Ordering number : ENA1794

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

TIG066SS — N-Channel IGBT Light-Controlling Flash Applications

Features

- Low-saturation voltage
- Enhansment type
- High speed switching
- 4.0V drive
- Built-in Gate-to-Emitter protection diode

Specifications

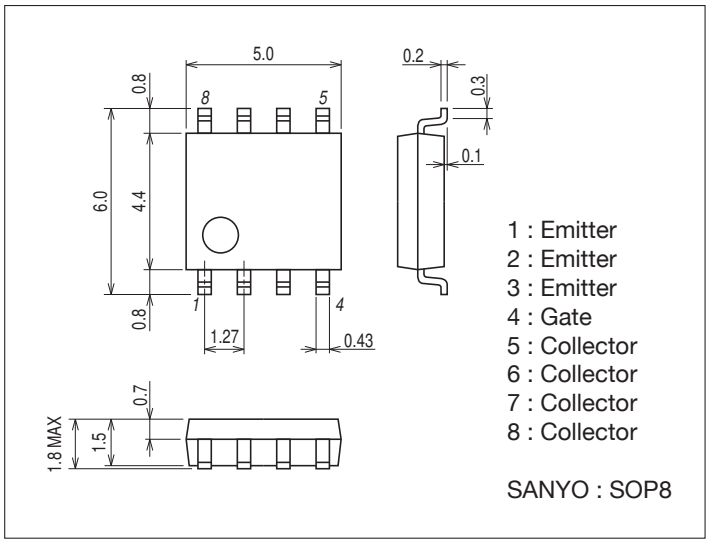
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Emitter Voltage (DC)	V_{CES}		400	V
Collector-to-Emitter Voltage (Pulse)	V_{CESP}	PW≤1ms	450	V
Gate-to-Emitter Voltage (DC)	V_{GES}		±6	V
Gate-to-Emitter Voltage (Pulse)	V_{GESP}	PW≤1ms	±8	V
Collector Current (Pulse)	I_{CP}	C_M=600μF	150	A
Maximum Collector-to-Emitter dv / dt	dv / dt	V_{CE}≤320V, starting Tch=25°C	1500	V / μs
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-40 to +150	°C

Package Dimensions

unit : mm (typ)

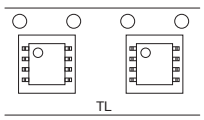
7005A-008



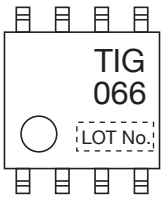
Product & Package Information

- Package : SOP8
- JEITA, JEDEC : SC-87, SOT96
- Minimum Packing Quantity : 1000 pcs./reel

