

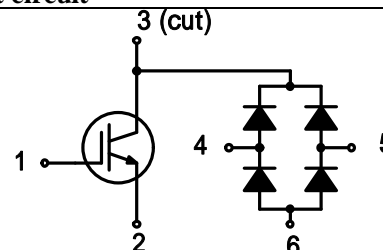
### Features

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

1. PW 10μs, Duty 1%
3. 1ms PW 10ms

2. PW 10ms, Half sinewave, 1shot
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

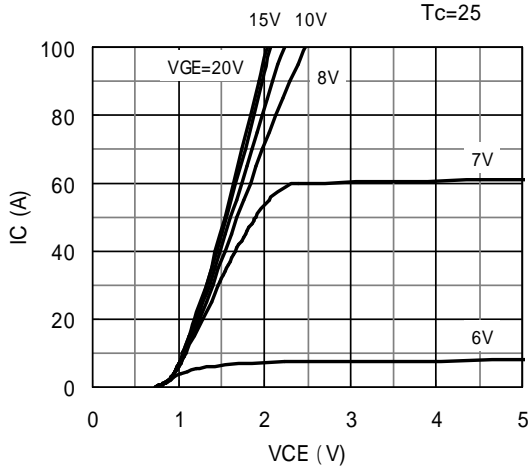
(Ta=25°C)

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

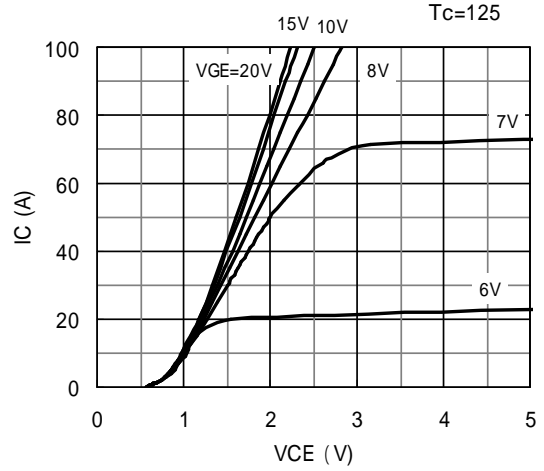
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**Electrical characteristics**

