2SC4602



# **Switching Regulator Applications**

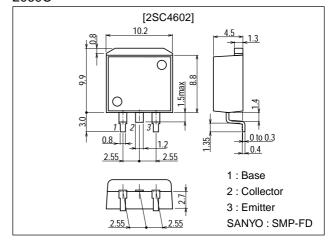
#### **Features**

- · Surface mount type device making the following possible.
- -Reduction in the number of manufacturing processes for 2SC4602-applied equipment.
- -High density surface mount applications.
- -Small size of 2SC4602-applied equipment.
- · High breakdown voltage, high reliability.
- · Fast switching speed.
- · Wide ASO.
- · Adoption of MBIT process.

### **Package Dimensions**

unit:mm

2069C



## **Specifications**

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		1100	V
Collector-to-Emitter Voltage	VCEO		800	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		7	V
Collector Current	l <sub>C</sub>		3	Α
Collector Current (Pulse)	I <sub>CP</sub>	PW≤300μs, duty cycle≤10%	10	Α
Base Current	I <sub>B</sub>		1.5	Α
Collector Dissipation	PC		1.65	W
		Tc=25°C	50	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions		Ratings		
	Symbol		min	typ	max	Unit
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =800V, I <sub>E</sub> =0			10	μΑ
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			10	μΑ
DC Current Gain	h <sub>FE</sub> 1	V <sub>CE</sub> =5V, I <sub>C</sub> =0.2A	10*		40*	
	h <sub>FE</sub> 2	V <sub>CE</sub> =5V, I <sub>C</sub> =1A	8			

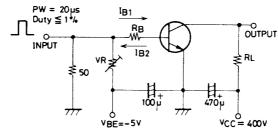
<sup>\*:</sup> For the h<sub>FE</sub>1 of the 2SC4602, specify two ranks or more in principle.

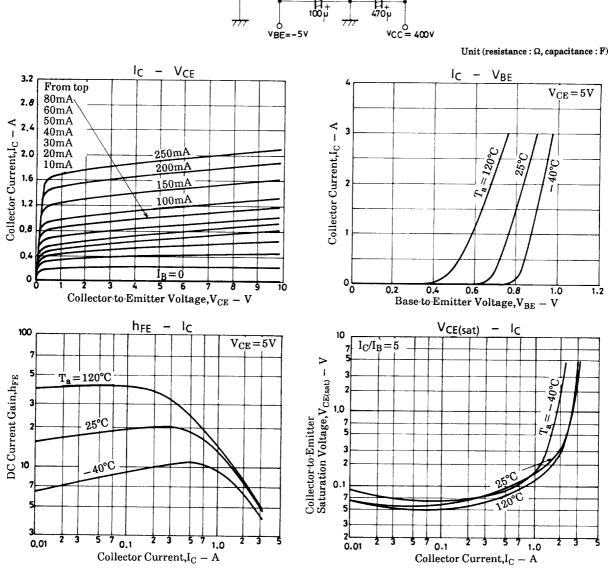
10 K 20 15 L 30 20 M 40

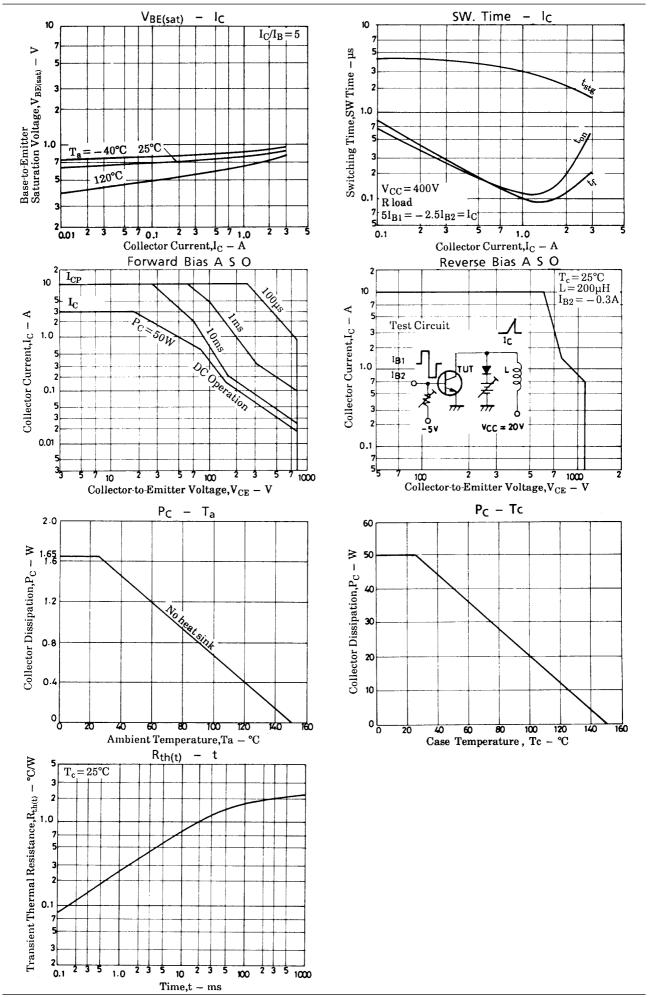
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =0.2A		15		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		60		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =1.5A, I <sub>B</sub> =0.3A			2.0	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =1.5A, I <sub>B</sub> =0.3A			1.5	V
Collector-to-Base Breakdown Voltage	V(BR)CBO	I <sub>C</sub> =1mA, I <sub>E</sub> =0	1100			V
Collector-to-Emitter Breakdown Voltage	V(BR)CEO	I <sub>C</sub> =5mA, R <sub>BE</sub> =∞	800			V
Emitter-to-Base Breakdown Voltage	V(BR)EBO	I <sub>E</sub> =1mA, I <sub>C</sub> =0	7			V
Collector-to-Emitter Sustain Voltage	V <sub>CEO(sus)</sub>	I <sub>C</sub> =1.5A, I <sub>B1</sub> =-I <sub>B2</sub> =0.3A, L=2mH, clamped	800			V
Turn-ON Time	ton	$I_{C}$ =2A, $I_{B1}$ =0.4A, $I_{B2}$ =-0.8A, $R_{L}$ =200 $\Omega$ , $V_{CC}$ =400 $V$			0.5	μs
Storage Time	t <sub>stg</sub>	I <sub>C</sub> =2A, I <sub>B1</sub> =0.4A, I <sub>B2</sub> =-0.8A, R <sub>L</sub> =200Ω, V <sub>CC</sub> =400V			3.0	μs
Fall Time	t <sub>f</sub>	I <sub>C</sub> =2A, I <sub>B1</sub> =0.4A, I <sub>B2</sub> =-0.8A, R <sub>L</sub> =200Ω, V <sub>CC</sub> =400V			0.3	μs

### **Switching Time Test Circuit**







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