

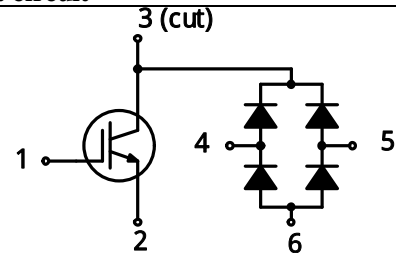
Features

- Built-in IGBT and diode bridge of partial switching PFC circuit Enable to reduce mounting area
 - Low saturation voltage IGBT $V_{CE(sat)} = 1.7V$ max
 - Low saturation voltage diode bridge $V_F = 1.1V$ max
 - The clip lead is adopted for inner lead.
- Low inductance, low resistance, high current capability
The smoke generation and explosion are less likely to occur in case of destruction.

Package

S L A

Equivalent circuit



Applications

- Partial switching PFC

Absolute maximum ratings

(Ta=25°C)

Characteristic	Symbol	Ratings	Unit
Collector to Emitter Voltage	V _{CES}	600	V
Gate to Emitter Voltage	V _{GE}	±30	V
Continuous Collector Current	I _{C(DC)}	30	A
Pulsed Collector Current	I _{C (pulse)} * 1	100	A
Diode Peak Reverse Voltage	V _{RM}	600	V
Diode Forward Current	I _F	25	A
Diode Peak Surge Forward Current	I _{FSM} * 2	200	A
Diode I ² t Limiting Value	I ² t * 3	200	A ² s
Maximum Allowable Power Dissipation	P _T * 4	5 (No.Fin Ta=25°C)	W
		92 (Tc=25°C)	
Thermal Resistance	θ _{j-a} * 4	25 (Junction-to-Ambient)	°C/W
	θ _{j-c} * 4	1.36 (Junction-to-Case)	°C/W
	θ _{j-c IGBT}	3.91 (Junction-to-Case,IGBT 1 Element Operation)	°C/W
	θ _{j-c Di}	8.33 (Junction-to-Case,Di 1 Element Operation)	°C/W
Isolation Voltage	V _{ISO}	1500 (Between Fin and Lead Pin, 1minute AC)	V _{rms}
Operating Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-40 ~ 150	°C

* 1. $PW \leq 10\mu s$, Duty $\leq 1\%$

* 2. $PW \leq 10ms$, Half sinewave, 1shot

* 3. $1ms \leq PW \leq 10ms$

* 4. All Element Operation

The information included herein is believed to be accurate and reliable. However, SANKEN ELECTRIC CO., LTD assumes no responsibility for its use ; nor for any infringements of patents or other rights of third parties that may result from its use.

Electrical characteristics

• IGBT

(Ta=25°C)

Characteristic	Symbol	Test Conditions	Limits			unit
			min	typ	max	
Collector to Emitter Breakdown Voltage	V(BR)CES	IC= 100μA, VGE=0V	600			V
Gate to Emitter Leakage Current	IGES	VGE= ±30V			±500	nA
Collector to Emitter Leakage Current	ICES	VCE= 600V, VGE=0V			100	μA
Gate Threshold Voltage	VGE(th)	VCE= 10V, ID=1mA	3		6	V
Collector to Emitter Saturation Voltage	VCE(sat)	VGE=15V, IC= 30A		1.3	1.7	V
Collector to Emitter Saturation Voltage	VCE(sat)	VGE=15V, IC= 50A		1.6		V
Input Capacitance	Cies	VCE=20V f=1.0MHz VGE=0V		2500		pF
Output Capacitance	Coes			150		
Reverse Transfer Capacitance	Cres			80		
Turn-On Delay Time	td(on)	IC=50A VCE ≅ 300V RG=39Ω VGE=±15V See fig.1		80		ns
Rise Time	tr			190		
Turn-Off Delay Time	td(off)			120		
Fall Time	tf			320		