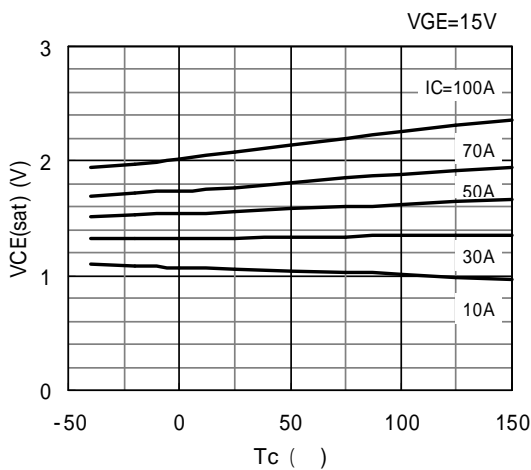
**IC - VCE (typical)**



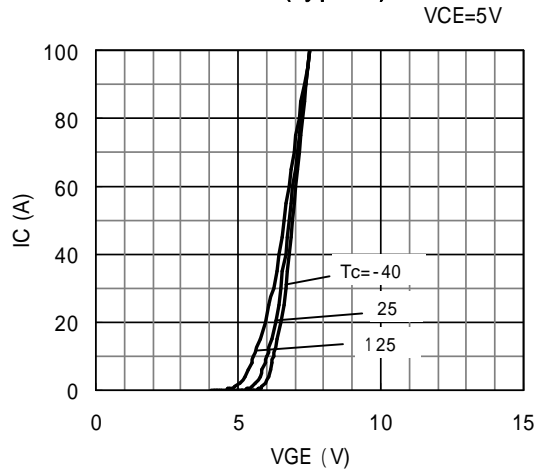
**IC - VCE (typical)**



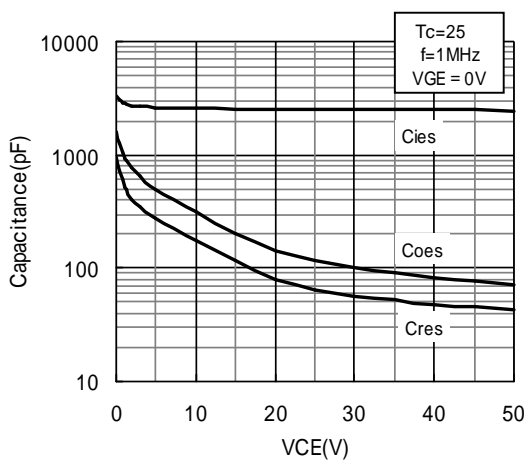
**VCE(sat) - Tc (typical)**



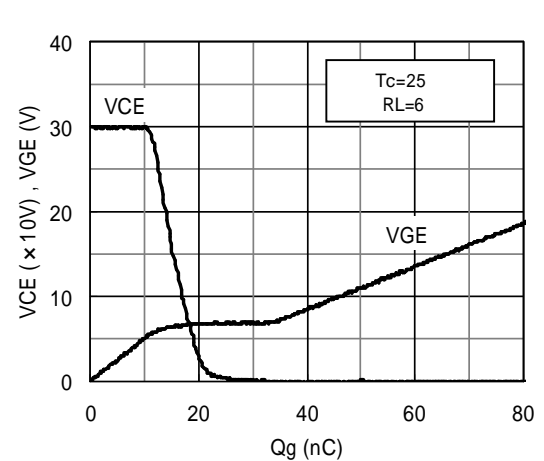
