



# THE DATASHEET OF SLA5227



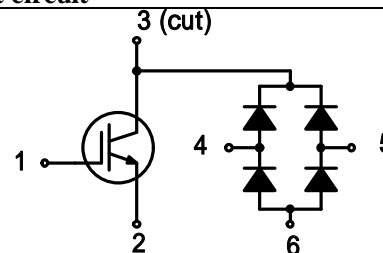
### Features

- 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

( $T_a=25^\circ\text{C}$ )

Characteristic	Symbol	Ratings	Unit
Collector to Emitter Voltage	$V_{CES}$	600	V
Gate to Emitter Voltage	$V_{GE}$	$\pm 30$	V
Continuous Collector Current	$I_C(DC)$	30	A
Pulsed Collector Current	$I_C$ (pulse) <sup>1</sup>	100	A
Diode Peak Reverse Voltage	$V_{RM}$	600	V
Diode Forward Current	$I_F$	25	A
Diode Peak Surge Forward Current	$I_{FSM}$ <sup>2</sup>	200	A
Diode $I^2t$ Limiting Value	$I^2t$ <sup>3</sup>	200	$A^2s$
Maximum Allowable Power Dissipation	$P_T$ <sup>4</sup>	5 (No.Fin $T_a=25^\circ\text{C}$ )	W
		92 ( $T_c=25^\circ\text{C}$ )	
Thermal Resistance	$\theta_{j-a}$ <sup>4</sup>	25 (Junction-to-Ambient)	$^\circ\text{C}/\text{W}$
	$\theta_{j-c}$ <sup>4</sup>	1.36 (Junction-to-Case)	$^\circ\text{C}/\text{W}$
	$\theta_{j-c}$ IGBT	3.91 (Junction-to-Case,IGBT 1 Element Operation)	$^\circ\text{C}/\text{W}$
	$\theta_{j-c}$ Di	8.33 (Junction-to-Case,Di 1 Element Operation)	$^\circ\text{C}/\text{W}$
Isolation Voltage	$V_{ISO}$	1500 (Between Fin and Lead Pin, 1minute AC)	Vrms
Operating Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ 150	$^\circ\text{C}$

1.  $P_W$  10 $\mu\text{s}$ , Duty 1%
3. 1ms  $P_W$  10ms

2.  $P_W$  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

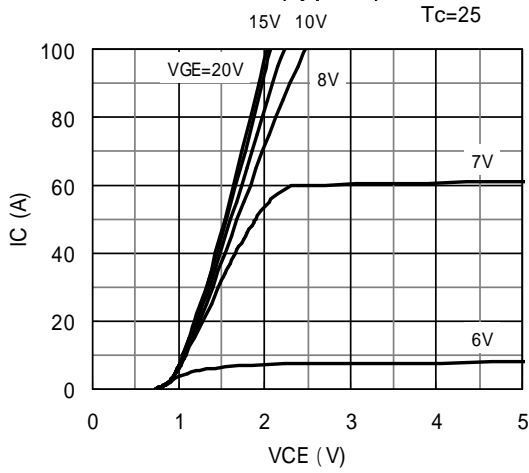
(Ta=25°C)

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

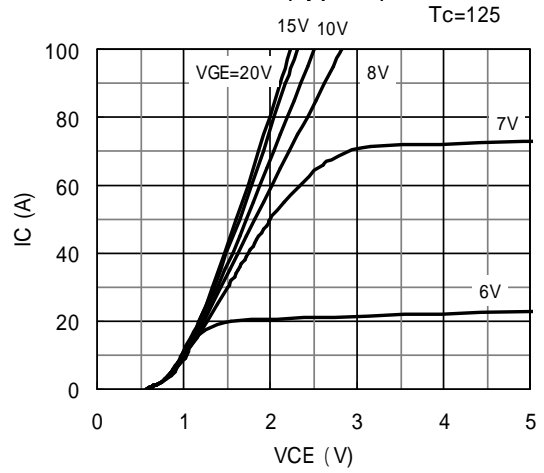
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**Electrical characteristics**