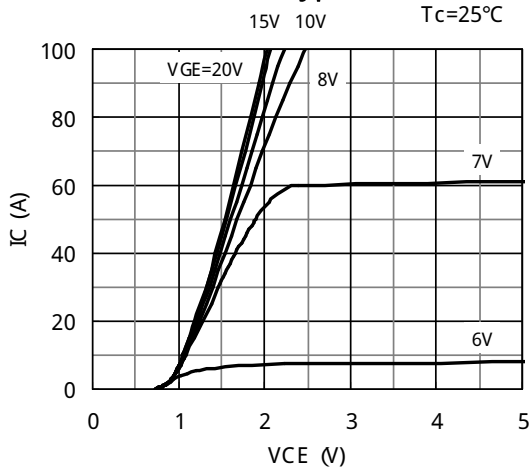
• Di

(Ta=25°C)

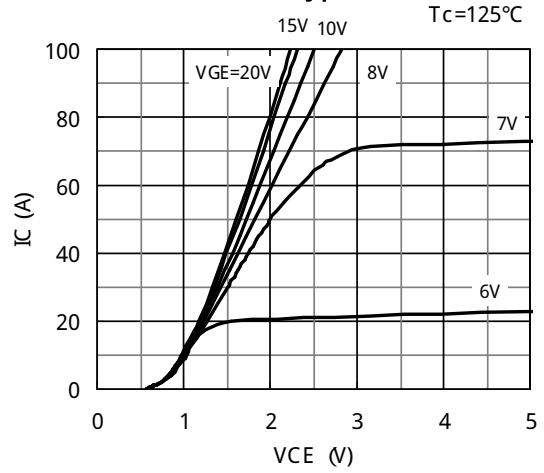
Characteristic	Symbol	Test Conditions	Limits			
			min	typ	max	
Forward Voltage Drop	VF	IF= 12.5A			1.1	
Reverse Leakage Current	IR	VR=600V			50	
Reverse Leakage Current Under High Temperature	H·IR	VR=600V, Tj=150°C			200	

Electrical characteristics

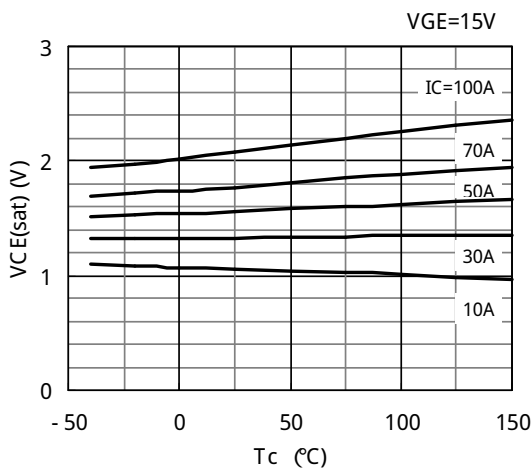
IC - VCE (typical)



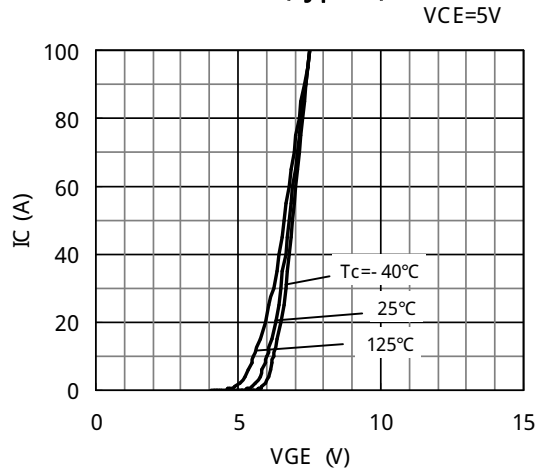
IC - VCE (typical)



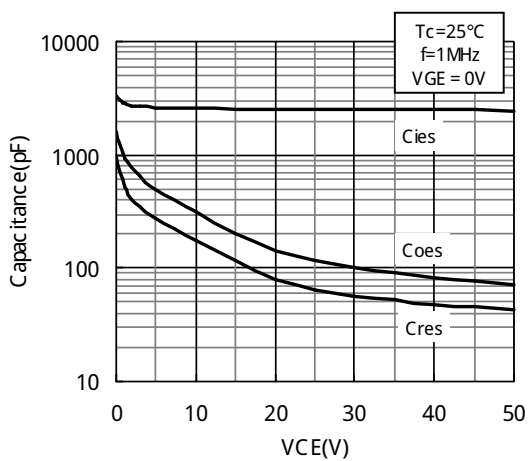
VCE(sat) - Tc (typical)



