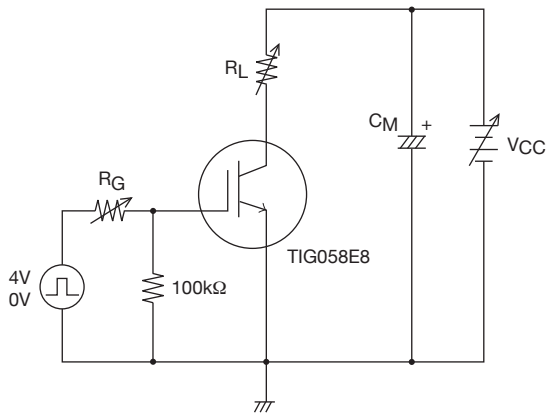
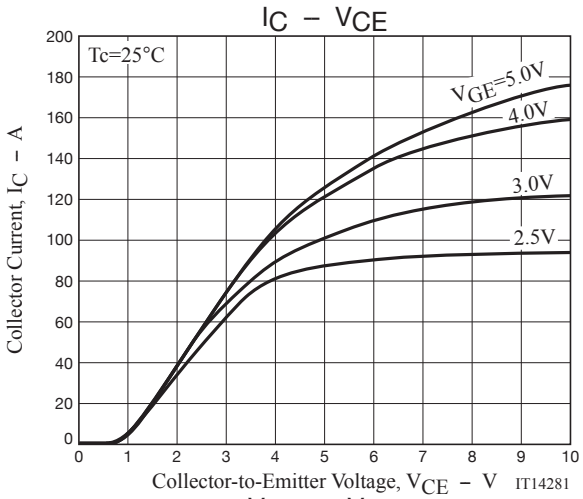


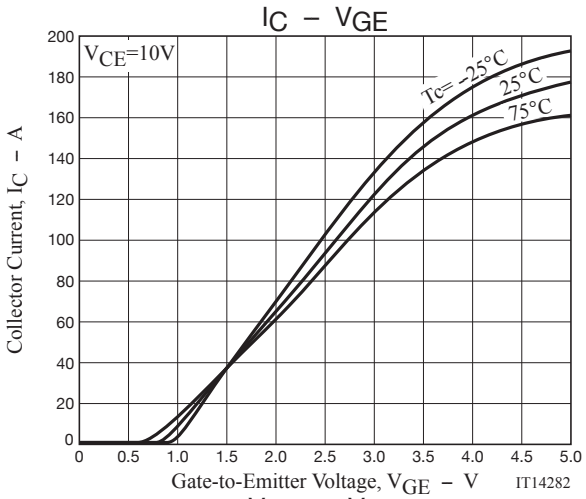
Fig.1 Large Current R Load Screening Circuit

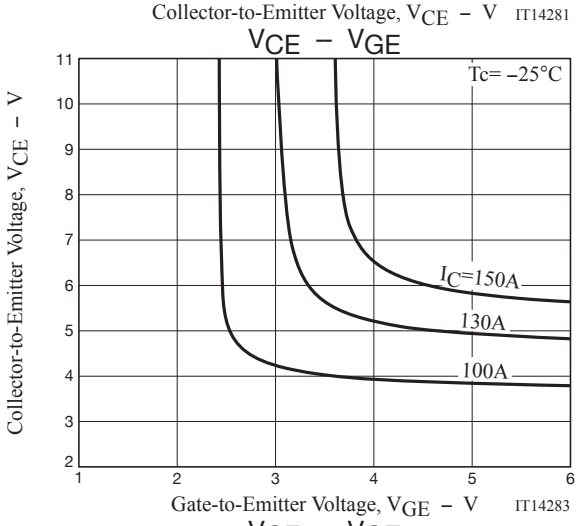


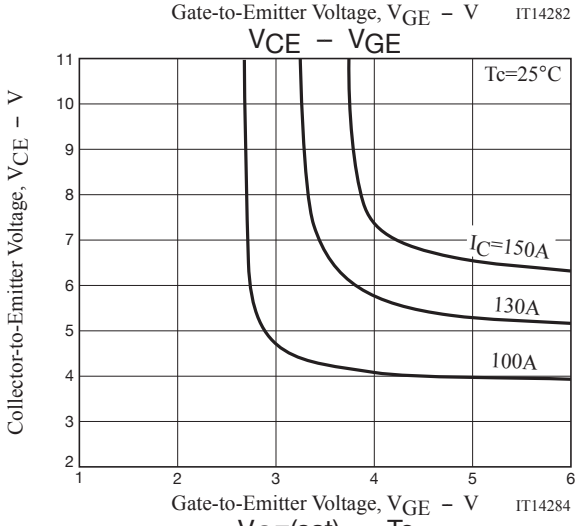
Note1. Gate Series Resistance $R_G \geq 230\Omega$ is recommended for protection purpose at the time of turn OFF. However, if dv / dt ≤ 400V / μs is satisfied at customer's actual set evaluation, $R_G < 230\Omega$ can also be used.

