2SC3991



500V/50A Switching Regulator Applications

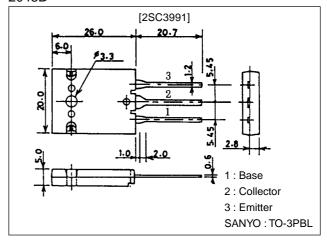
Features

- · High breakdown voltage, high reliability.
- · Fast switching speed (t_f =0.1 μ s typ).
- · Wide ASO.
- $\cdot \ Adoption \ of \ MBIT \ process.$

Package Dimensions

unit:mm

2048B



Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		800	V
Collector-to-Emitter Voltage	V _{CEO}		500	V
Emitter-to-Base Voltage	V _{EBO}		7	V
Collector Current	I _C		50	А
Collector Current (Pulse)	I _{CP}	PW≤300μs, duty cycle≤10%	70	Α
Base Current	I _B		14	Α
Collector Dissipation	PC		3.5	W
		Tc=25°C	300	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oilit
Collector Cutoff Current	I _{CBO}	V _{CB} =500V, I _E =0			10	μΑ
Emitter Cutoff Current	I _{EBO}	V _{EB} =5V, I _C =0			10	μΑ
DC Current Gain	h _{FE} 1*	V _{CE} =5V, I _C =4.8A	15		50	
	h _{FE} 2	V _{CE} =5V, I _C =24A	8			
Gain-Bandwidth Product	fΤ	V _{CE} =10V, I _C =4.8A		18		MHz
Output Capacitance	C _{ob}	V _{CB} =10V, f=1MHz		560		pF

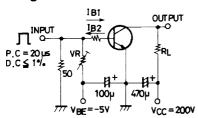
*: The h_{FE}1 of the 2SC3991 is classified as follows. When specifying the h_{FE}1 rank, specify two ranks or more in principle.

15 L 30 20 M 40 30 N 50

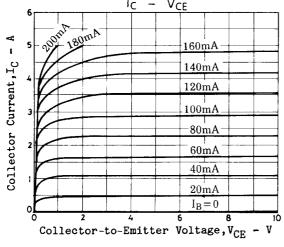
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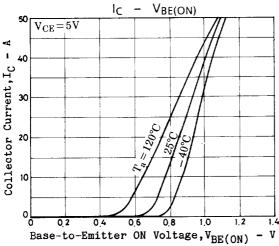
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =24A, I _B =4.8A			1.0	V
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =24A, I _B =4.8A			1.5	V
Collector-to-Base Breakdown Voltage	V _(BR) CBO	I _C =1mA, I _E =0	800			V
Collector-to-Emitter Breakdown Voltage	V _(BR) CEO	I _C =10mA, R _{BE} =∞	500			V
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}	I _E =1mA, I _C =0	7			V
Collector-to-Emitter Sustain Voltage	V _{CEX(sus)}	I _C =15A, I _{B1} =-I _{B2} =-2A, L=100μH, clamped	500			V
Turn-ON Time	t _{on}	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =26A, R_{L} =7. 7Ω			0.5	μs
Storage Time	t _{stg}	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =26A, R_{L} =7. 7Ω			3.0	μs
Fall Time	t _f	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =26A, R_{L} =7. 7Ω			0.3	μs

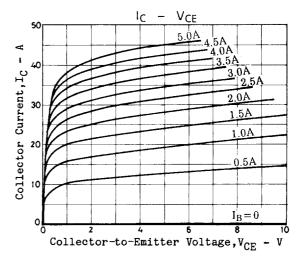
Switching Time Test Circuit

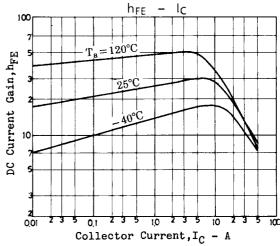


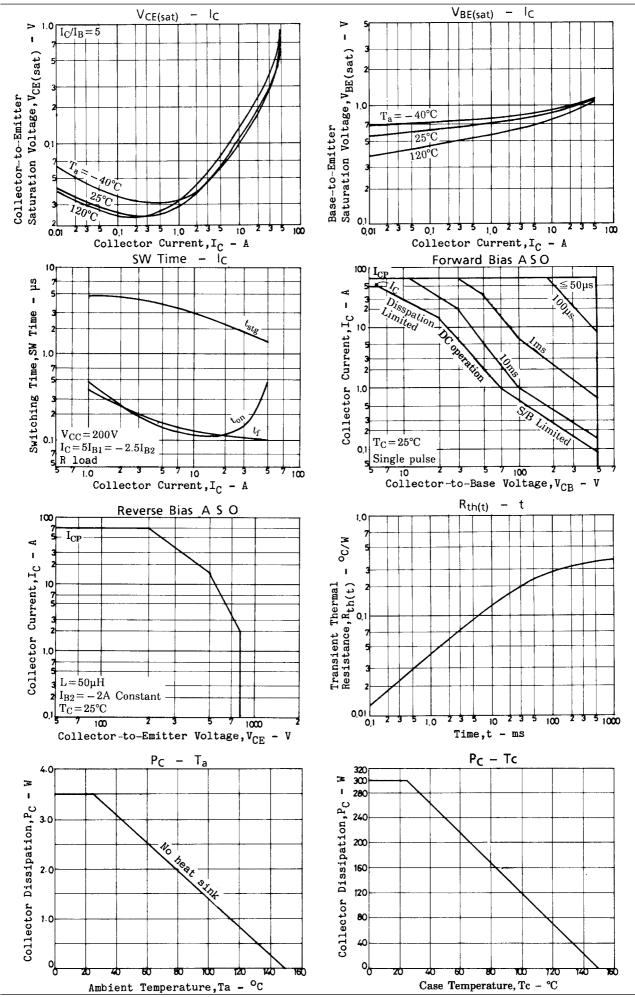
Unit (resistance : Ω , capacitance : F)











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