



500V/25A Switching Regulator Applications

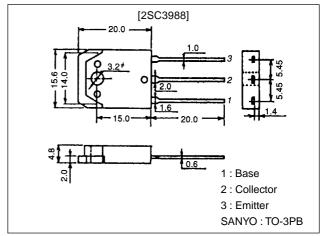
Features

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

Package Dimensions

unit:mm

2022A



Specifications

Absolute Maximum Ratings at Ta = 25°C

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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	lC		25	Α
Collector Current (Pulse)	I _{CP}	Pulse PW≤300μs, duty cycle≤10%	40	Α
Base Current	I _B		8	Α
Collector Dissipation	PC	Tc=25°C	150	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

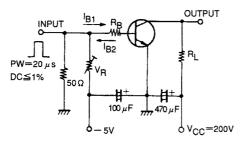
Parameter	Symbol	Conditions		Ratings			
			min	typ	max	Unit	
Collector Cutoff Current	I _{CBO}	V _{CB} =500V, I _E =0			10	μΑ	
Emitter Cutoff Current	I _{EBO}	V _{EB} =5V, I _C =0			10	μA	
DC Current Gain	h _{FE} 1	V _{CE} =5V, I _C =2.4A	15*		50*		
	h _{FE} 2	V _{CE} =5V, I _C =12A	8				
Gain-Bandwidth Product	f _T	V _{CE} =10V, I _C =2.4A		18		MHz	
Output Capacitance	C _{ob}	V _{CB} =10V, f=1MHz		260		pF	

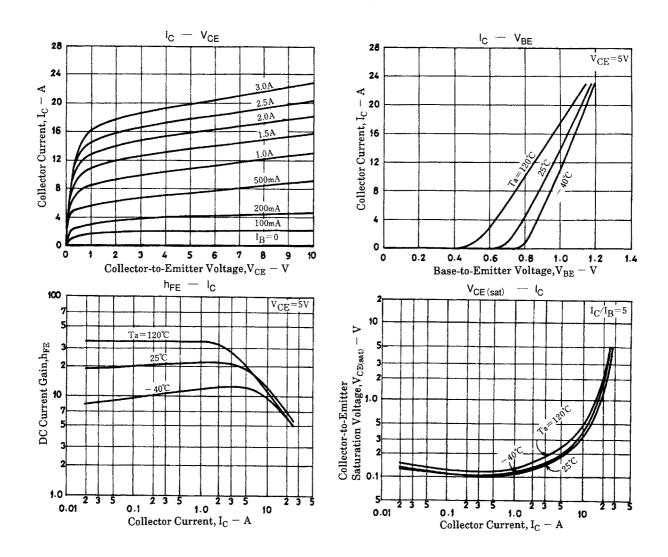
^{* :} The 2SC3988 is classified by 2.4A h_{FE} as follows : 15 L 30 20 M 40 30 N 50

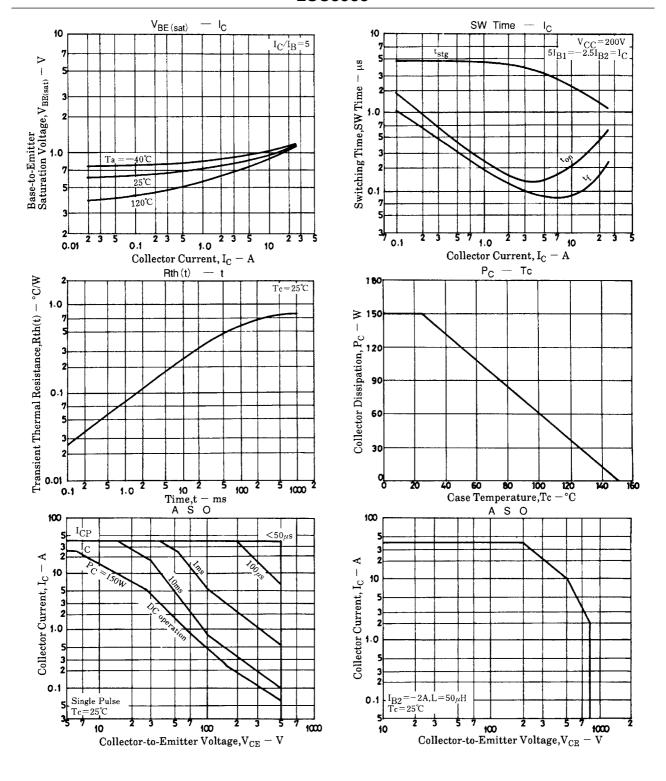
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	l Oille
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =12A, I _B =2.4A			1.0	V
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =12A, I _B =2.4A			1.5	V
Collector-to-Base Breakdown Voltage	V(BR)CBO	I _C =1mA, I _E =0	800			V
Collector-to-Emitter Breakdown Voltage	V(BR)CEO	I _C =5mA, 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 =10A, I _{B1} =-I _{B2} =-2A, L=200μH, clamped	500			V
Turn-ON Time	ton	V _{CC} =200V, 5l _{B1} =-2.5l _{B2} =l _C =14A, R _L =14.3Ω			0.5	μs
Storage Time	t _{stg}	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =14A, R_{L} =14. 3Ω			3.0	μs
Fall Time	t _f	V_{CC} =200V, $5I_{B1}$ =-2. $5I_{B2}$ = I_{C} =14A, R_{L} =14. 3Ω			0.3	μs

Switching Time Test Circuit







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