TIG067SS

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

ON Semiconductor®
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Features

- Low-saturation Voltage
- Enhancement Type
- High Speed Switching
- 4.0V Drive
- Built-in Gate-to-Emitter Protection Diode
- Pb-Free, Halogen Free and RoHS Compliance

Applications

- Light-controlling Flash

Specifications

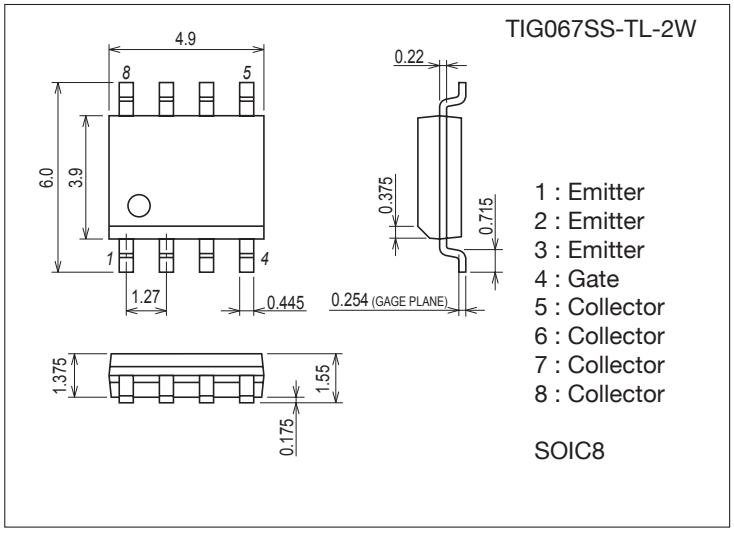
Absolute Maximum Ratings at Ta=25°C

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
Allowable Power Dissipation	P_D	When mounted on FR4 substrate (11,680mm^2×1.6mm)	1.2	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-40 to +150	°C

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.

Package Dimensions

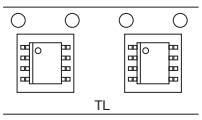
unit : mm (typ)
7072-002



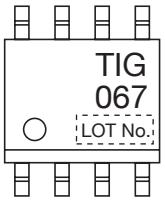
Product & Package Information

- Package : SOIC8
- JEITA, JEDEC : SC-87, SOT-96
- Minimum Packing Quantity : 2500 pcs./reel

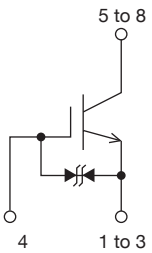
Packing Type: TL



Marking



Electrical Connection



ORDERING INFORMATION

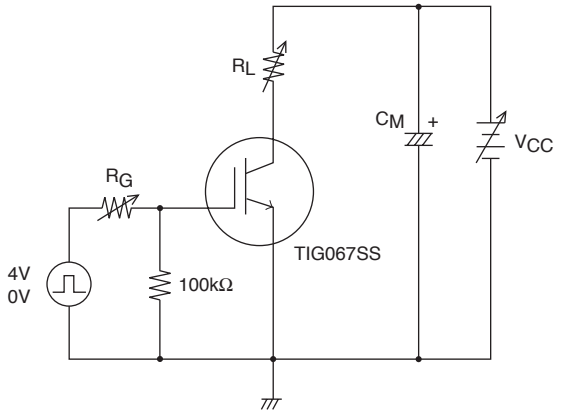
See detailed ordering and shipping information on page 2 of this data sheet.

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			59		pF
Reverse Transfer Capacitance	Cres			43		pF
Fall Time	t_f	I_C=150A, V_{CC}=320V, Resistor load V_{GE}=4V, R_G=36Ω		270		ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Fig1 Large Current R Load Switching Circuit