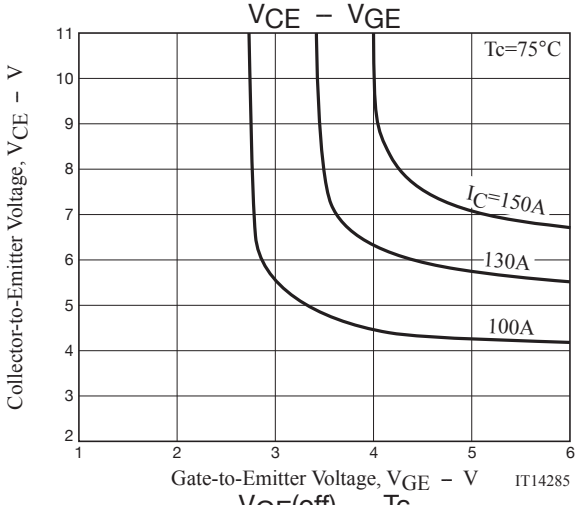
Note2. The collector voltage gradient dv / dt must be smaller than 400V / μs to protect the device when it is turned off.

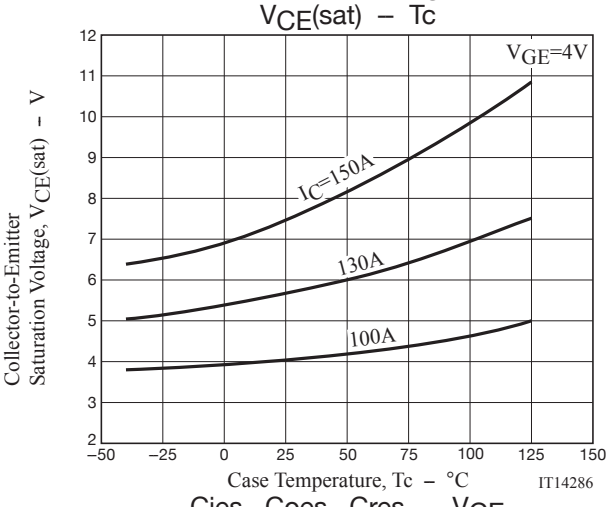

IC – VCE
Tc=25°C
VGE=5.0V
4.0V
3.0V
2.5V
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT14281

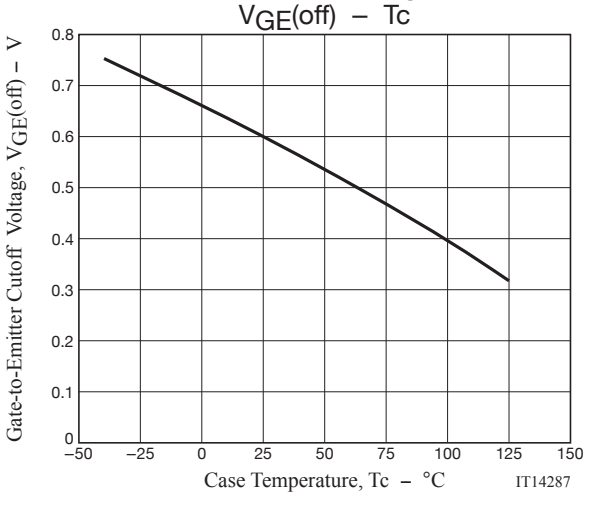

IC – VGE
VCE=10V
Tc= –25°C
25°C
75°C
Collector Current, IC – A
Gate-to-Emitter Voltage, VGE – V
IT14282

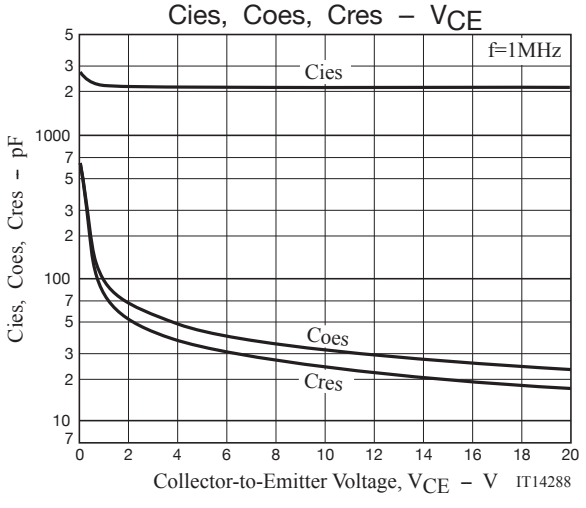

VCE – VGE
Tc= –25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT14283


VCE – VGE
Tc=25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT14284

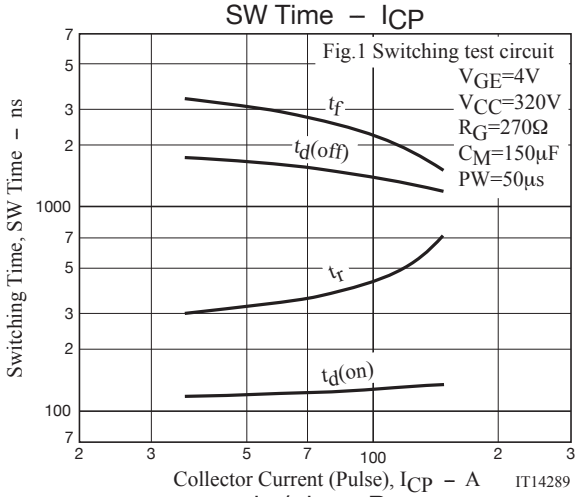

VCE – VGE
Tc=75°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT14285


VCE(sat) – Tc
VGE=4V
IC=150A
130A
100A
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Case Temperature, Tc – °C
IT14286