**IC - VGE (typical)**



**Capa - VCE (typical)**

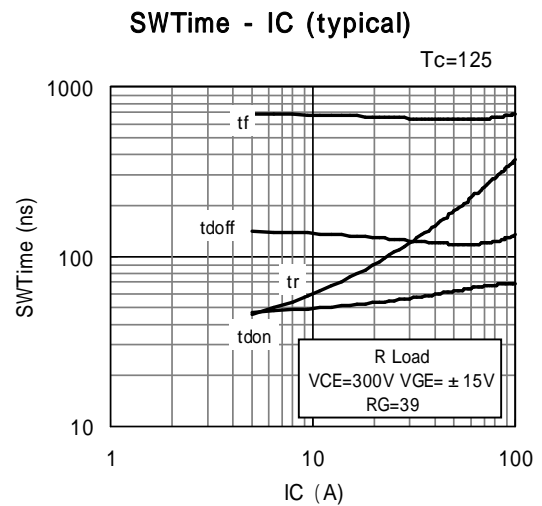
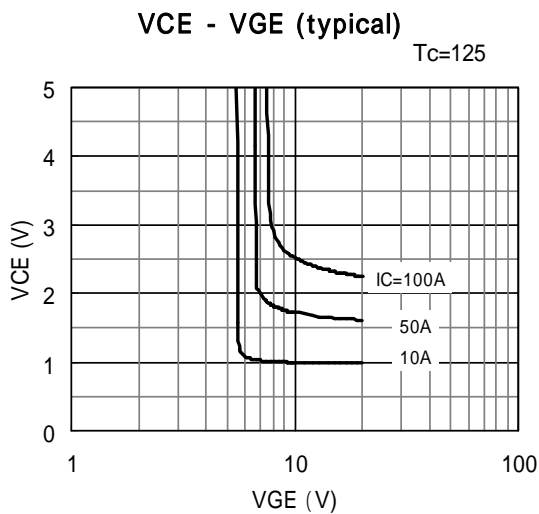
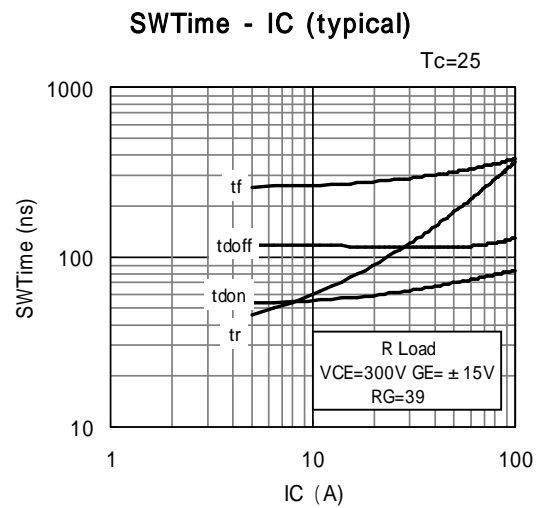
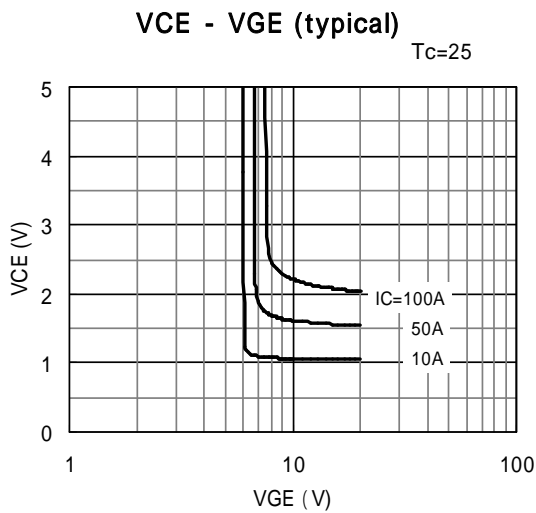
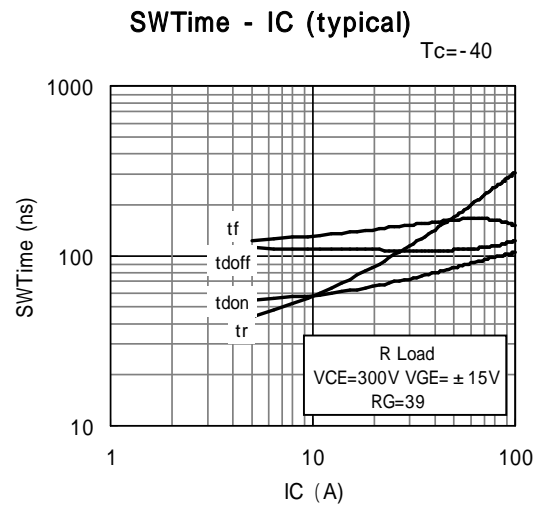
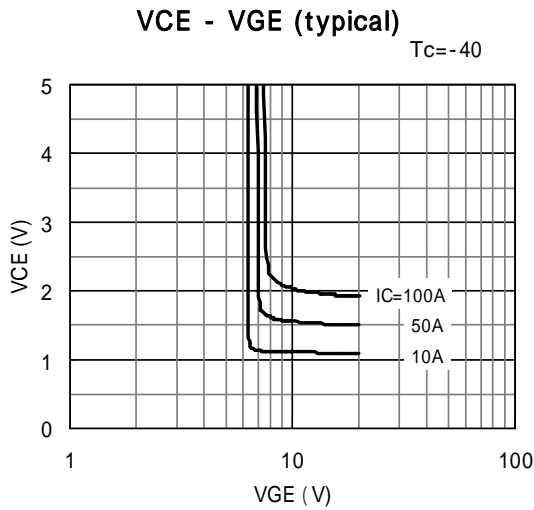