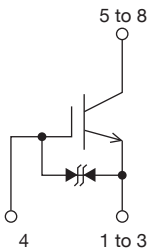
Packing Type: TL



Marking



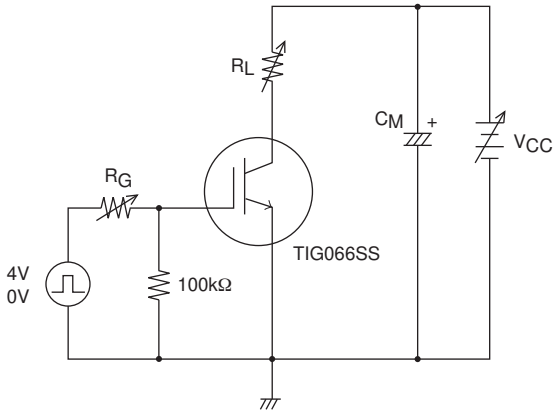
Electrical Connection



Electrical Characteristics at Ta=25°C

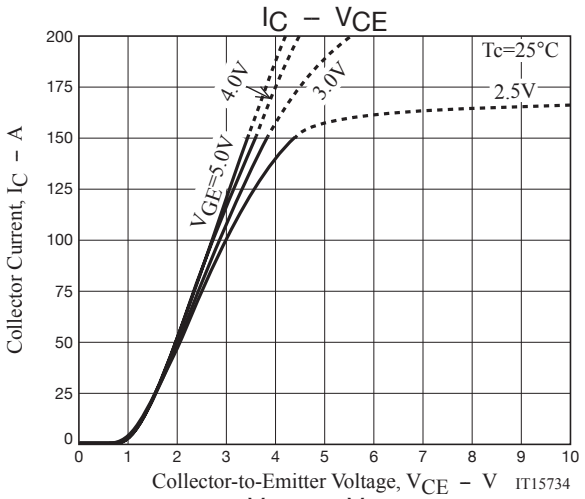
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=2mA, V_{GE}=0V	400			V
Collector-to-Emitter Cutoff Current	I_{CES}	V_{CE}=320V, V_{GE}=0V			10	μA
Gate-to-Emitter Leakage Current	I_{GES}	V_{GE}=±6V, V_{CE}=0V			±10	μA
Gate-to-Emitter Threshold Voltage	$V_{GE(off)}$	V_{CE}=10V, I_C=1mA	0.4		1.0	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=150A, V_{GE}=4V		3.8	5	V
Input Capacitance	Cies	V_{CE}=10V, f=1MHz		5100		pF
Output Capacitance	Coes	V_{CE}=10V, f=1MHz		59		pF
Reverse Transfer Capacitance	Cres	V_{CE}=10V, f=1MHz		43		pF
Fall Time	t_f	I_C=150A, V_{CC}=320V, Resistor load V_{GE}=4V, R_G=36Ω		270		ns

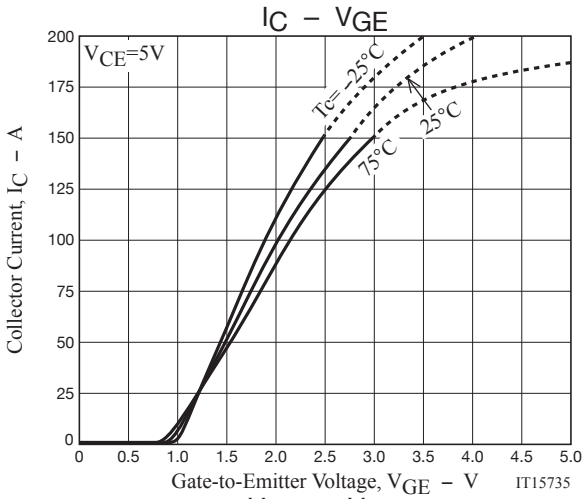
Fig1 Large Current R Load Switching Circuit