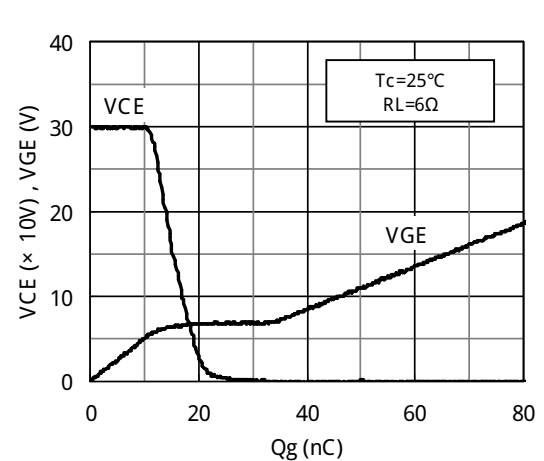
IC - VGE (typical)



Capa - VCE (typical)

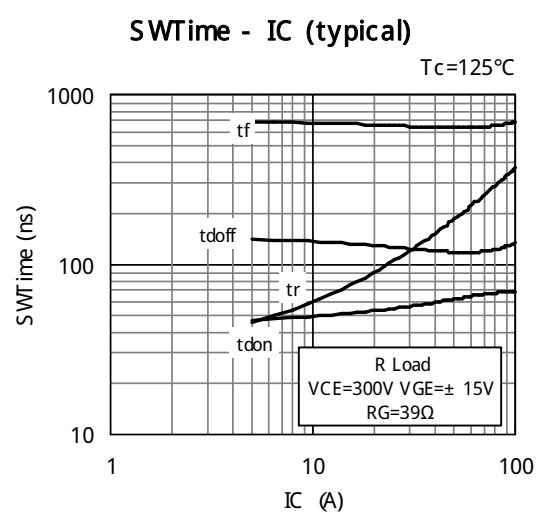
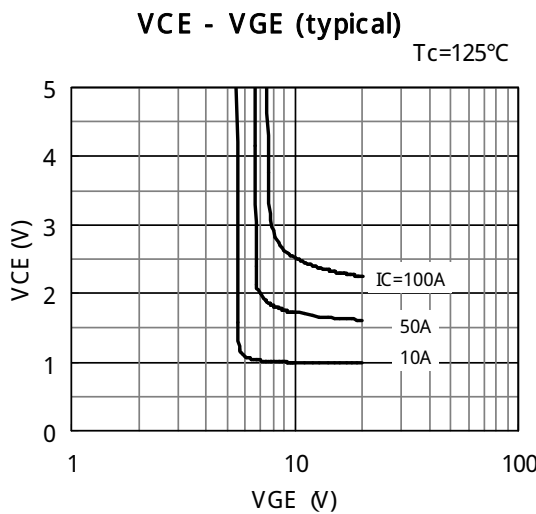
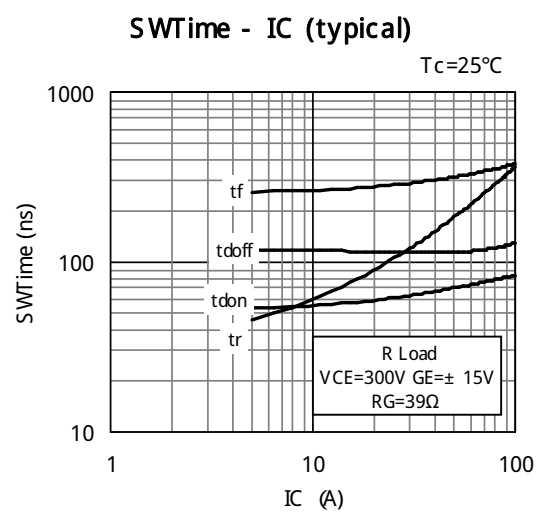
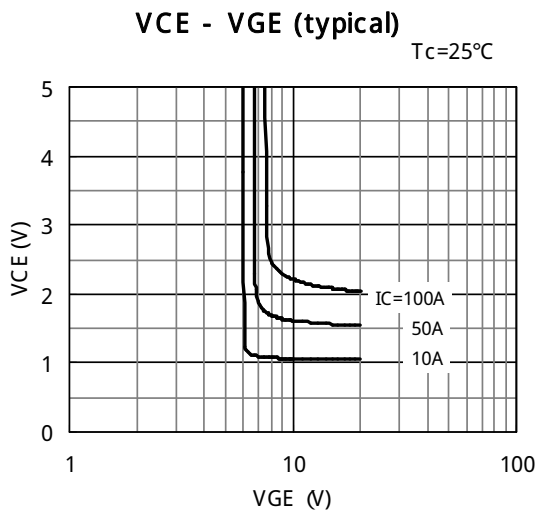
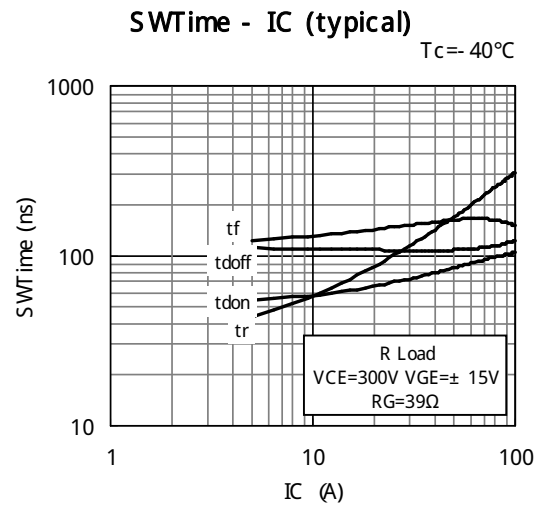
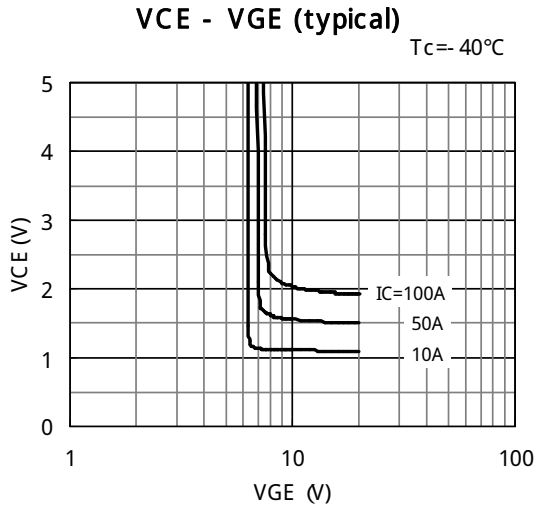