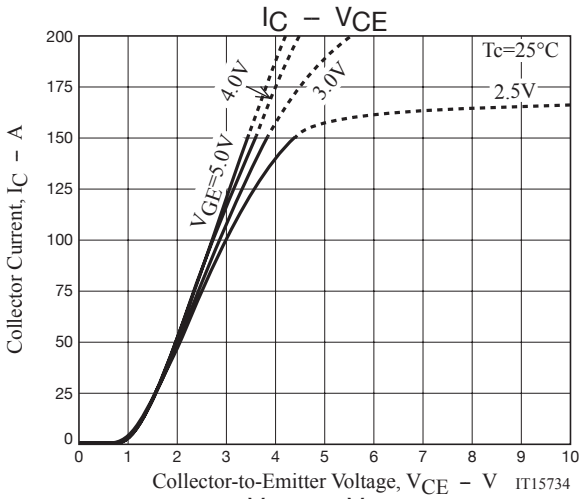


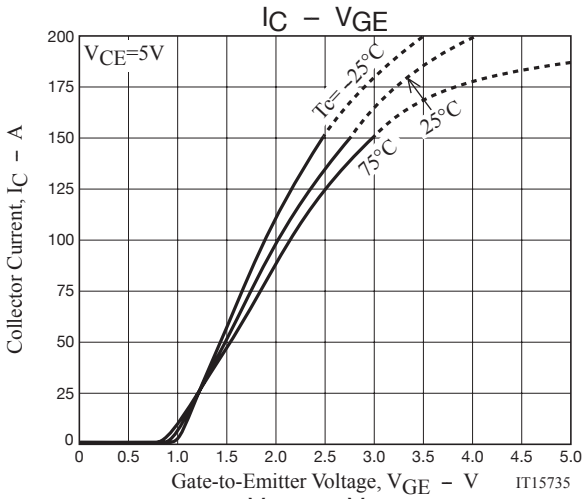
Note1. Gate Series Resistance $R_G \geq 36\Omega$ is recommended for protection purpose at the time of turn OFF. However, if dv / dt ≤ 1500 / μs is satisfied at customer's actual set evaluation, $R_G < 36\Omega$ can also be used.

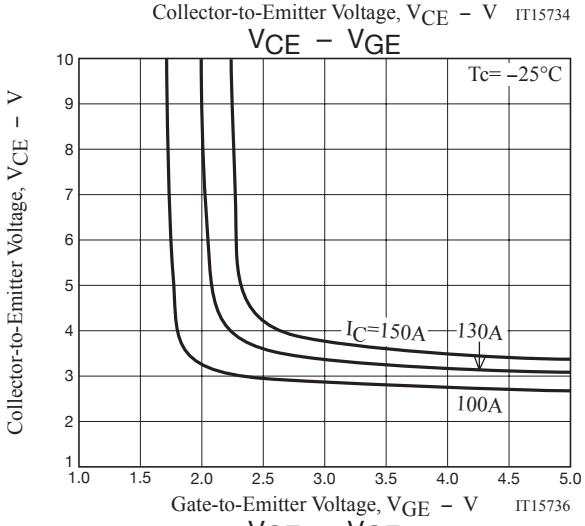
Note2. The collector voltage gradient dv / dt must be smaller than 1500V / μs to protect the device when it is turned off.

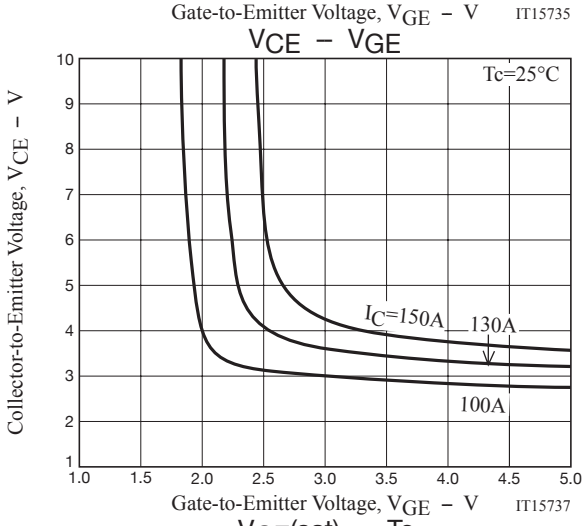
ORDERING INFORMATION

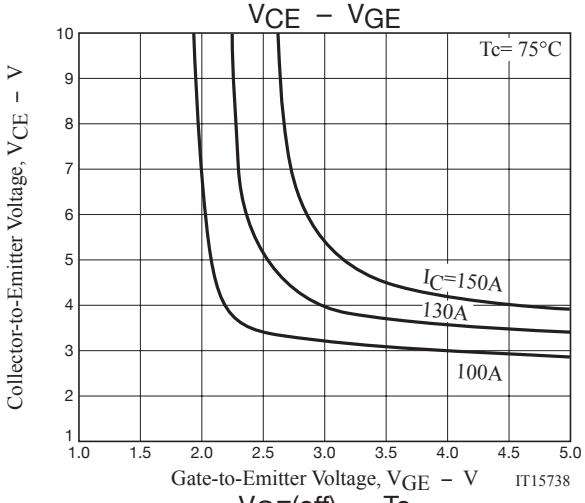
Device	Package	Shipping	memo
TIG067SS-TL-2W	SOIC8	2,500pcs./reel	Pb-Free and Halogen Free

