



500V/35A Switching Regulator Applications

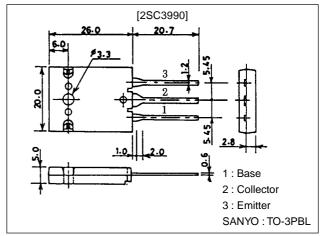
Features

- · 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 _{CBO}		800	V
Collector-to-Emitter Voltage	VCEO		500	V
Emitter-to-Base Voltage	V _{EBO}		7	V
Collector Current	IC		35	Α
Collector Current (Pulse)	I _{CP}	PW≤300μs, duty cycle≤10%	50	Α
Base Current	Ι _Β		12	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

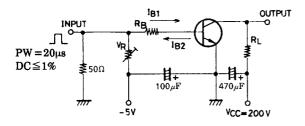
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Collector Cutoff Current	ICBO	V _{CB} =500V, I _E =0			10	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =5V, I _C =0			10	μA
DC Current Gain	h _{FE} 1	V _{CE} =5V, I _C =3.2A	15*		50*	
	h _{FE} 2	V _{CE} =5V, I _C =16A	8			
Gain-Bandwidth Product	fT	V _{CE} =10V, I _C =3.2A		18		MHz
Output Capacitance	C _{ob}	V _{CB} =10V, f=1MHz		400		pF

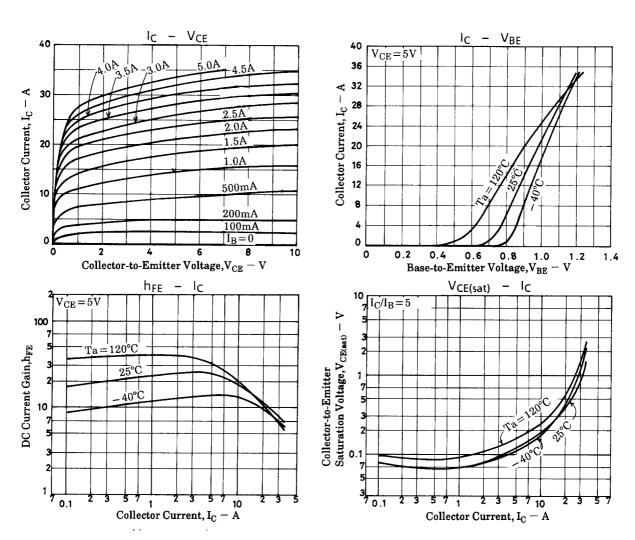
^{* :} The 2SC3990 is classified by 3.2A h_{FE} as follows : 15 L 30 20 M 40 30 N 50

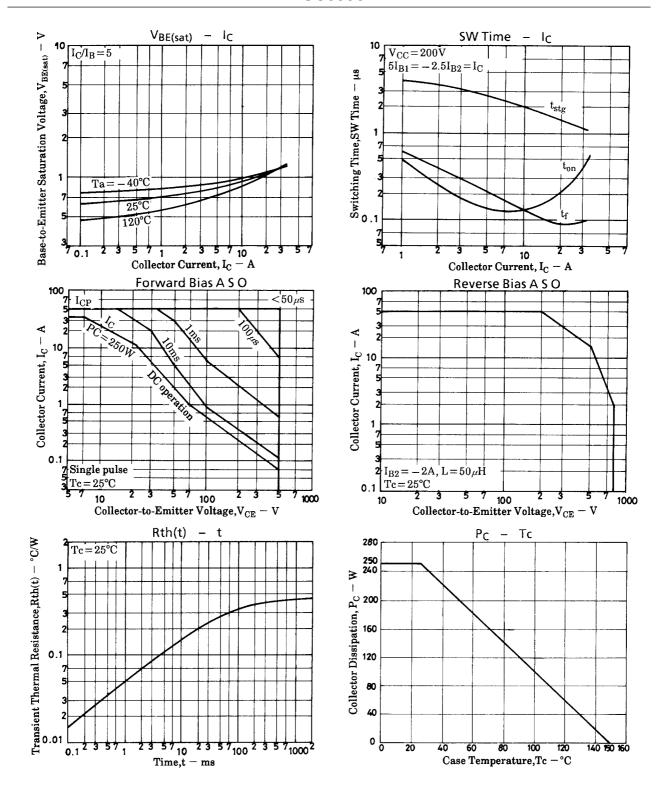
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Offic
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =16A, I _B =3.2A			1.0	V
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =16A, I _B =3.2A			1.5	V
Collector-to-Base Breakdown 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=200μH, clamped	500			V
Turn-ON Time	ton	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =18A, R_{L} =11. 1Ω			0.5	μs
Storage Time	t _{stg}	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =18A, R_{L} =11. 1Ω			3.0	μs
Fall Time	t _f	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =18A, R_{L} =11. 1Ω			0.3	μs

Switching Time Test Circuit







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