VCE, VGE - Qg (typical)



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Electrical characteristics

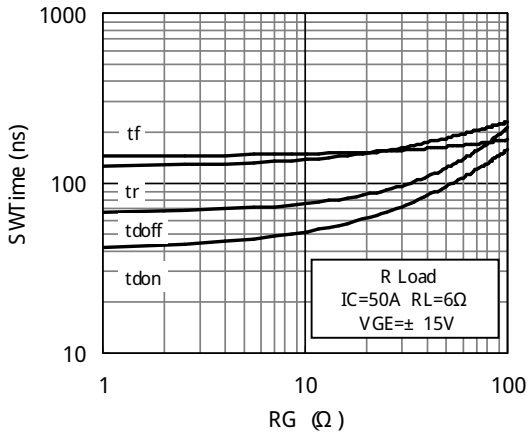


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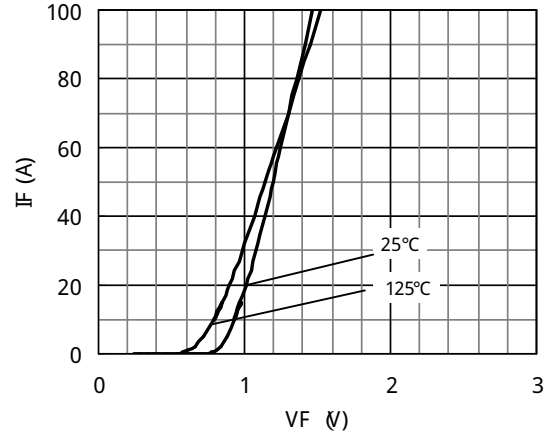
Electrical characteristics

SWTime - RG (typical)