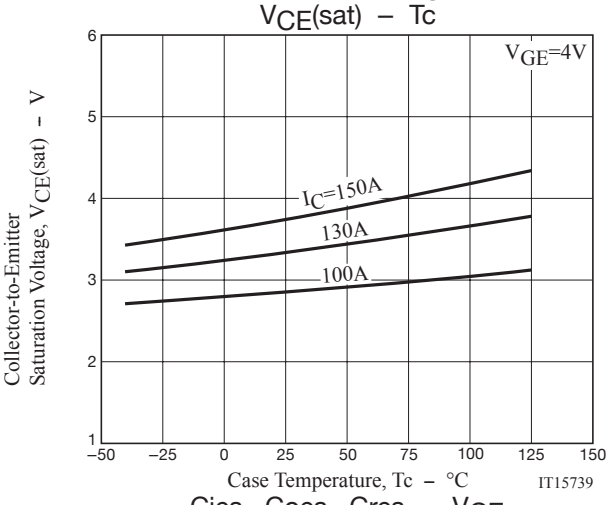

IC – VCE
Tc=25°C
2.5V
3.0V
4.0V
VGE=5.0V
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT15734

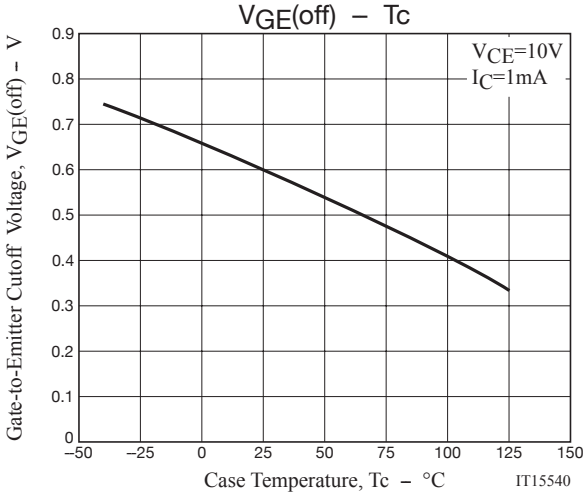

IC – VGE
VCE=5V
Tc=–25°C
25°C
75°C
Collector Current, IC – A
Gate-to-Emitter Voltage, VGE – V
IT15735

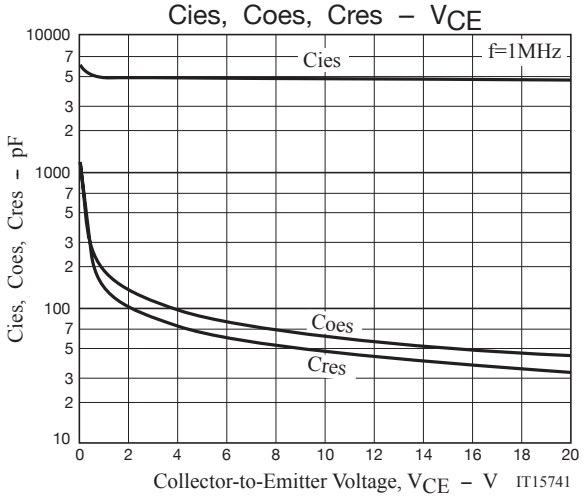

VCE – VGE
Tc= –25°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT15736


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

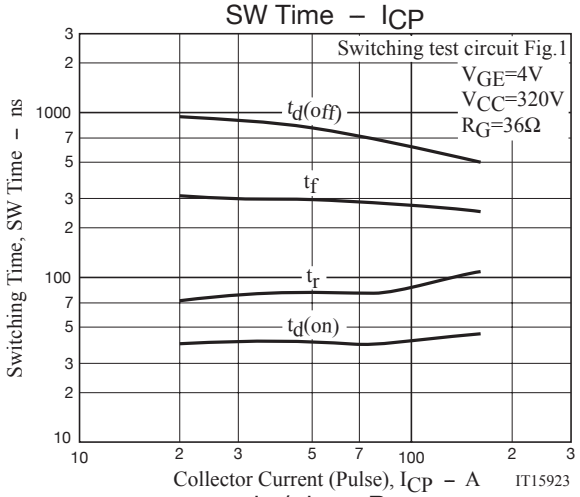

VCE – VGE
Tc= 75°C
IC=150A
130A
100A
Collector-to-Emitter Voltage, VCE – V
Gate-to-Emitter Voltage, VGE – V
IT15738