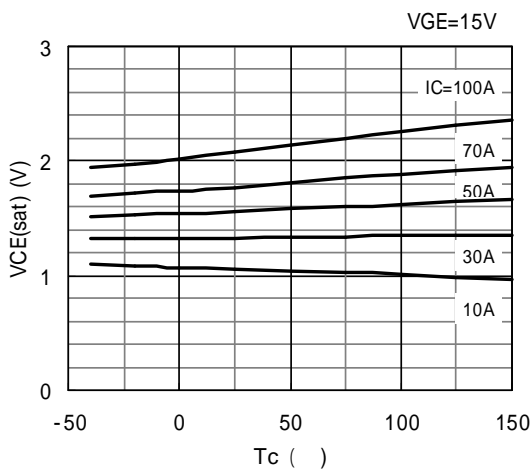
**IC - VCE (typical)**



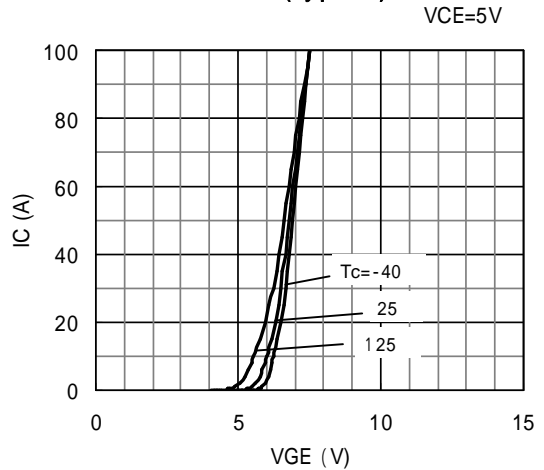
**IC - VCE (typical)**



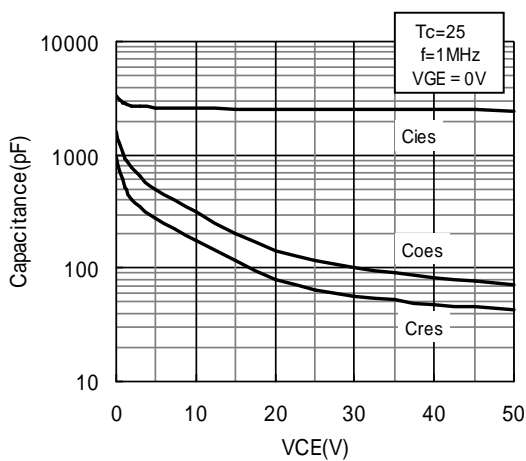
**VCE(sat) - Tc (typical)**



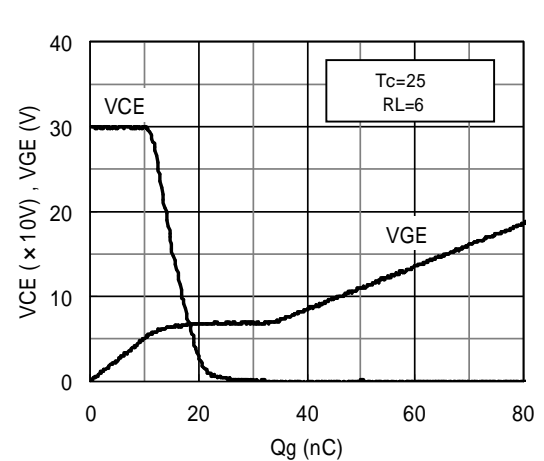