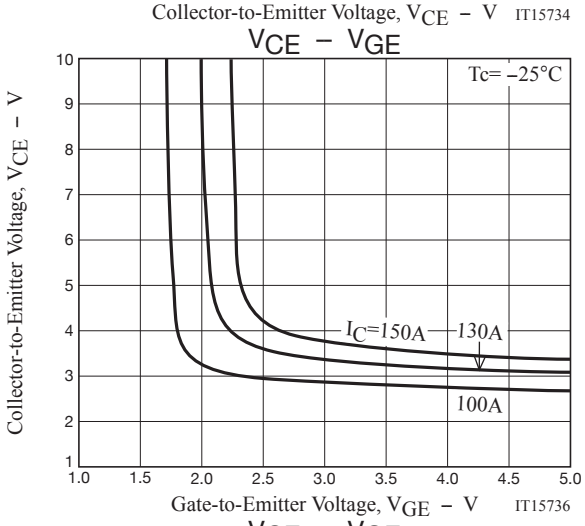


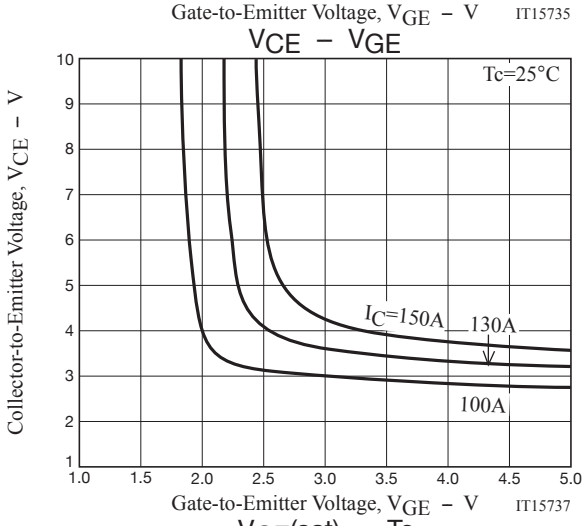
Note1. Gate Series Resistance $R_G \geq 36\Omega$ is recommended for protection purpose at the time of turn OFF. However, if dv / dt ≤ 1500V / μs is satisfied at customer's actual set evaluation, $R_G < 36\Omega$ can also be used.

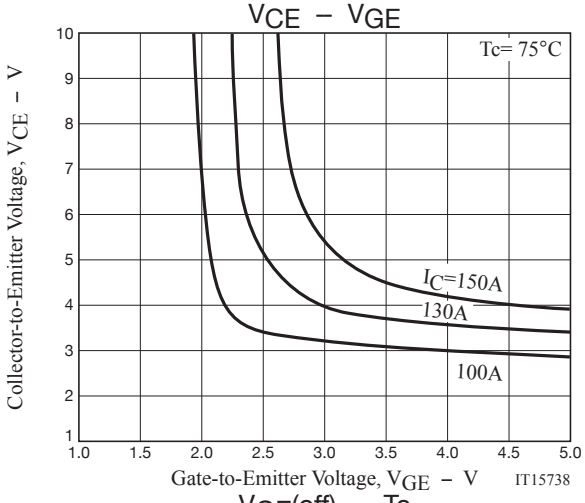
Note2. The collector voltage gradient dv / dt must be smaller than 1500V / μs to protect the device when it is turned off.

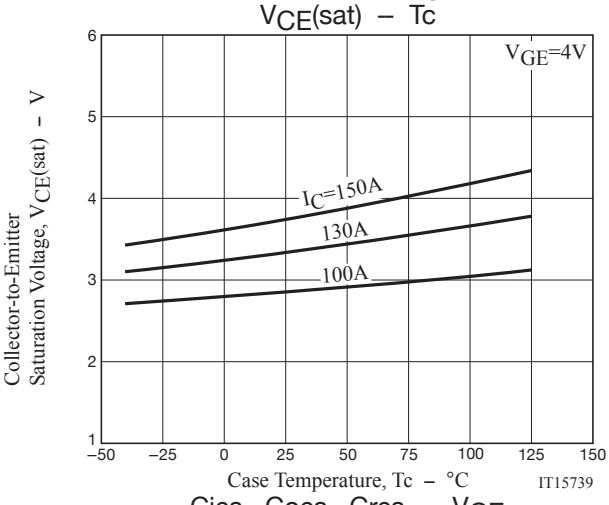

IC – VCE
Tc=25°C
2.5V
3.0V
4.0V
VGE=5.0V
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT15734

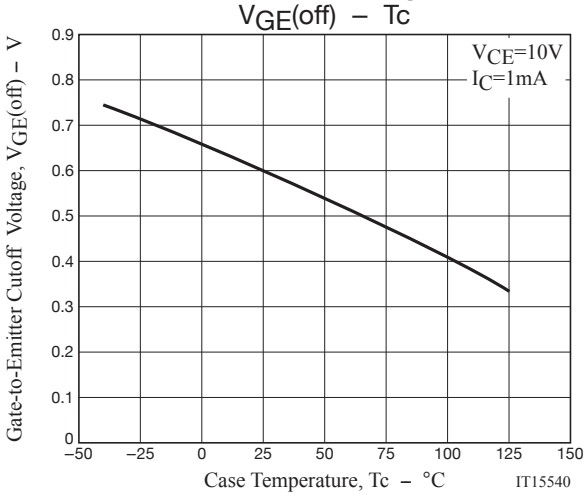

IC – VGE
VCE=5V
Tc=–25°C
25°C
75°C
Collector Current, IC – A
Gate-to-Emitter Voltage, VGE – V
IT15735