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

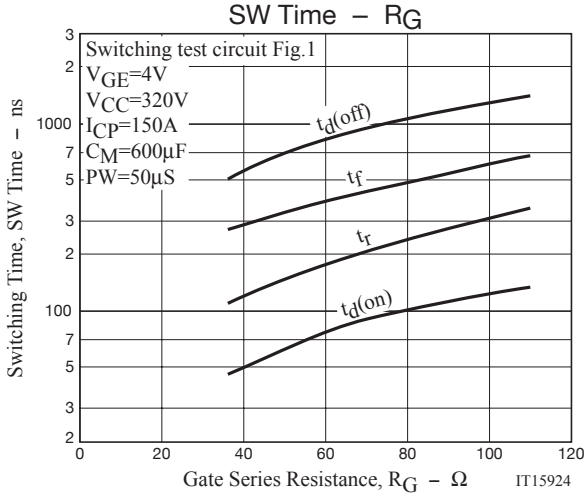

VGE(off) – Tc
VCE=10V
IC=1mA
Gate-to-Emitter Cutoff Voltage, VGE(off) – V
Case Temperature, Tc – °C
IT15540


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

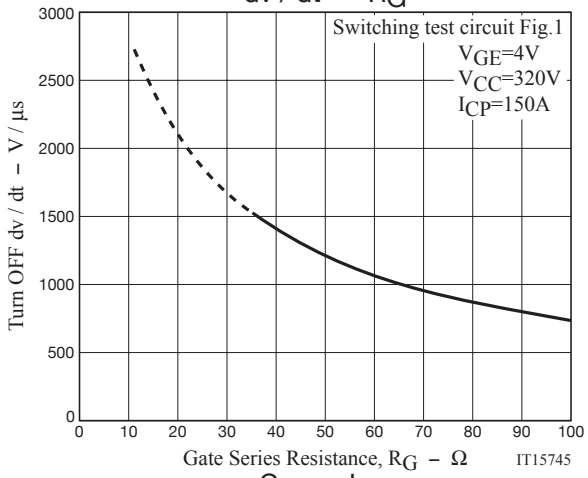
SW Time – I_{CP}



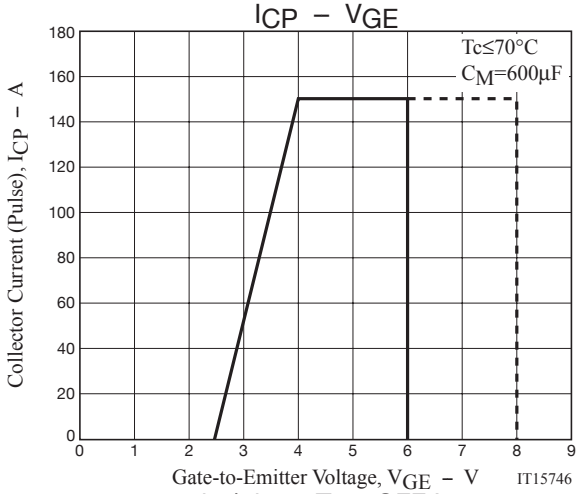
SW Time – R_G