**IC - VGE (typical)**



**Capa - VCE (typical)**

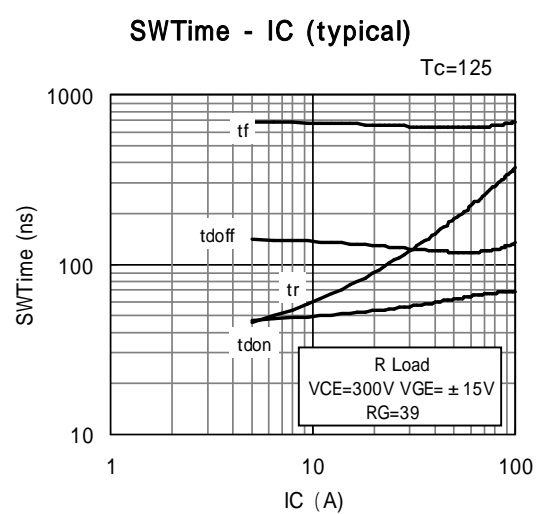
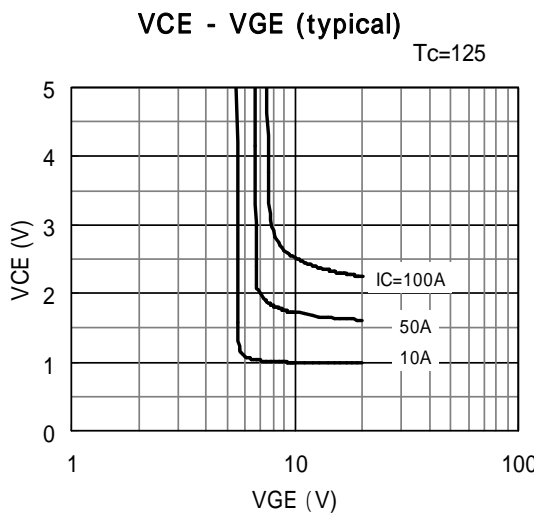
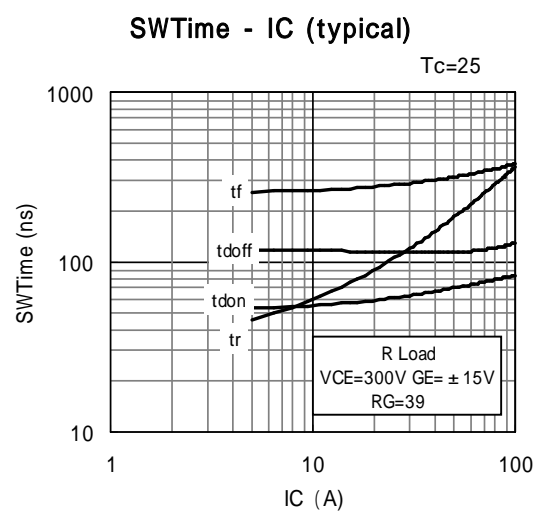
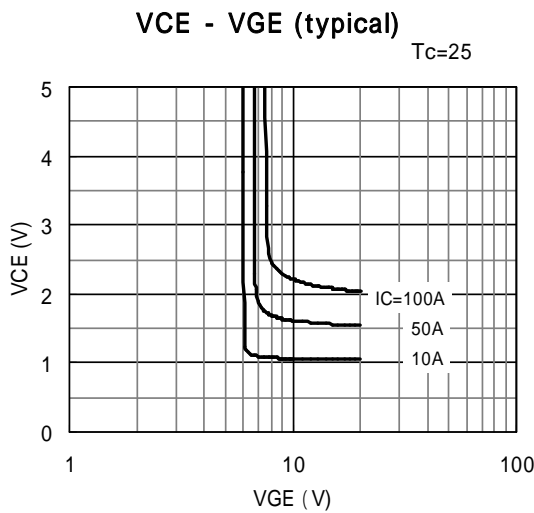
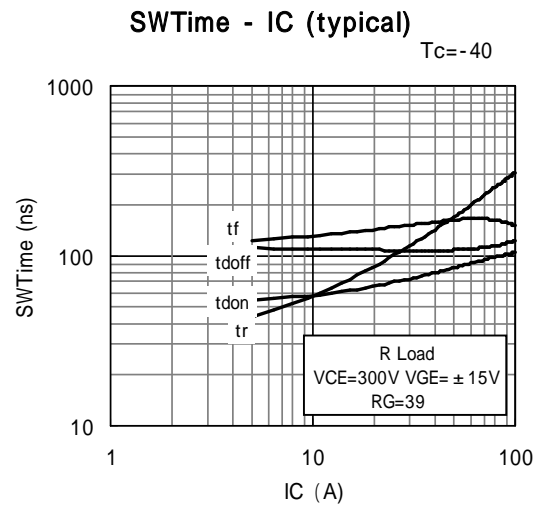
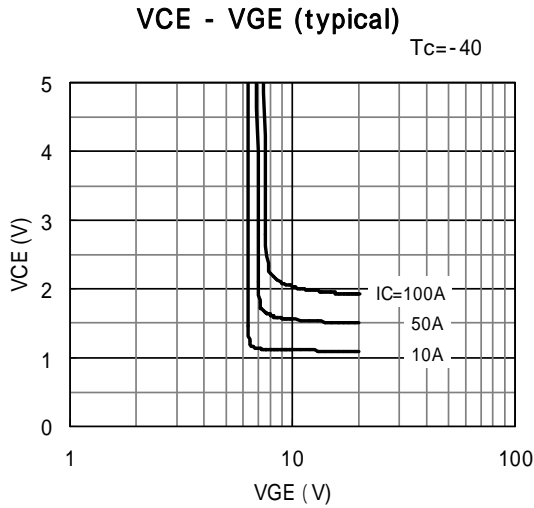


