



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

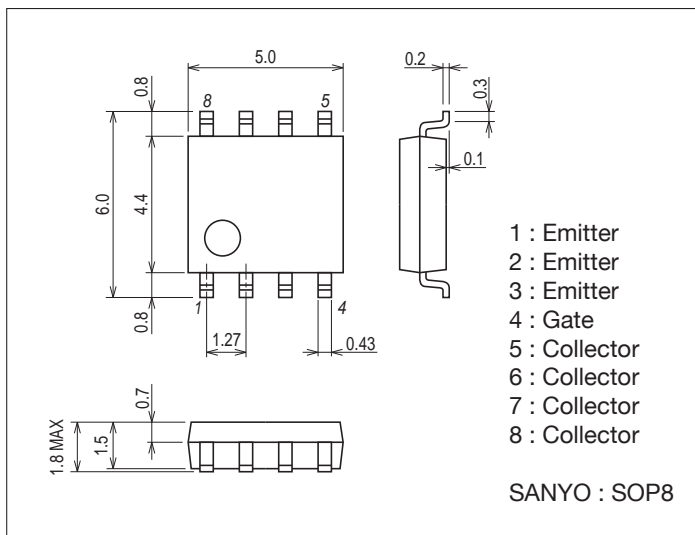
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Emitter Voltage (DC)	V <sub>CES</sub>		400	V
Collector-to-Emitter Voltage (Pulse)	V <sub>CESP</sub>	PW≤1ms	450	V
Gate-to-Emitter Voltage (DC)	V <sub>GES</sub>		±6	V
Gate-to-Emitter Voltage (Pulse)	V <sub>GESP</sub>	PW≤1ms	±8	V
Collector Current (Pulse)	I <sub>CP</sub>	C <sub>M</sub> =600μF	150	A
Maximum Collector-to-Emitter dv / dt	dv / dt	V <sub>CE</sub> ≤320V, starting Tch=25°C	1500	V / μs
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-40 to +150	°C

### Package Dimensions

unit : mm (typ)

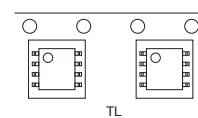
7005A-008



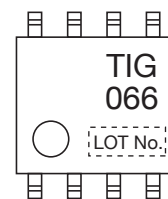
### Product & Package Information

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

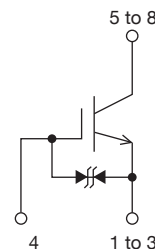
### Packing Type: TL



### Marking



### Electrical Connection



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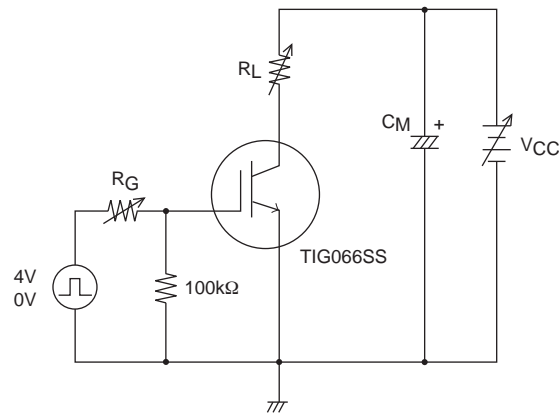
<http://semicon.sanyo.com/en/network>