**VCE, VGE - Qg (typical)**



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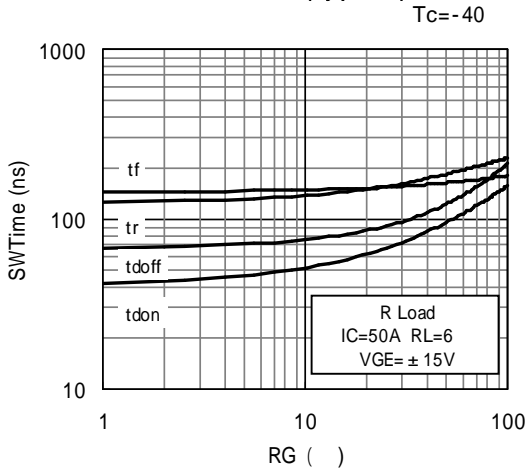
**Electrical characteristics**



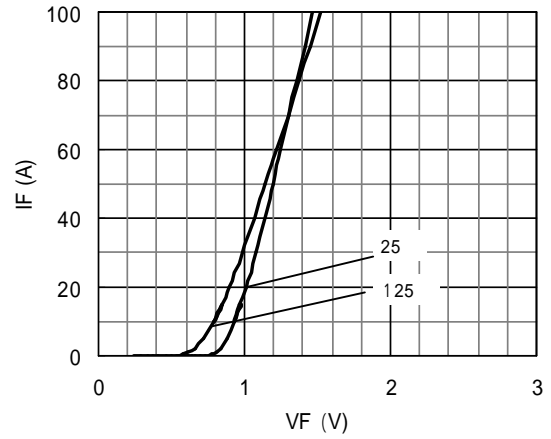
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**Electrical characteristics**

