

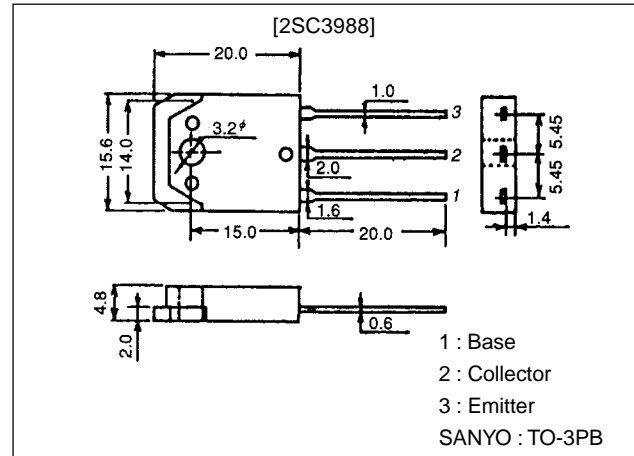
**2SC3988****500V/25A Switching Regulator Applications****Features**

- 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**

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		25	A
Collector Current (Pulse)	I_{CP}	Pulse PW \leq 300 μ s, duty cycle \leq 10%	40	A
Base Current	I_B		8	A
Collector Dissipation	P_C	Tc=25°C	150	W
Junction Temperature	T_J		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=500V, I_E=0$			10	μ A
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5V, I_C=0$			10	μ A
DC Current Gain	h_{FE1}	$V_{CE}=5V, I_C=2.4A$	15*		50*	