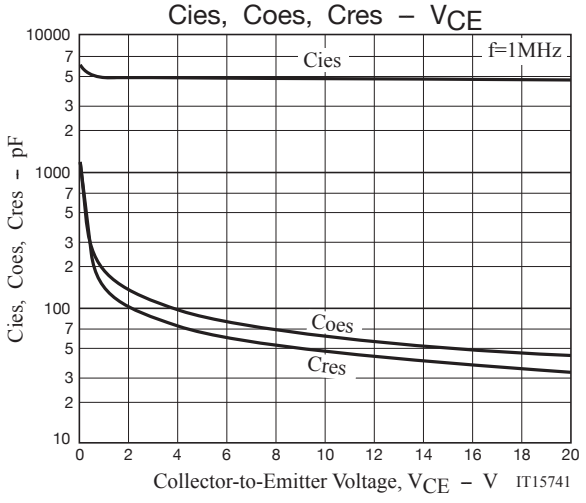

VCE – VGE
Tc= –25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT15736


VCE – VGE
Tc=25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT15737

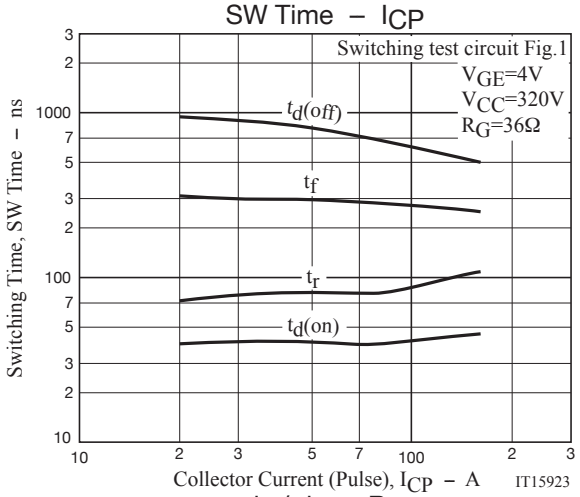

VCE – VGE
Tc= 75°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT15738


VCE(sat) – Tc
VGE=4V
IC=150A
130A
100A
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Case Temperature, Tc – °C
IT15739

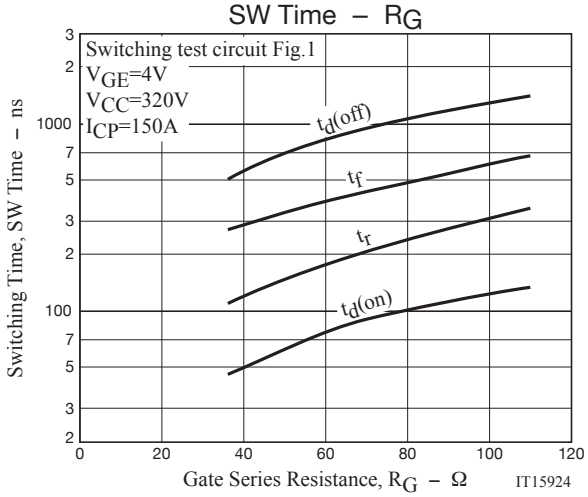

VGE(off) – Tc
VCE=10V
IC=1mA
Gate-to-Emitter Cutoff Voltage, VGE(off) – V
Case Temperature, Tc – °C
IT15540


Cies, Coes, Cres – VCE
f=1MHz
Cies
Coes
Cres
Cies, Coes, Cres – pF
Collector-to-Emitter Voltage, VCE – V
IT15741