**VCE, VGE - Qg (typical)**



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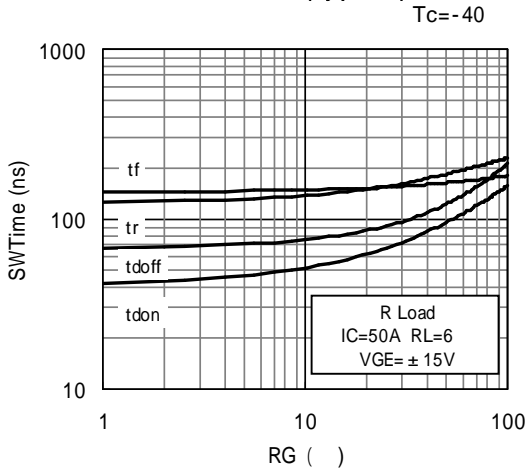
**Electrical characteristics**



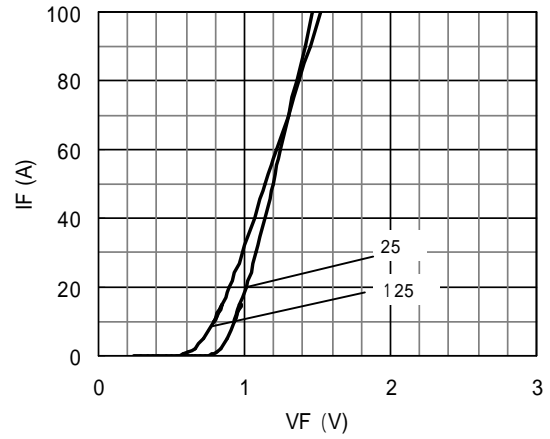
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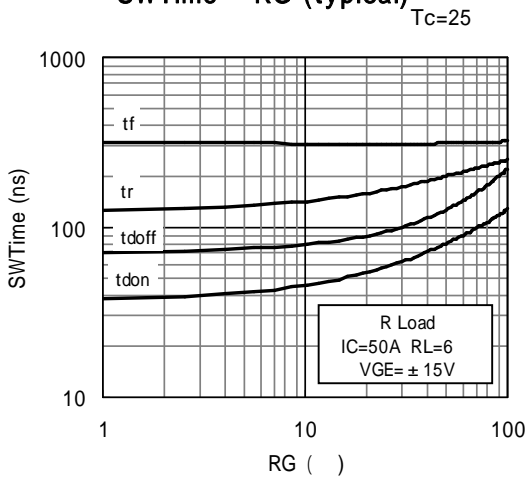
**SWTime - RG (typical)**