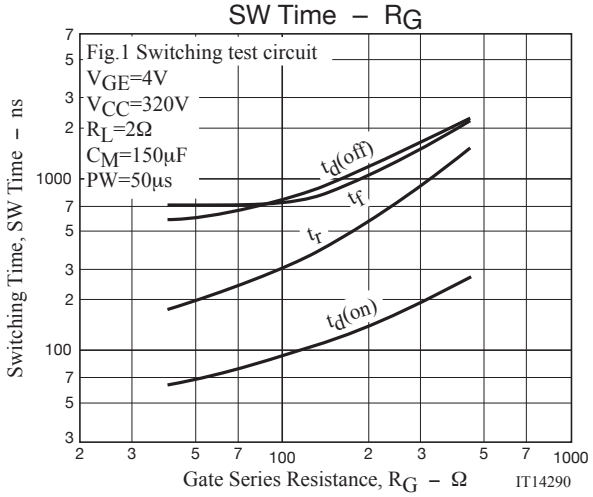

VGE(off) – Tc
Gate-to-Emitter Cutoff Voltage, VGE(off) – V
Case Temperature, Tc – °C
IT14287


Cies, Coes, Cres – VCE
f=1MHz
Cies
Coes
Cres
Cies, Coes, Cres – pF
Collector-to-Emitter Voltage, VCE – V
IT14288

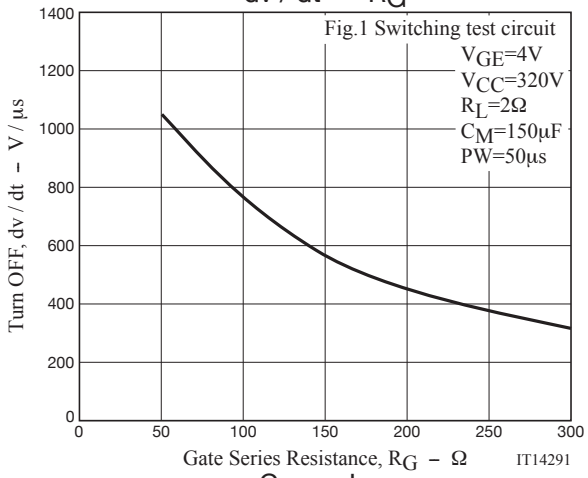
SW Time – I_{CP}



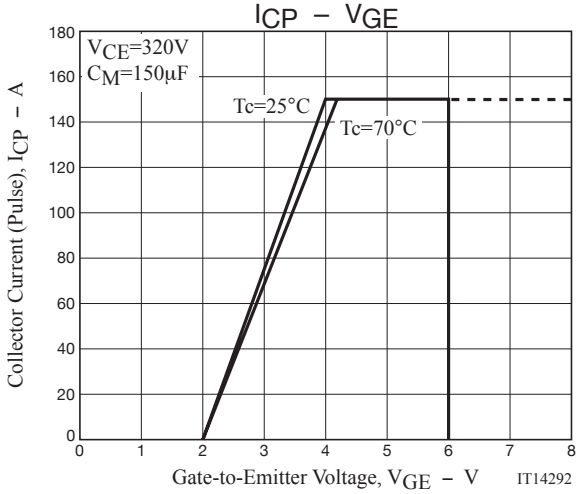
SW Time – R_G



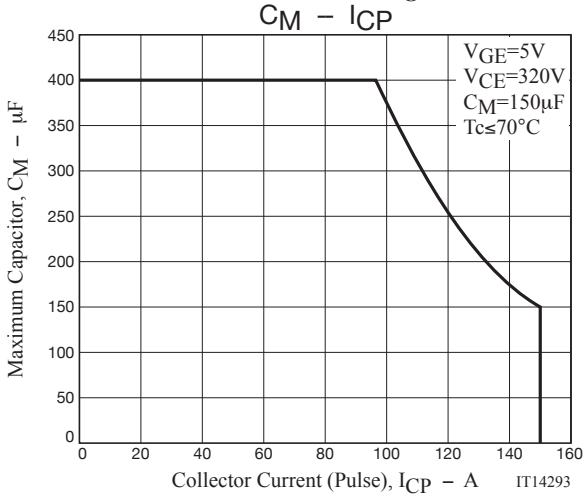
dv / dt – R_G



I_{CP} – V_{GE}



C_M – I_{CP}



Note : TIG058E8 has protection diode between gate and emitter but handling it requires sufficient care to be taken.

This catalog provides information as of December, 2008. Specifications and information herein are subject to change without notice.