# TIG066SS

## Electrical Characteristics at Ta=25°C

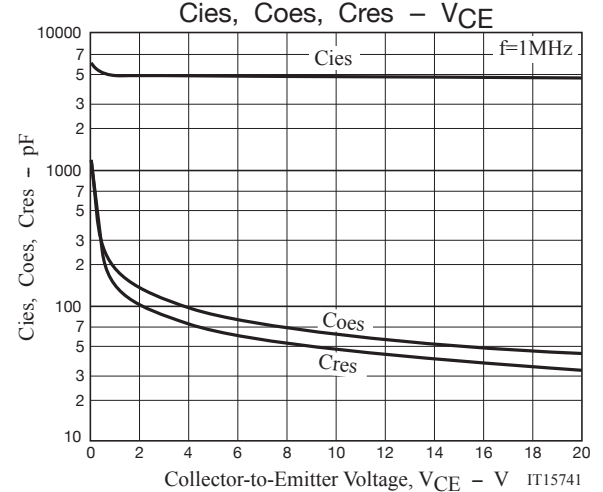
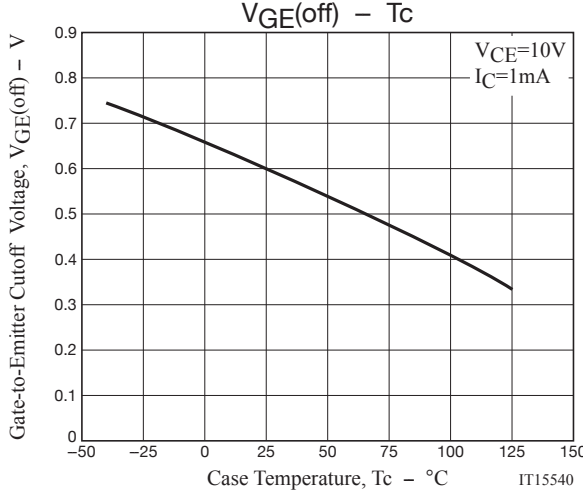
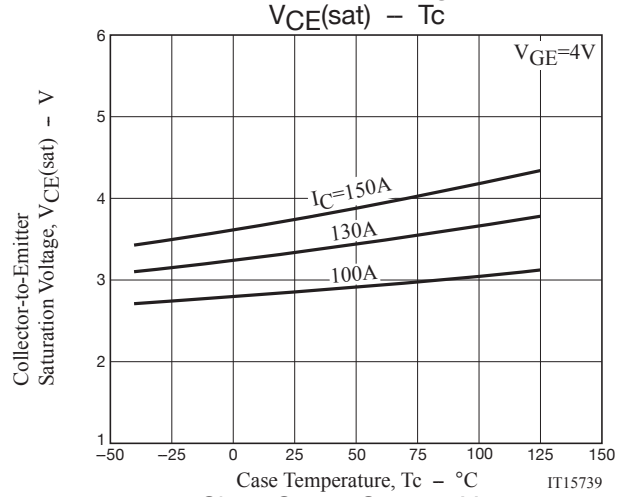
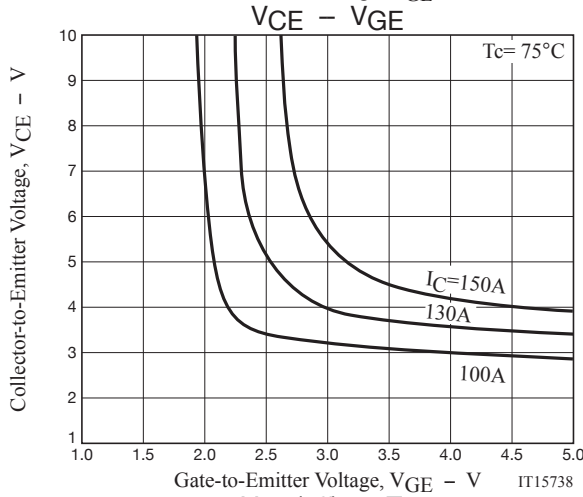
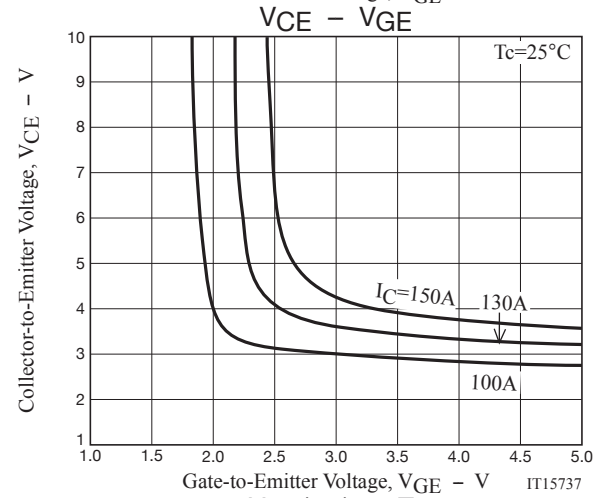
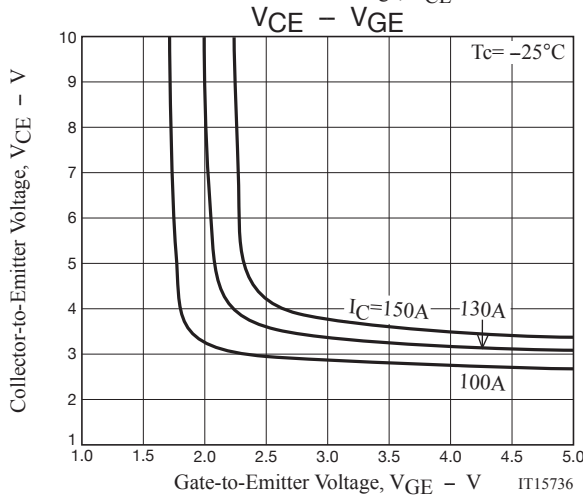
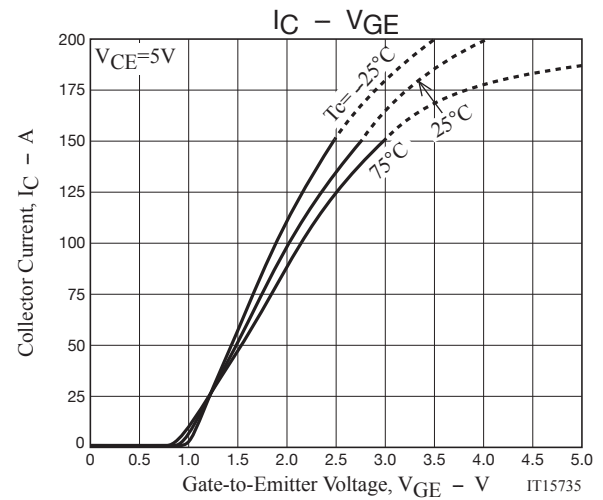
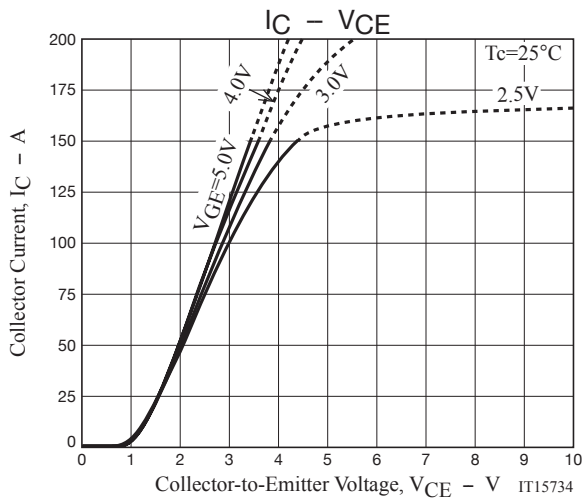
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=2mA, V_{GE}=0V$	400			V
Collector-to-Emitter Cutoff Current	$I_{CES}$	$V_{CE}=320V, V_{GE}=0V$			10	$\mu A$
Gate-to-Emitter Leakage Current	$I_{GES}$	$V_{GE}=\pm 6V, V_{CE}=0V$			$\pm 10$	$\mu A$
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	$C_{ies}$	$V_{CE}=10V, f=1MHz$		5100		pF
Output Capacitance	$C_{oes}$	$V_{CE}=10V, f=1MHz$		59		pF
Reverse Transfer Capacitance	$C_{res}$	$V_{CE}=10V, f=1MHz$		43		pF
Fall Time	$t_f$	$I_C=150A, V_{CC}=320V, \text{Resistor load } V_{GE}=4V, R_G=36\Omega$		270		ns