$T_c = -40^\circ\text{C}$

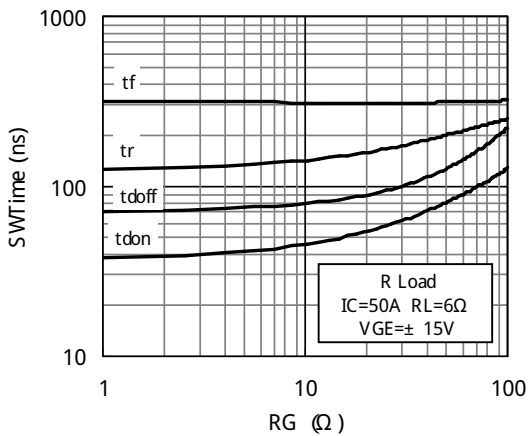


IF - VF (typical)

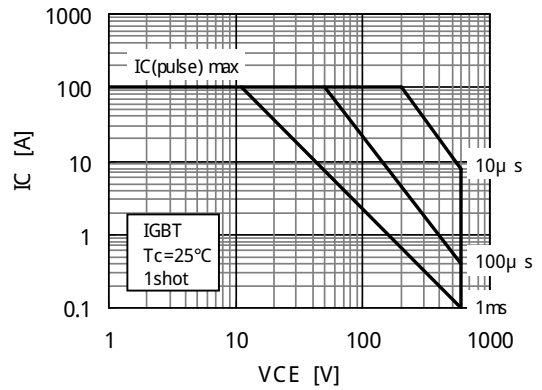


SWTime - RG (typical)

$T_c = 25^\circ\text{C}$

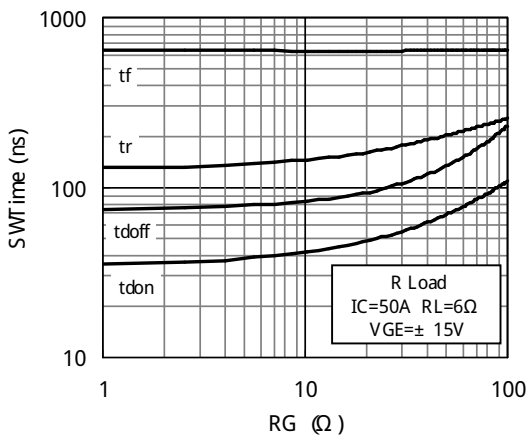


SAFE OPERATING AREA

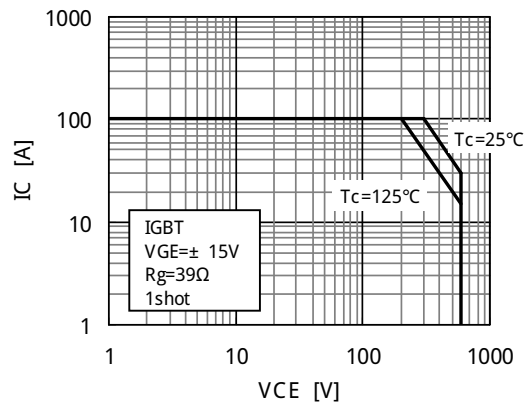


SWTime - RG (typical)