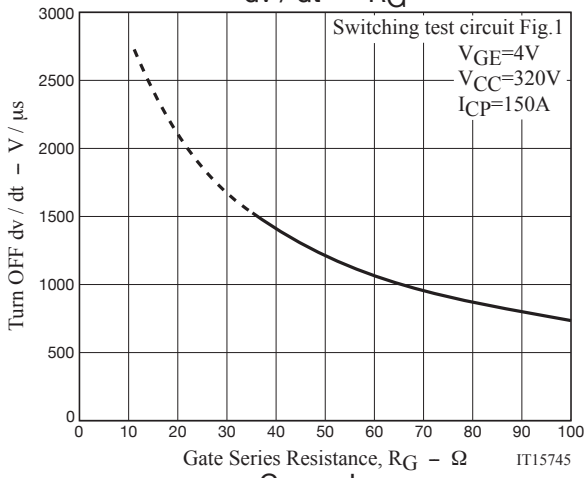
SW Time – I_{CP}



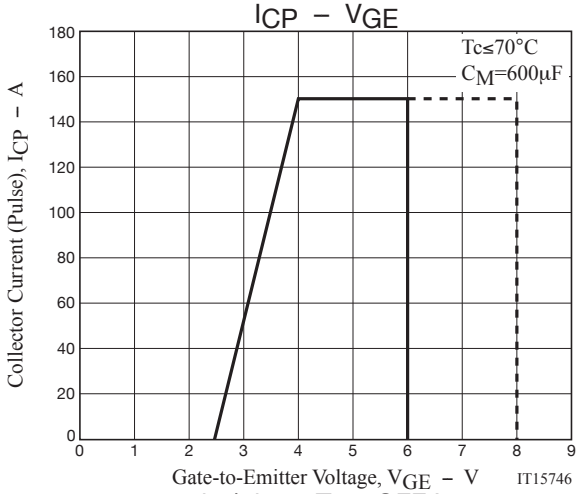
SW Time – R_G



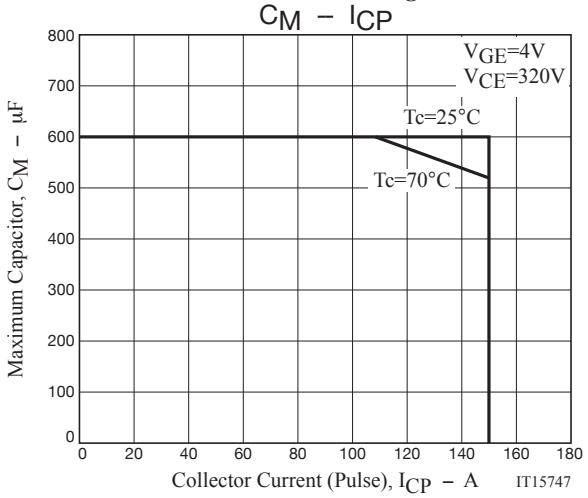
dv / dt – R_G



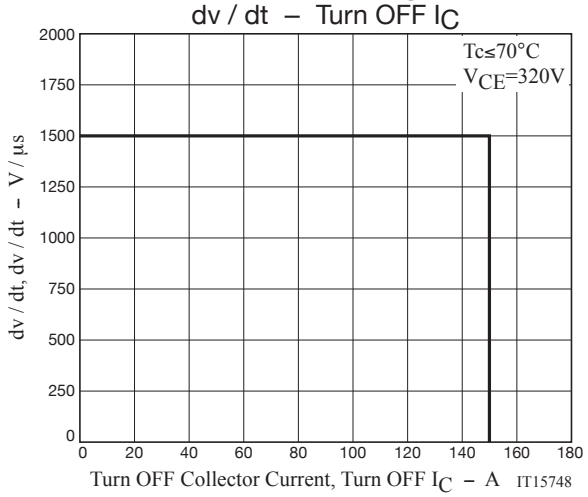
I_{CP} – V_{GE}



C_M – I_{CP}



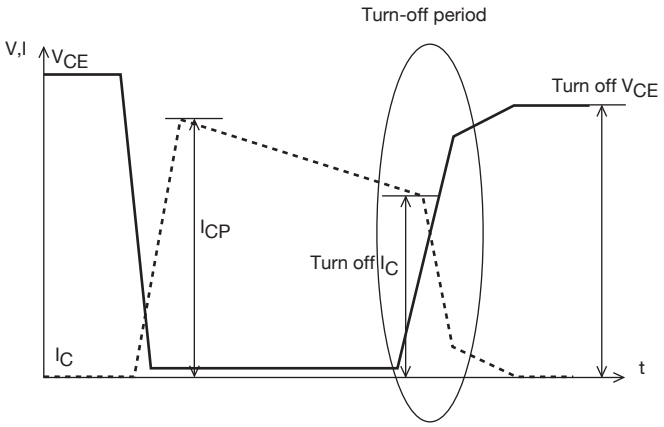
dv / dt – Turn OFF I_C



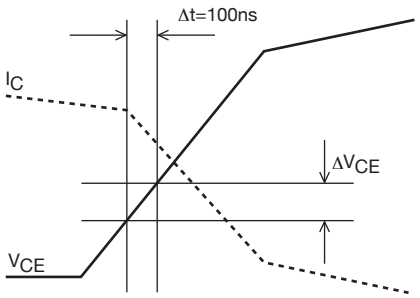
Definition of dv/dt