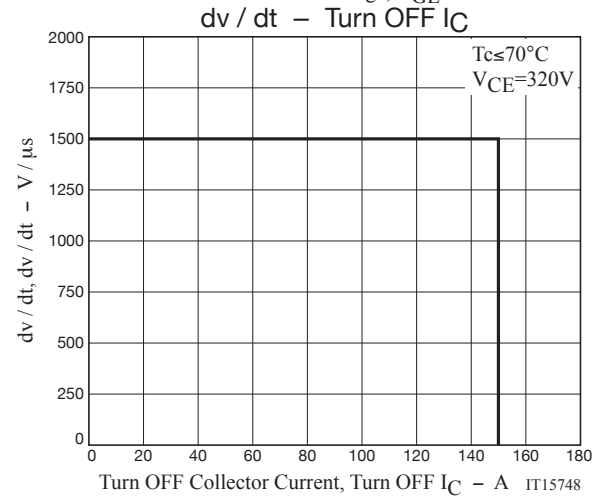
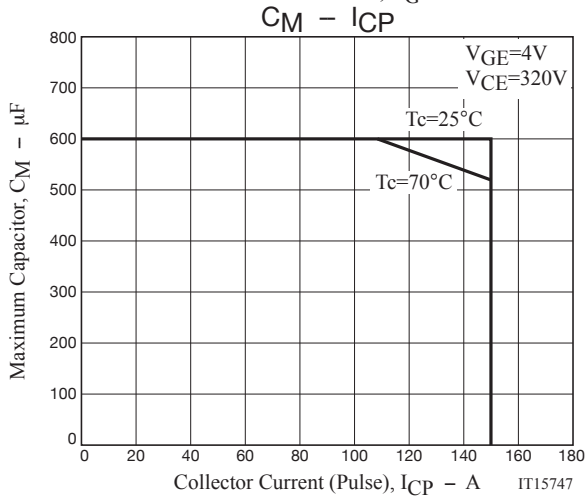
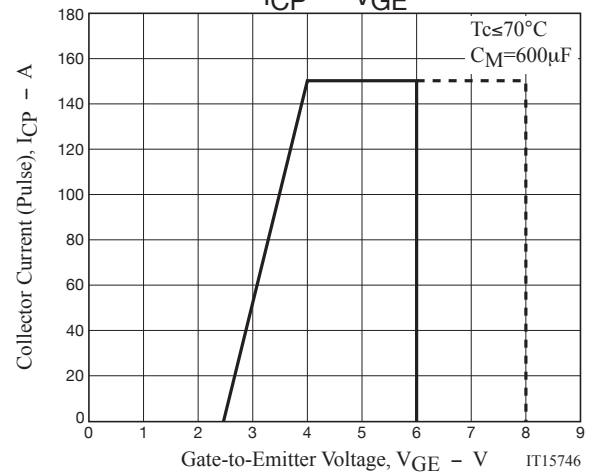
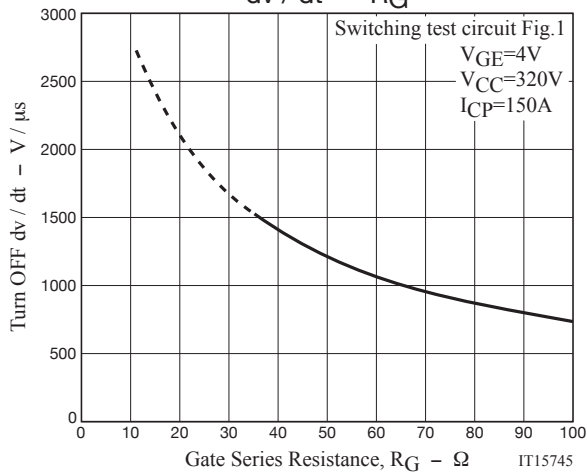
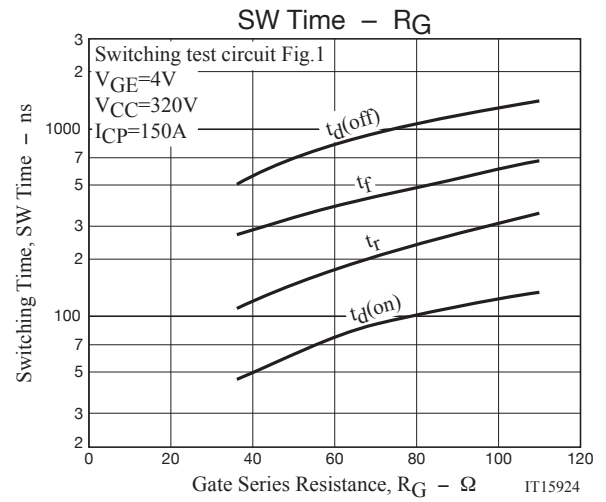
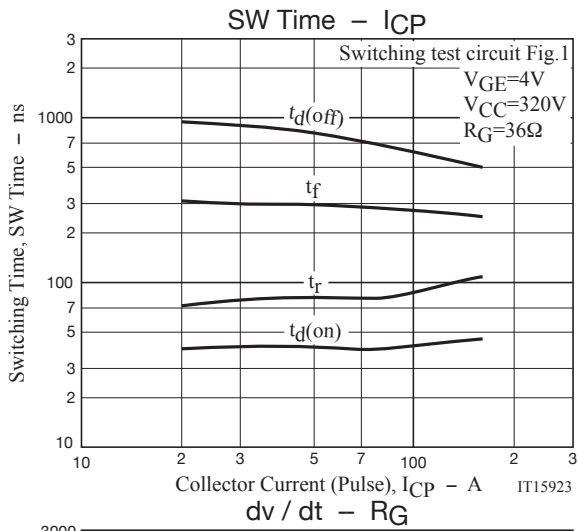
Fig1 Large Current R Load Switching Circuit