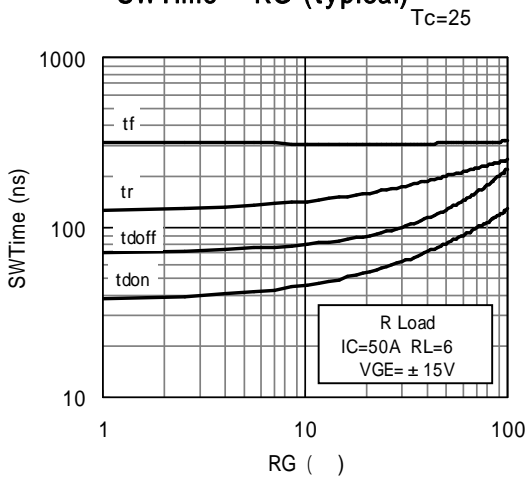
**SWTime - RG (typical)**



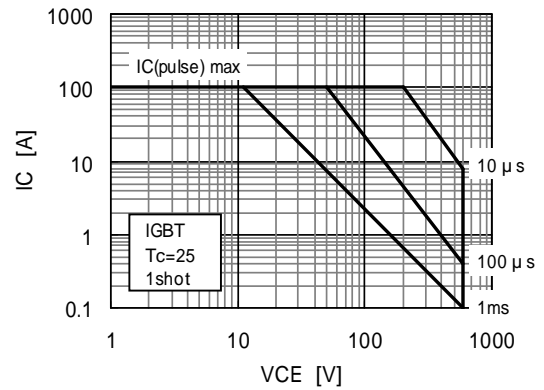
**IF - VF (typical)**



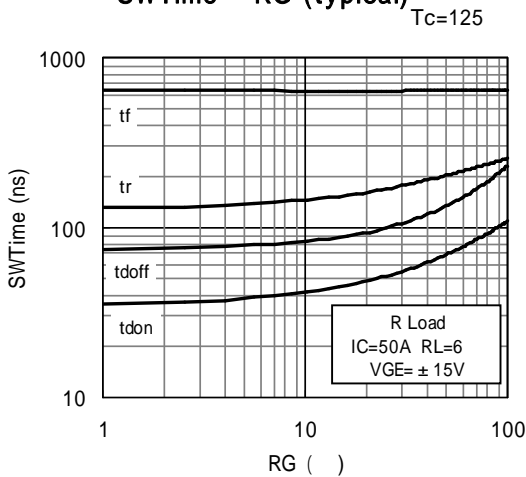
**SWTime - RG (typical)**



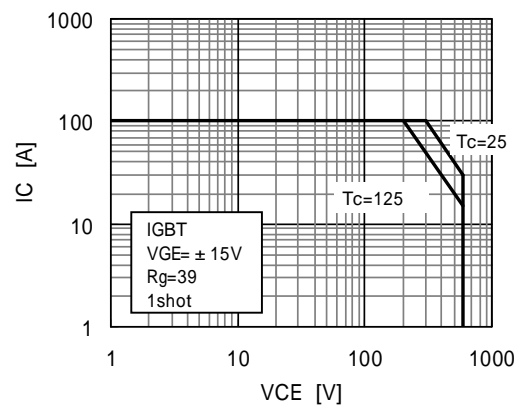
**SAFE OPERATING AREA**



**SWTime - RG (typical)**



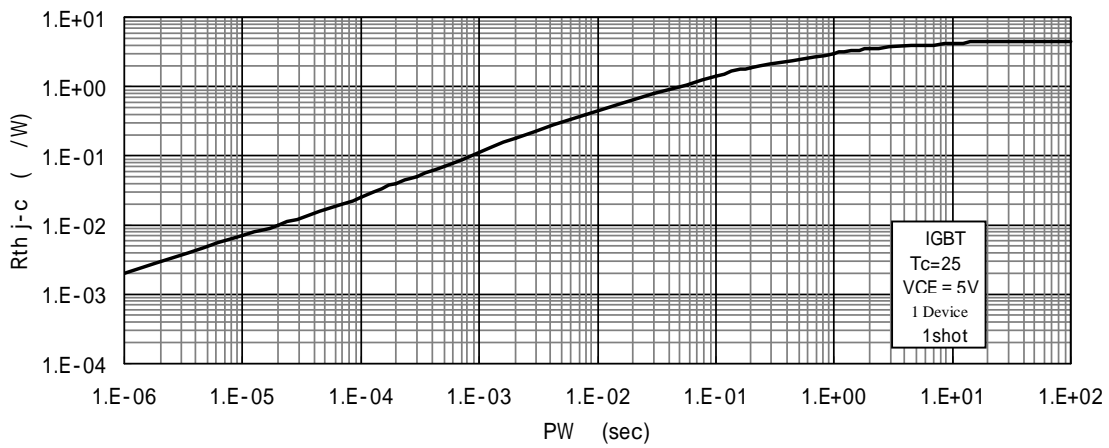
**Reverse Bias ASO**



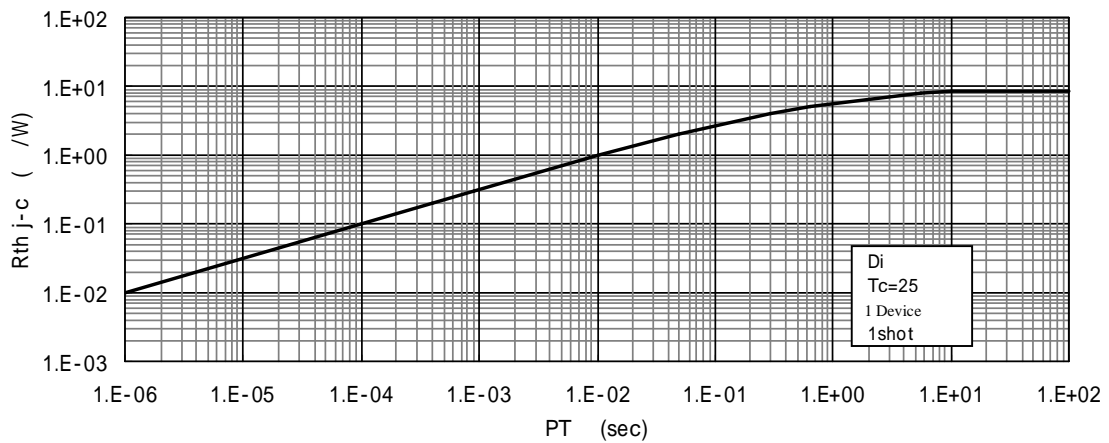
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**Electrical characteristics**