	h_{FE2}	$V_{CE}=5V, I_C=12A$	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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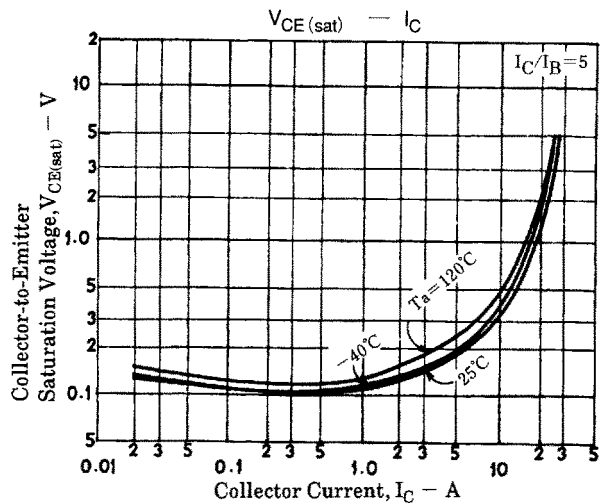
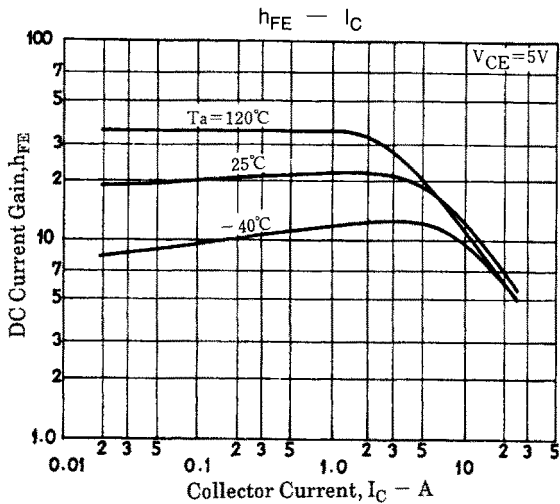
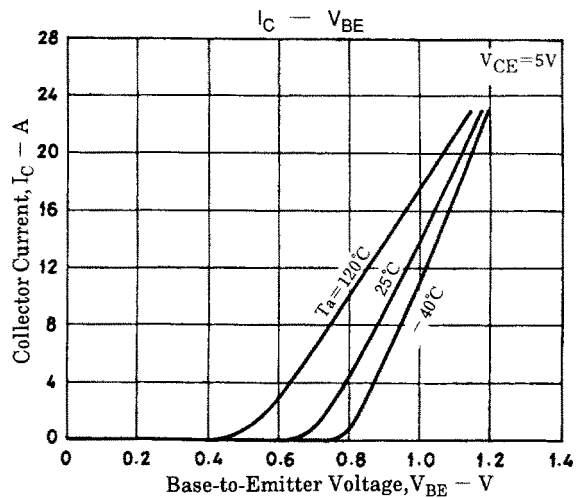
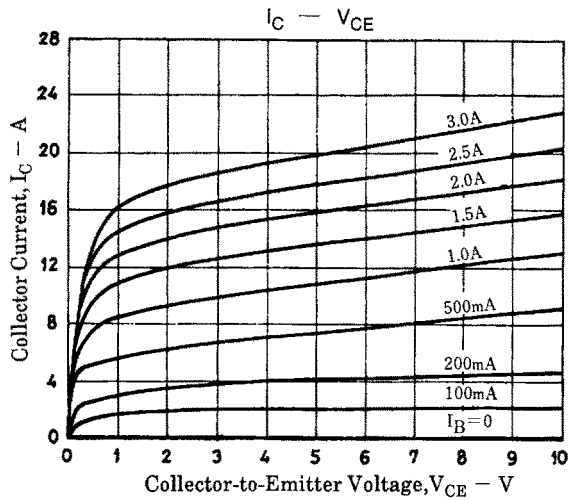
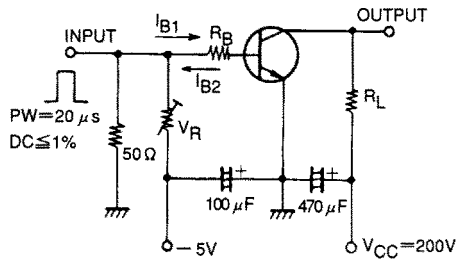
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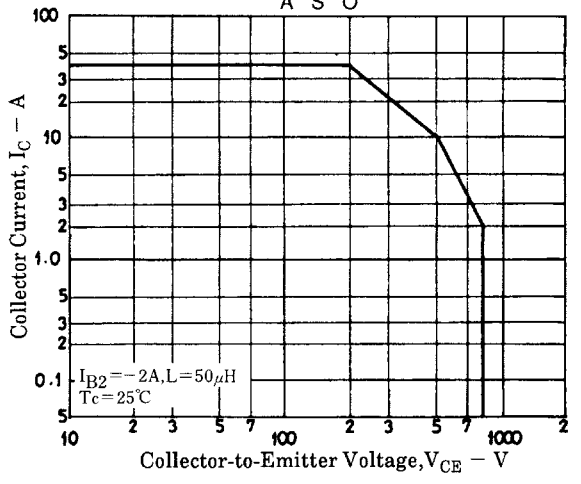
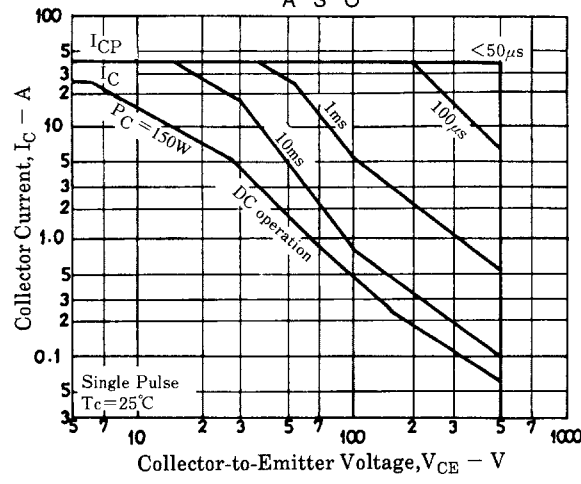
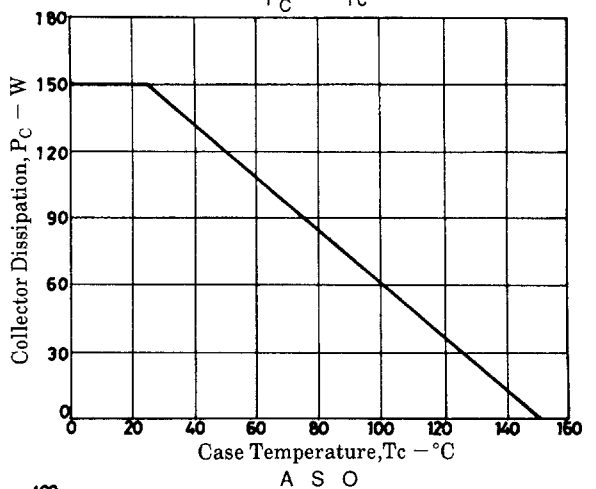
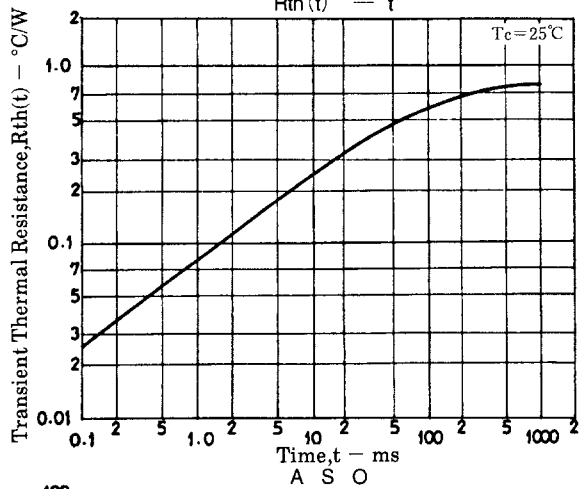
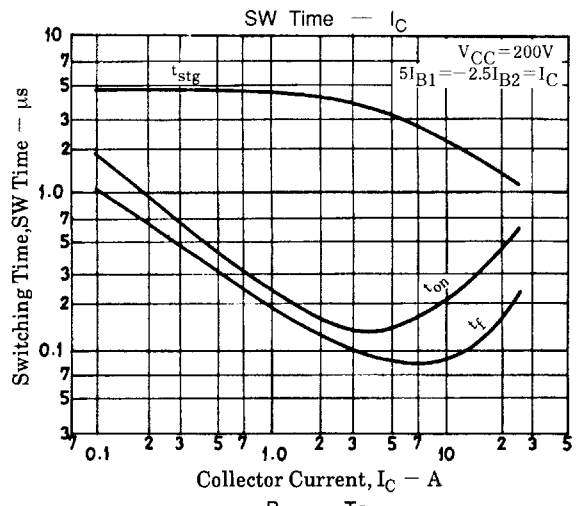
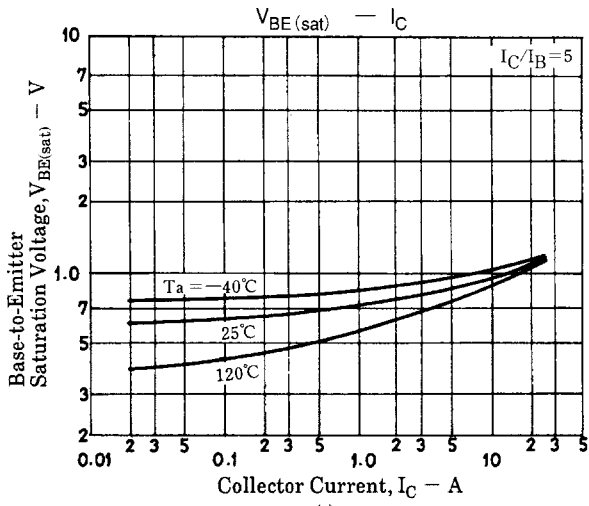
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=12A, I_B=2.4A$			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=12A, I_B=2.4A$			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	800			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	500			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)}$	$I_C=10A, I_{B1}=-I_{B2}=-2A, L=200\mu H, \text{clamped}$	500			V
Turn-ON Time	t_{on}	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=14A, R_L=14.3\Omega$			0.5	μs
Storage Time	t_{stg}	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=14A, R_L=14.3\Omega$			3.0	μs
Fall Time	t_f	$V_{CC}=200V, 5I_{B1}=-2.5I_{B2}=I_C=14A, R_L=14.3\Omega$			0.3	μs

Switching Time Test Circuit



2SC3988



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