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

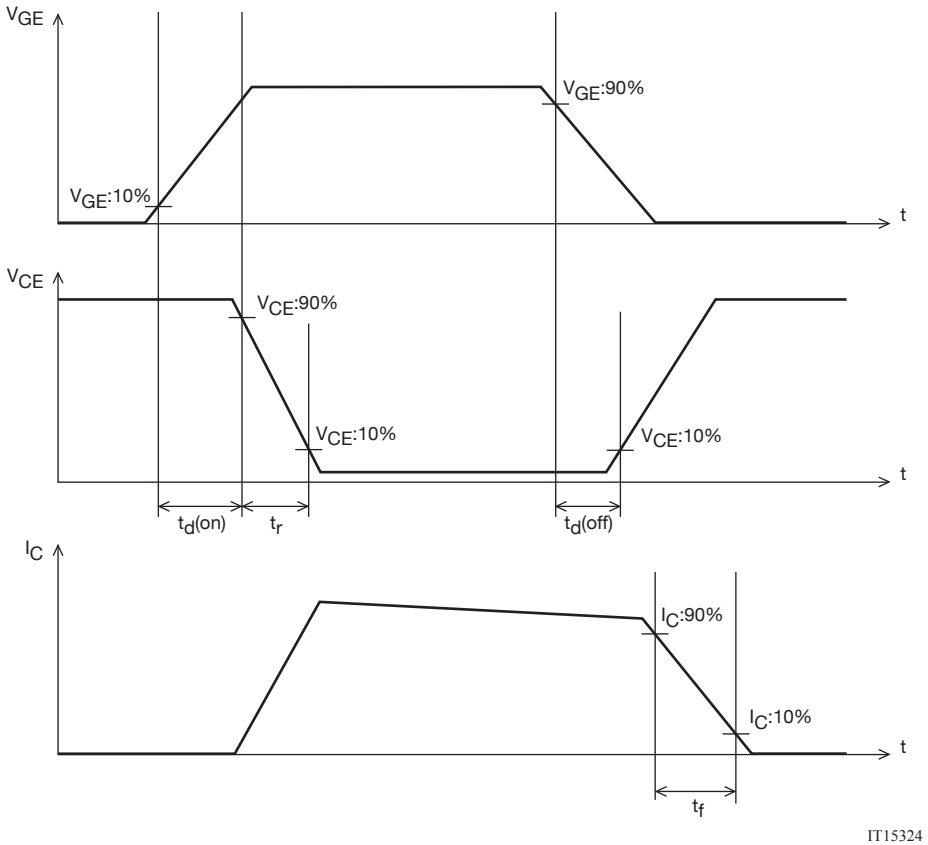


Enlarged picture of turn-off period



IT15323

Definition of Switching Time



IT15324

Note : TIG066SS has protection diode between gate and emitter but handling it requires sufficient care to be taken.

This catalog provides information as of September, 2010. Specifications and information herein are subject to change without notice.