**TRANSIENT THERMAL RESISTANCE - PULSE WIDTH IGBT**

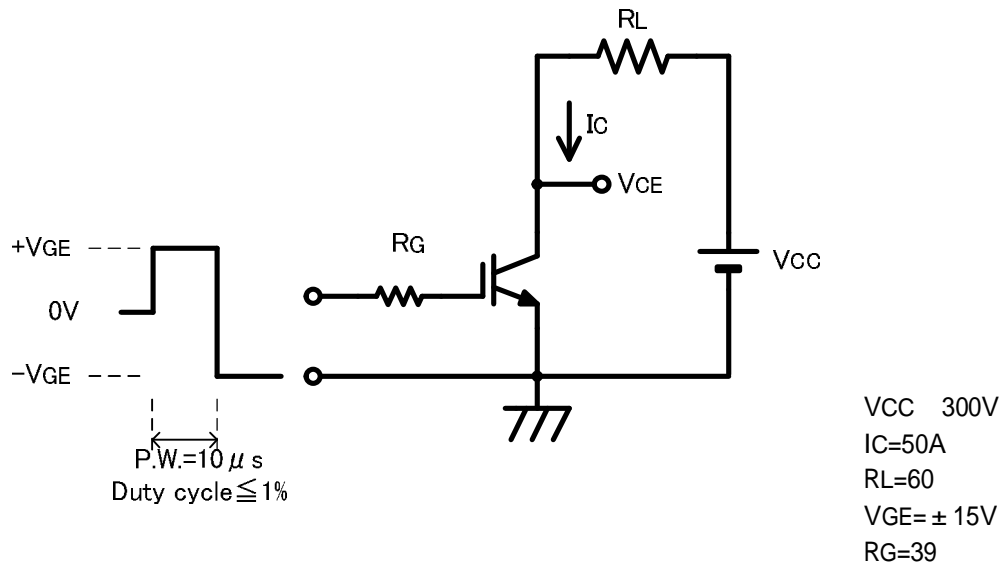


**TRANSIENT THERMAL RESISTANCE - PULSE WIDTH Di**

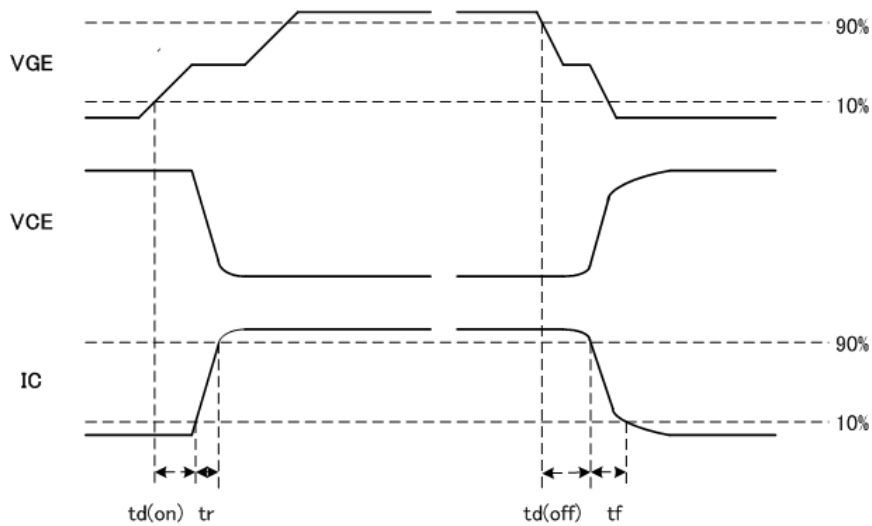


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Fig.1 Switching Time Test Method



(a) Test Circuit



(b) Waveforms

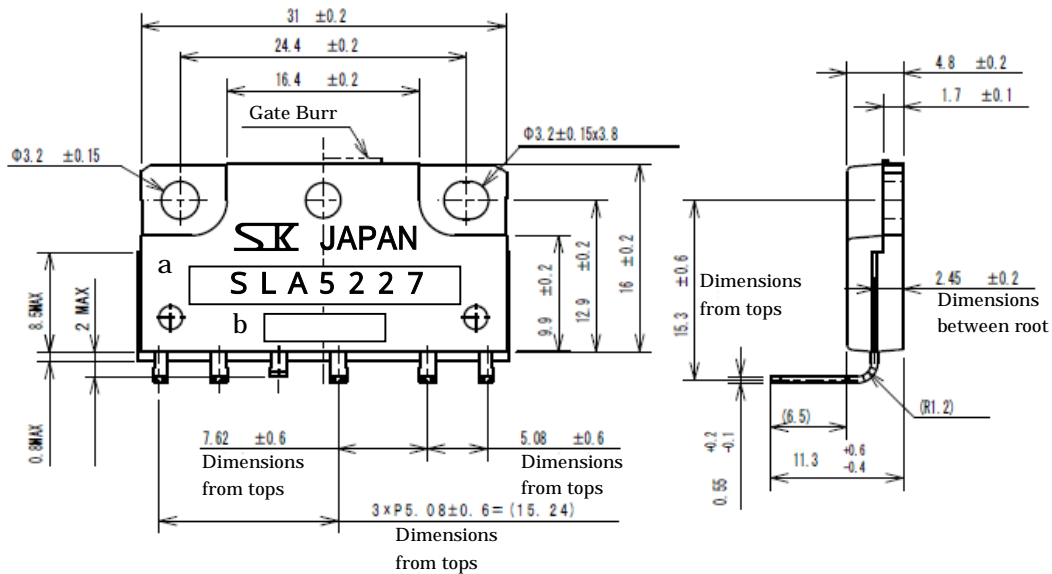
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**Outline**

SLA (LF No. 822)

Dimensions  
between root

Dimensions  
from tops



a : Type No.  
b : Lot No.

Weight Approx. 6g

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