$T_c = 125^\circ\text{C}$



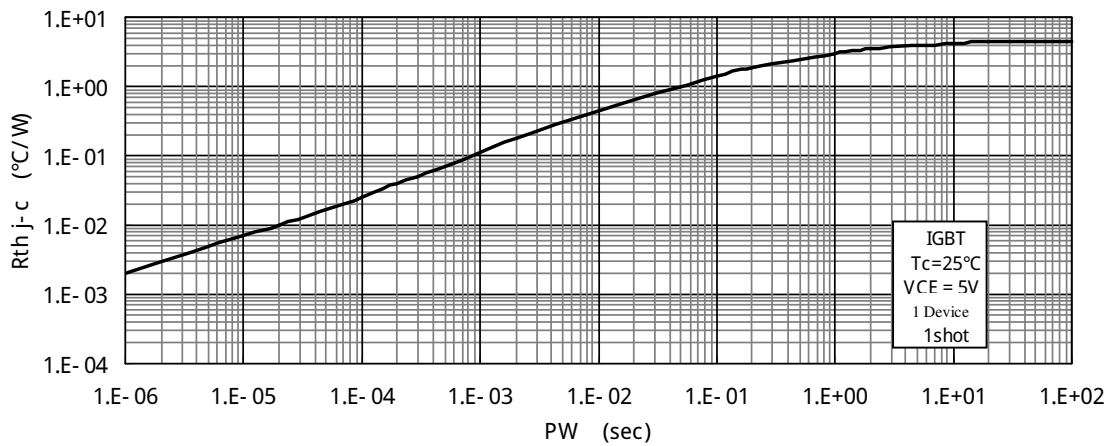
Reverse Bias ASO



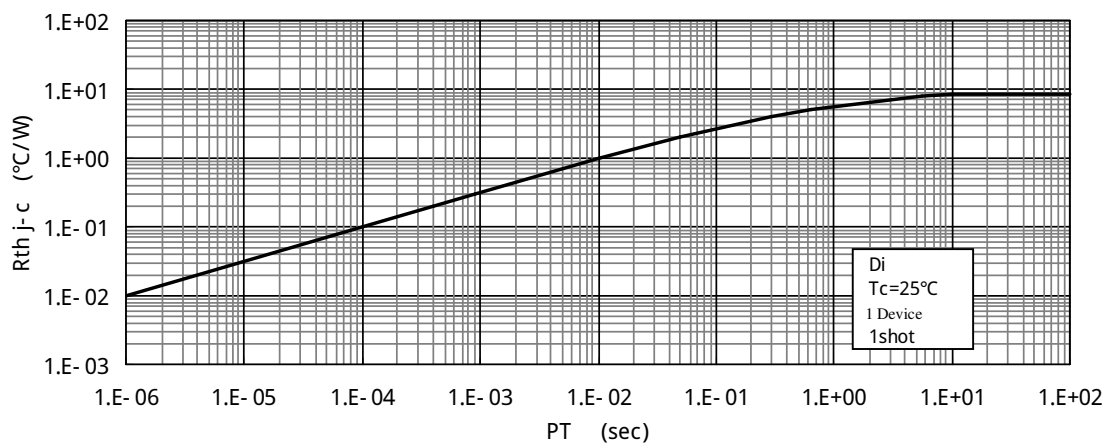
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Electrical characteristics