Note1. Gate Series Resistance  $R_G \geq 36\Omega$  is recommended for protection purpose at the time of turn OFF. However, if  $dv/dt \leq 1500V/\mu s$  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  $1500V/\mu s$  to protect the device when it is turned off.



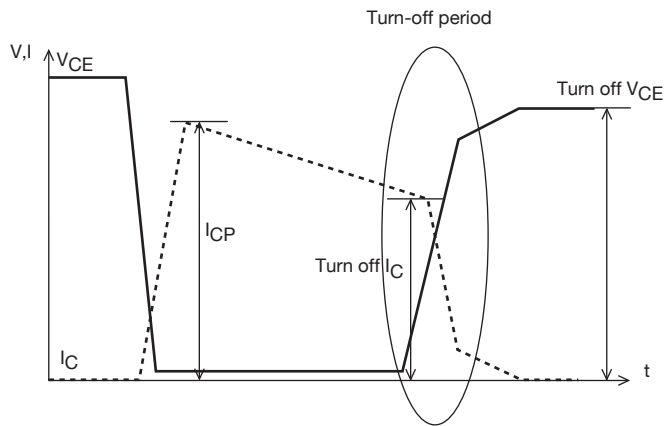


### Definition of $dv/dt$

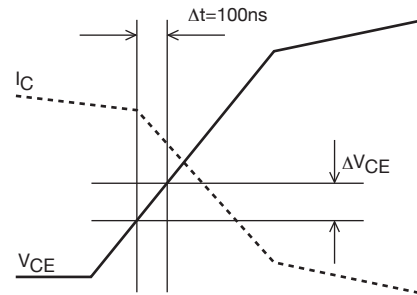
$dv/dt$  is defined as the maximum slope of the below  $V_{CE}$  curve during turn-off period.

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

### Overall waveform

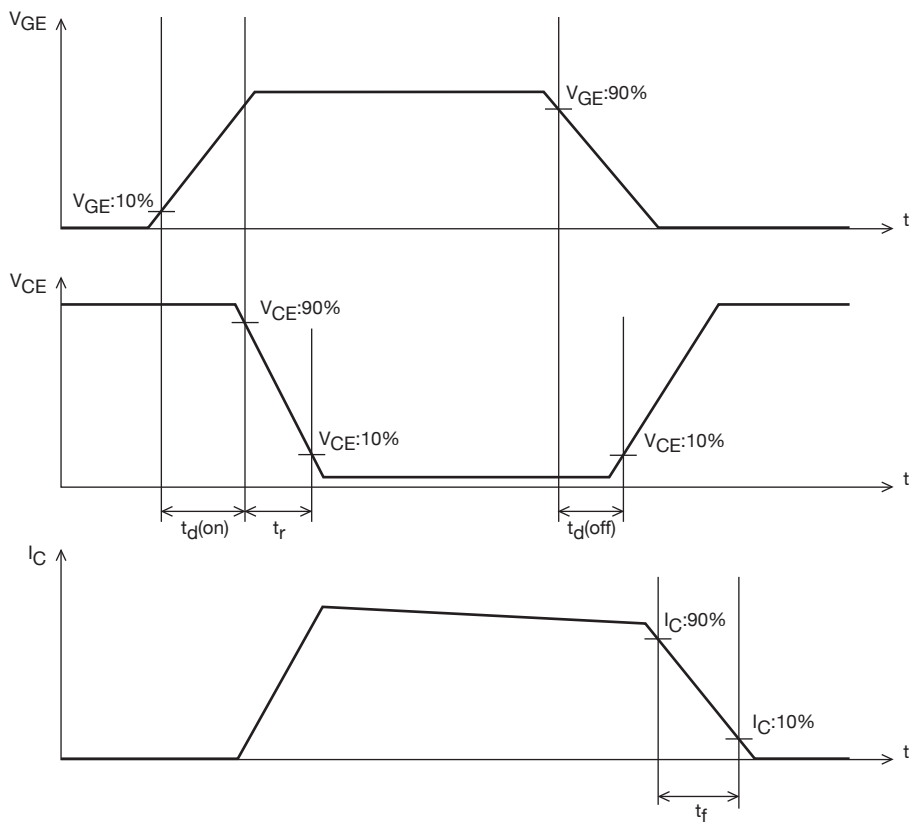


### Enlarged picture of turn-off period



IT15323

### Definition of Switching Time



IT15324

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

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