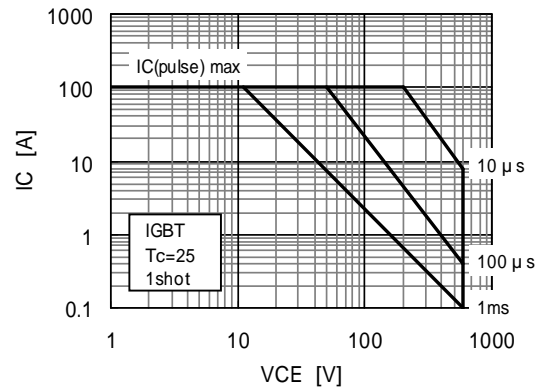
**IF - VF (typical)**



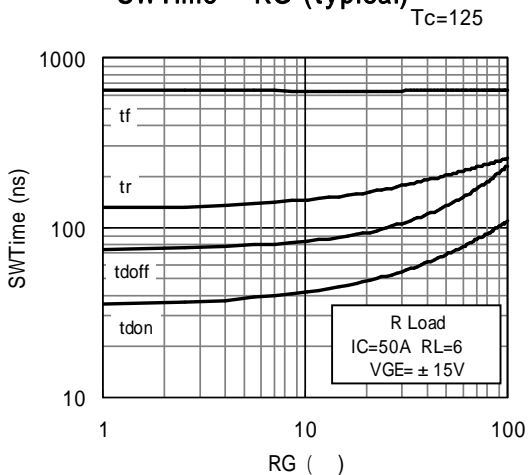
**SWTime - RG (typical)**



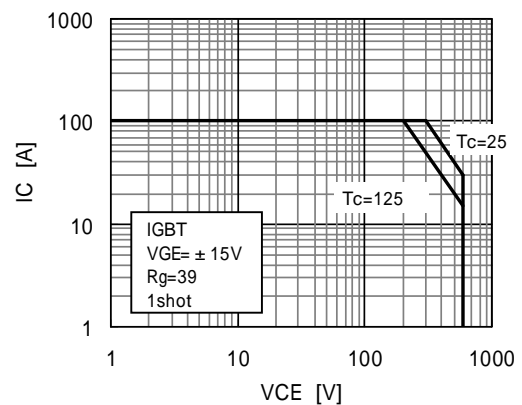
**SAFE OPERATING AREA**



**SWTime - RG (typical)**



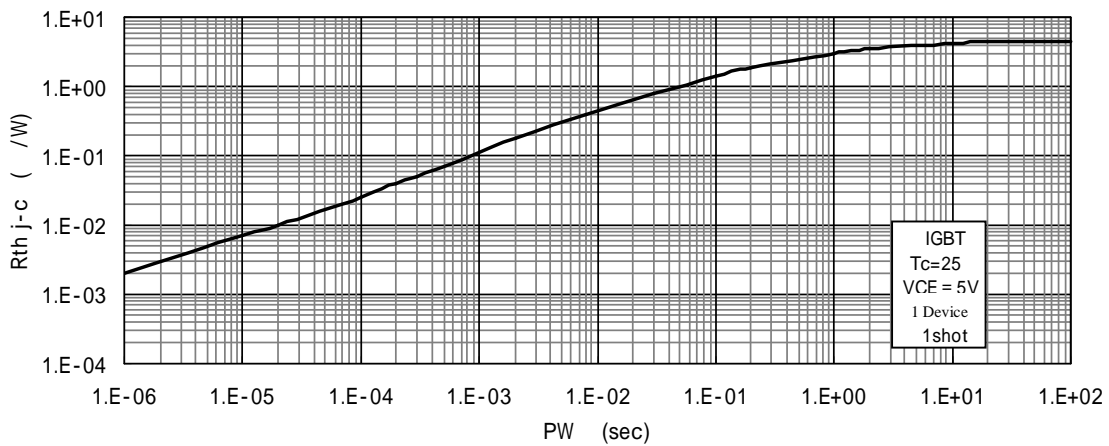
**Reverse Bias ASO**



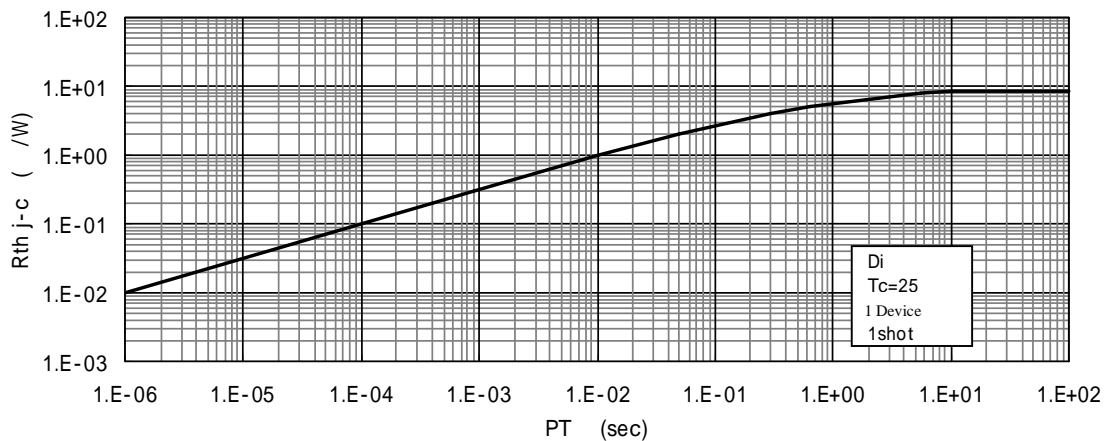
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**Electrical characteristics**

