2SC3993



# 800V/16A Switching Regulator Applications

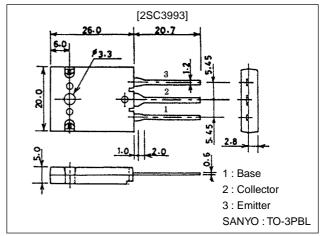
### **Features**

- · High breakdown voltage, high reliability.
- · Fast switching speed.
- · Wide ASO.
- · Adoption of MBIT process.

## **Package Dimensions**

unit:mm

2048B



# **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>		16	Α
Collector Current (Pulse)	I <sub>CP</sub>	PW≤300μs, Duty cycle≤10%	40	Α
Base Current	I <sub>B</sub>		8	Α
Collector Dissipation	PC	Tc=25°C	250	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

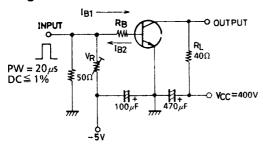
#### Electrical Characteristics at Ta = 25°C

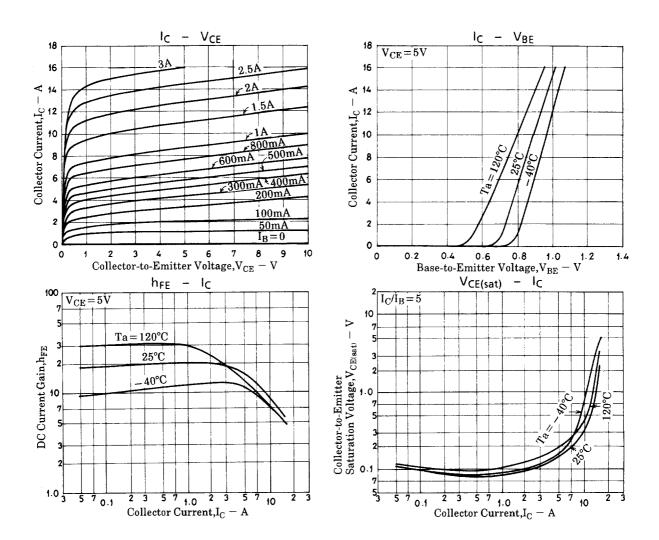
Parameter	Symbol	Conditions	Ratings			Unit
	Symbol		min	typ	max	Office
Collector Cutoff Current	ICBO	V <sub>CB</sub> =800V, I <sub>E</sub> =0			10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			10	μA
DC Current Gain	h <sub>FE</sub> 1	V <sub>CE</sub> =5V, I <sub>C</sub> =1.2A	10*		40*	
	h <sub>FE</sub> 2	V <sub>CE</sub> =5V, I <sub>C</sub> =6A	8			
Gain-Bandwidth Product	fT	V <sub>CE</sub> =10V, I <sub>C</sub> =1.2A		15		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		320		pF

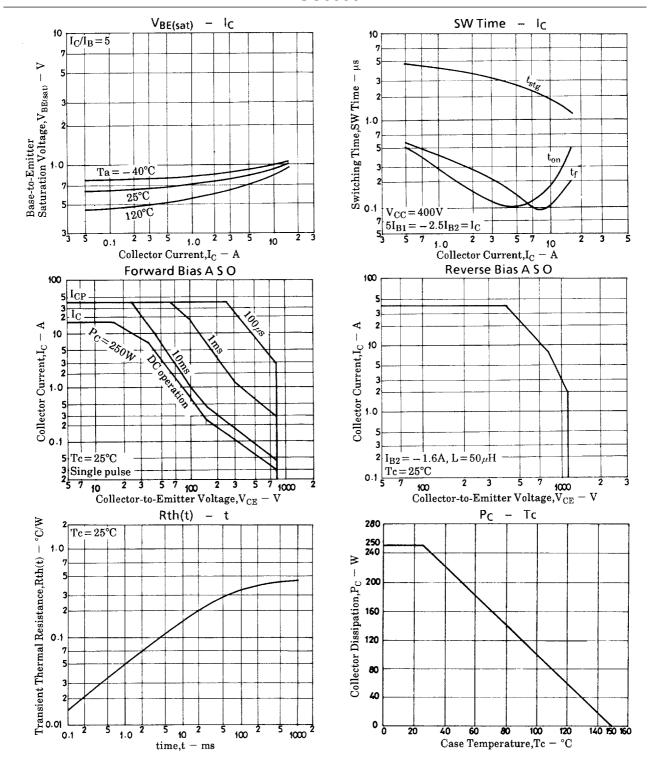
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =6A, I <sub>B</sub> =1.2A			2.0	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =6A, I <sub>B</sub> =1.2A			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> =10mA, 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>CEX(sus)</sub>	I <sub>C</sub> =8A, I <sub>B1</sub> =-I <sub>B2</sub> =-1.6A, L=500μH, clamped	800			V
Turn-ON Time	ton	V <sub>CC</sub> =400V, 5l <sub>B1</sub> =-2.5l <sub>B2</sub> =l <sub>C</sub> =10A, R <sub>L</sub> =40Ω			0.5	μs
Storage Time	t <sub>stg</sub>	$V_{CC}$ =400V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =10A, $R_{L}$ =40 $\Omega$			3.0	μs
Fall Time	t <sub>f</sub>	$V_{CC}$ =400V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =10A, $R_{L}$ =40 $\Omega$			0.3	μs

### **Switching Time Test Circuit**







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