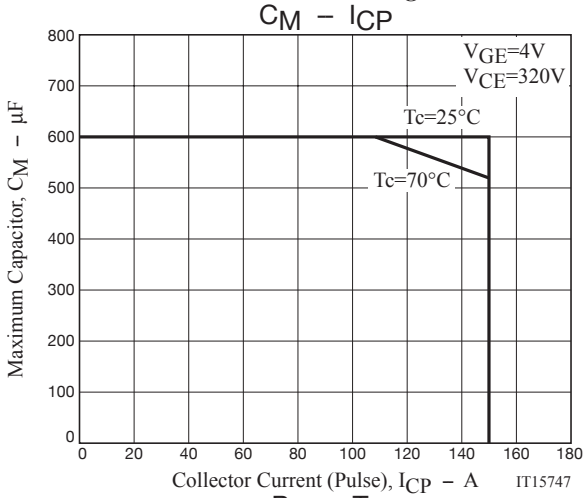
dv / dt – R_G



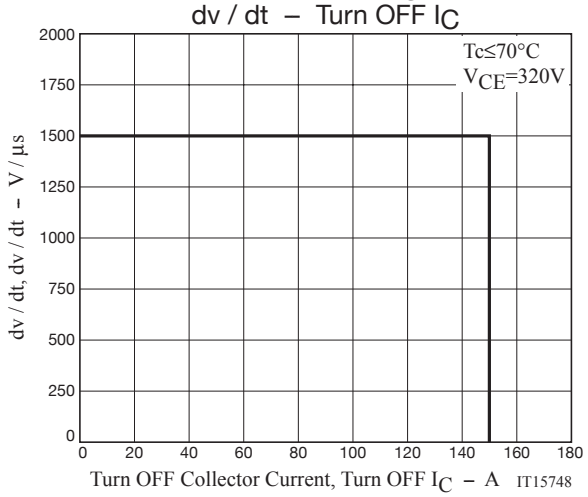
I_{CP} – V_{GE}



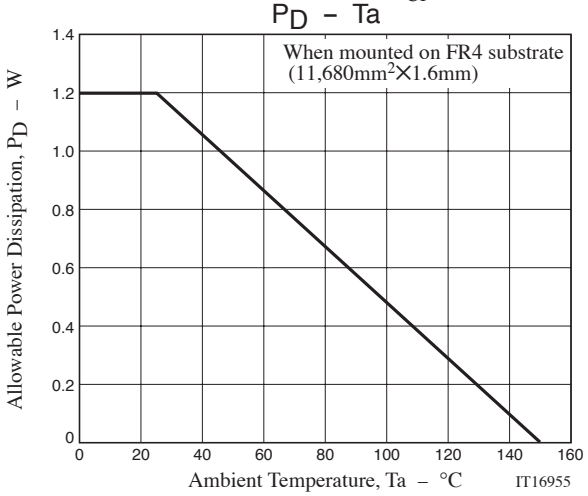
C_M – I_{CP}



dv / dt – Turn OFF I_C



P_D – Ta

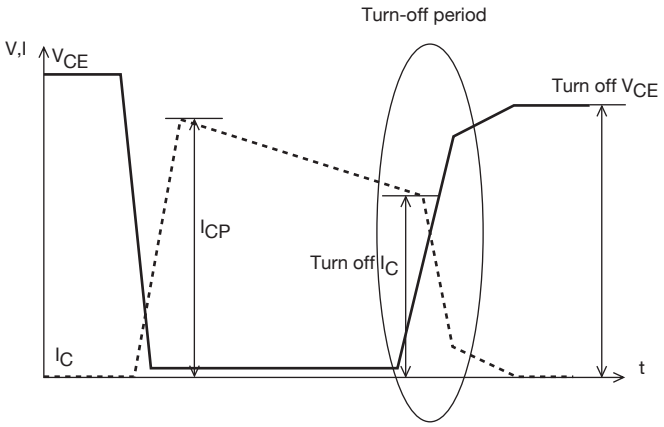


Definition of dv/dt

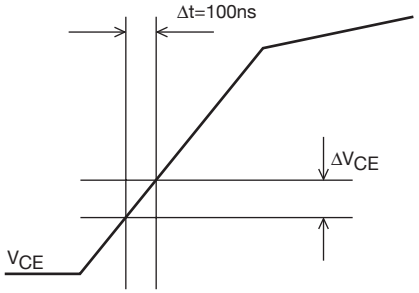
dv/dt is defined as the maximum slope of the below V_{CE} curve during turn-off period.