**TRANSIENT THERMAL RESISTANCE - PULSE WIDTH IGBT**

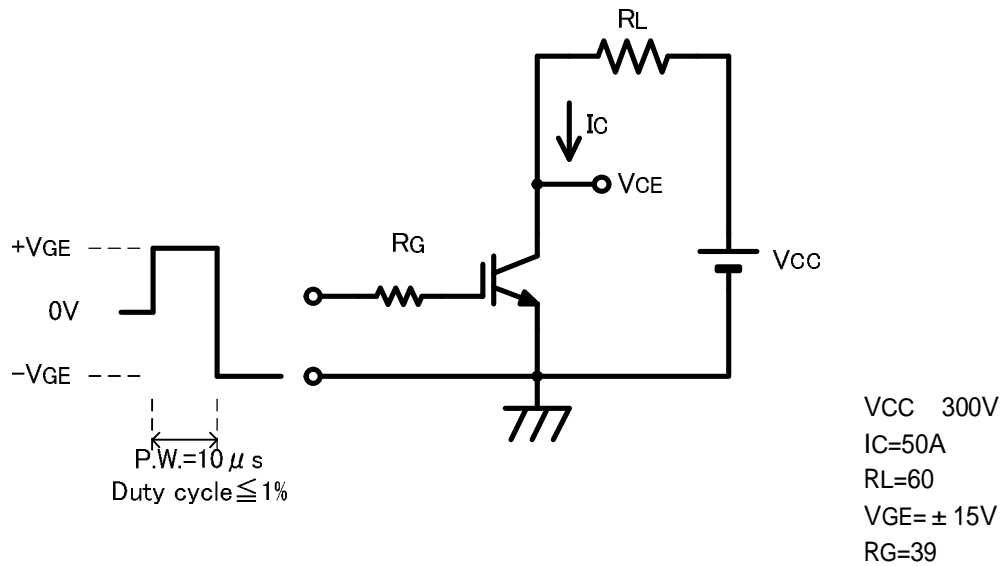


**TRANSIENT THERMAL RESISTANCE - PULSE WIDTH Di**

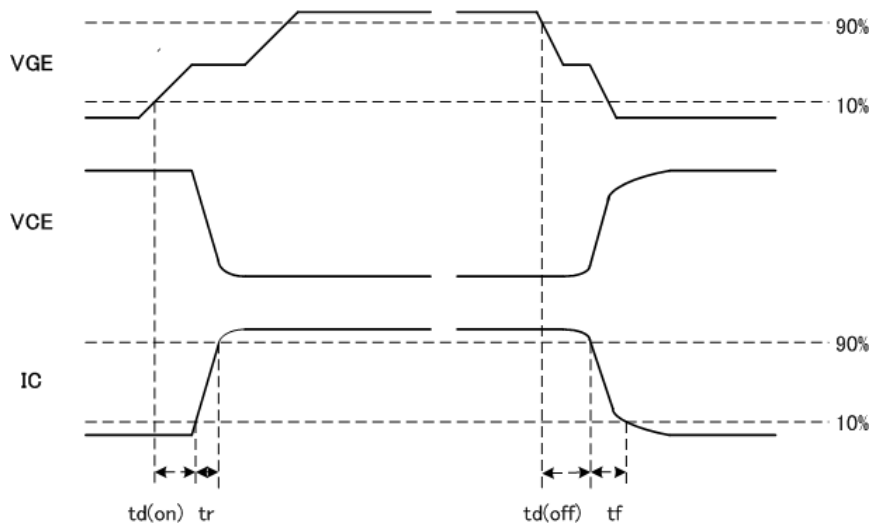


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Fig.1 Switching Time Test Method



(a) Test Circuit



(b) Waveforms