TRANSIENT THERMAL RESISTANCE - PULSE WIDTH IGBT

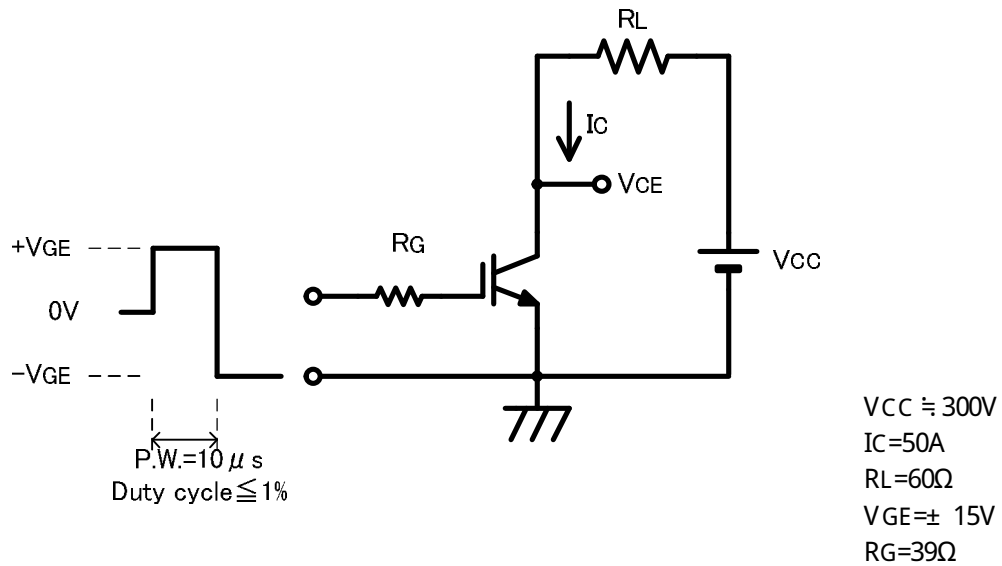


TRANSIENT THERMAL RESISTANCE - PULSE WIDTH Di

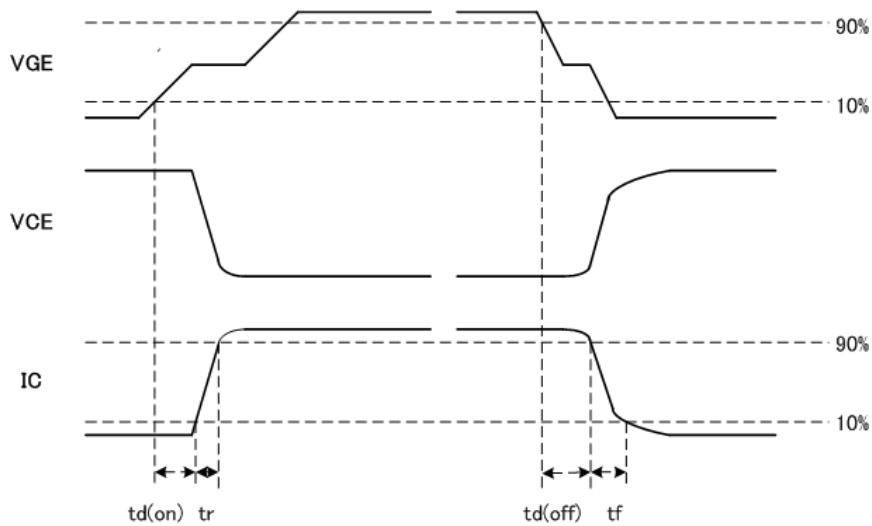


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Fig.1 Switching Time Test Method



(a) Test Circuit



(b) Waveforms

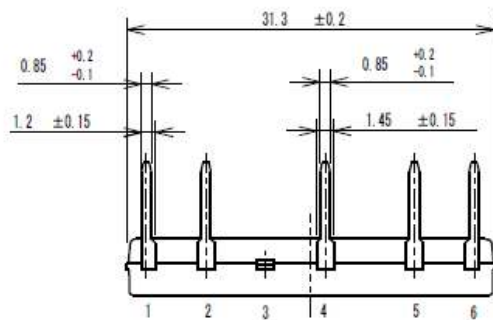
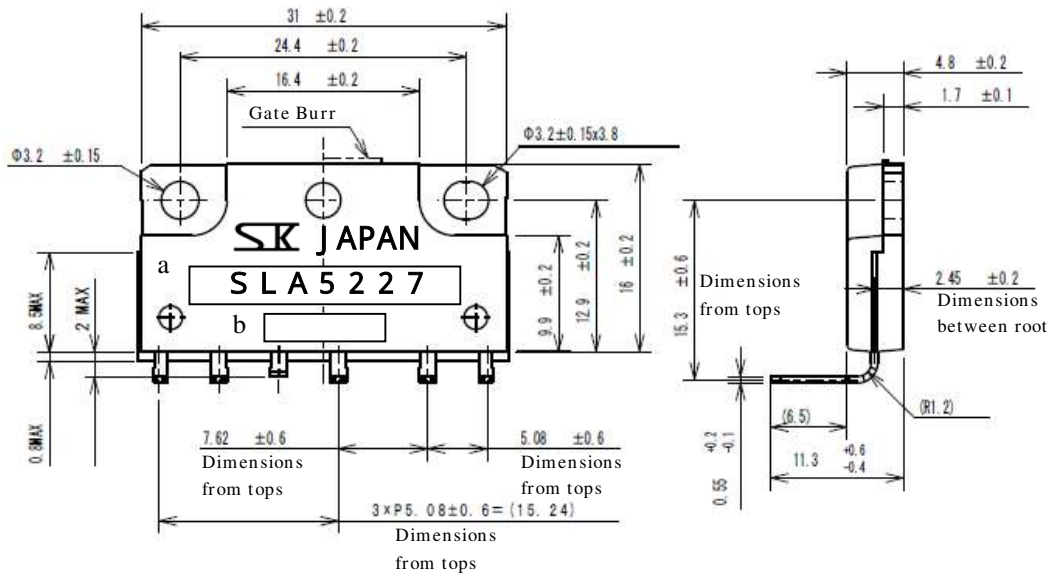
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Outline

SLA (LF No. 822)

Dimensions
between root

Dimensions
from tops



a : Type No.
b : Lot No.

Weight Approx. 6g

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