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

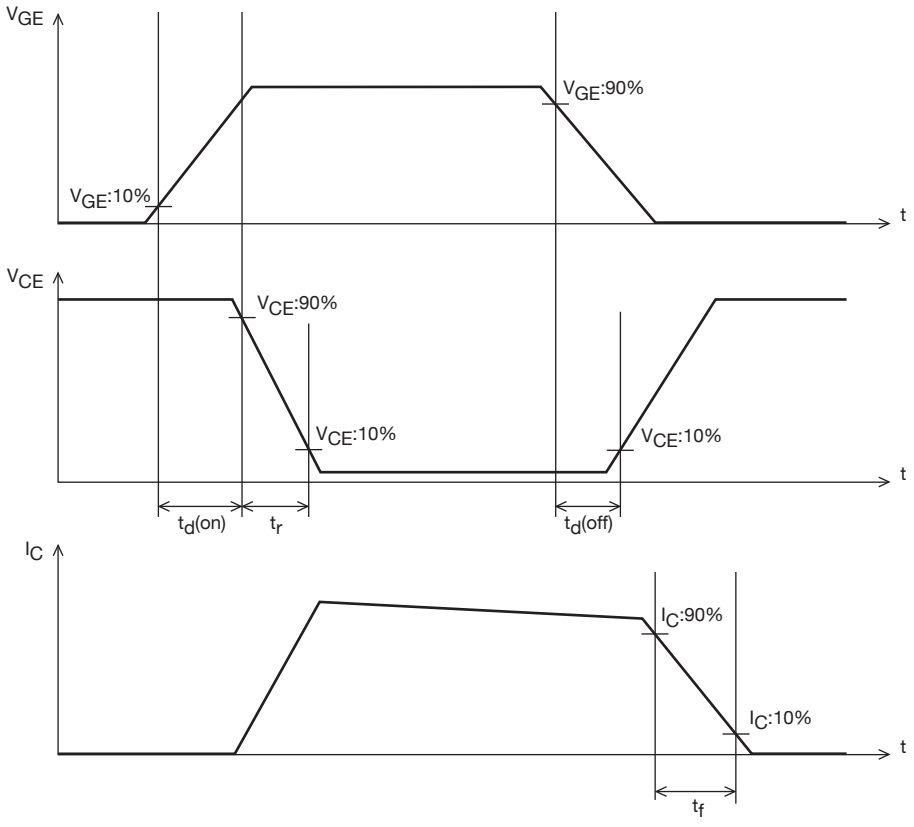
Overall waveform



Enlarged picture of turn-off period

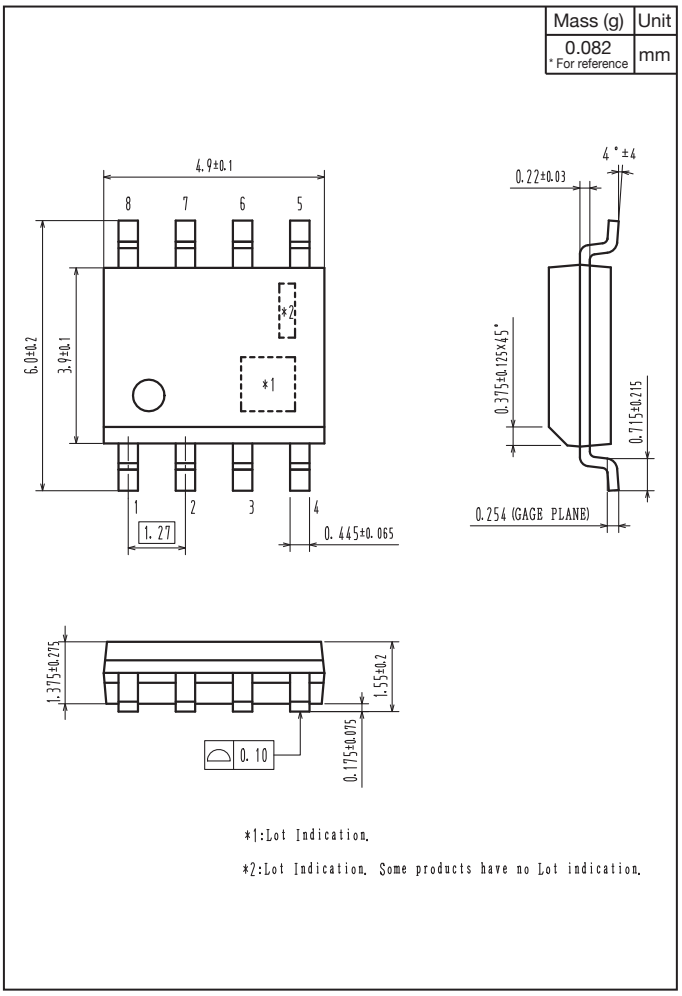


Definition of Switching Time



Outline Drawing

TIG067SS-TL-2W



Land Pattern Example