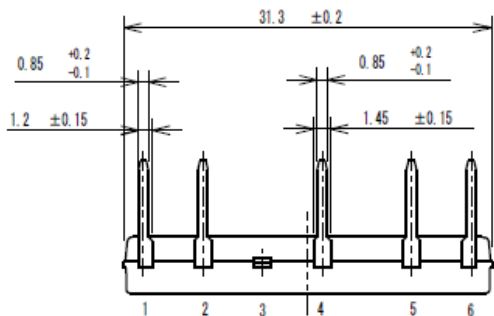
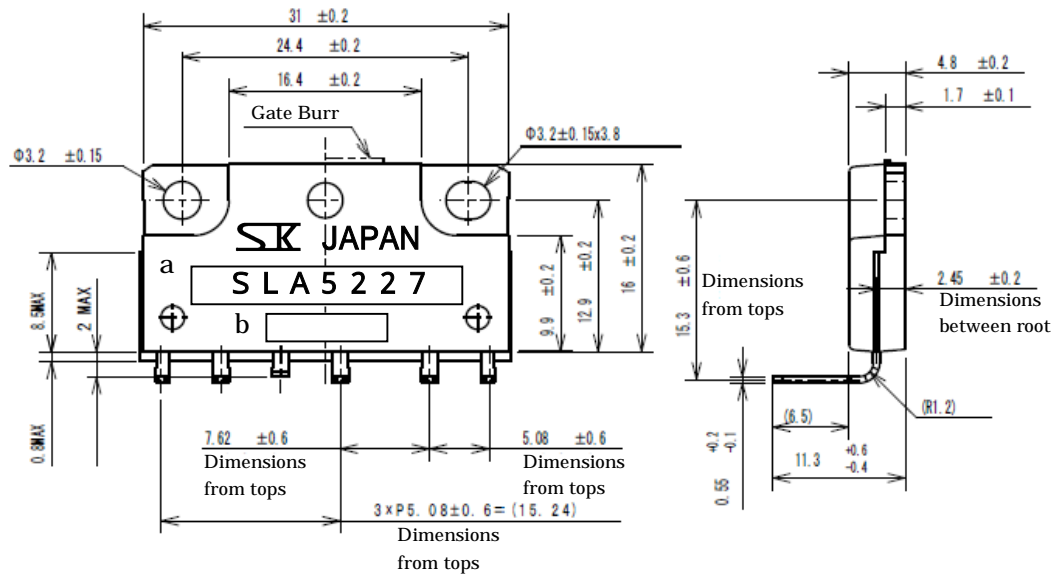
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**Outline**

SLA (LF No. 822)

Dimensions  
between root

Dimensions  
from tops





a : Type No.  
b : Lot No.

Weight Approx. 6g







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