

<b>SANYO</b>	No.2828	2SC3994
	NPN Triple Diffused Planar Silicon Transistor Switching Regulator Applications	

**Features**

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

**Absolute Maximum Ratings at  $T_a = 25^\circ C$**

Parameter	Symbol	Condition	Value	unit
Collector-to-Base Voltage	$V_{CB0}$		1100	V
Collector-to-Emitter Voltage	$V_{CEO}$		800	V
Emitter-to-Base Voltage	$V_{EBO}$		7	V
Collector Current	$I_C$		25	A
Peak Collector Current	$i_{cp}$	$PW \leq 300\mu s, \text{duty cycle} \leq 10\%$	60	A
Base Current	$I_B$		12	A
Collector Dissipation	$P_C$	$T_C = 25^\circ C$	300	W
Junction Temperature	$T_j$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

**Electrical Characteristics at  $T_a = 25^\circ C$**

Parameter	Symbol	Condition	min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 800V, I_E = 0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$			10	$\mu A$
DC Current Gain	$h_{FE(1)*}$	$V_{CE} = 5V, I_C = 1.6A$	10		40	
		$V_{CE} = 5V, I_C = 8A$	8			
Gain-Bandwidth Product	$f_T$	$V_{CE} = 10V, I_C = 1.6A$		15		MHz
Output Capacitance	$c_{ob}$	$V_{CB} = 10V, f = 1MHz$		470		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = 12A, I_B = 2.4A$			2.0	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = 12A, I_B = 2.4A$			1.5	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1mA, I_E = 0$	1100			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10mA, R_{BE} = \infty$	800			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1mA, I_C = 0$	7			V

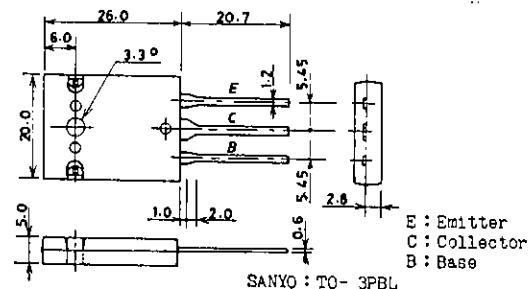
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\*: The  $h_{FE(1)}$  of the 2SC3994 is classified as follows. When specifying the  $h_{FE(1)}$  rank, specify two ranks or more in principle.

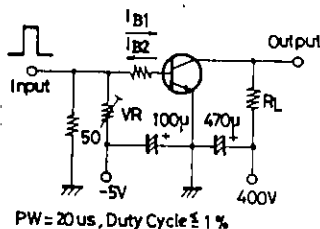
10	K	20	15	L	30	20	M	40
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**Package Dimensions 2048**

(unit : mm)



**Switching Time Test Circuit**

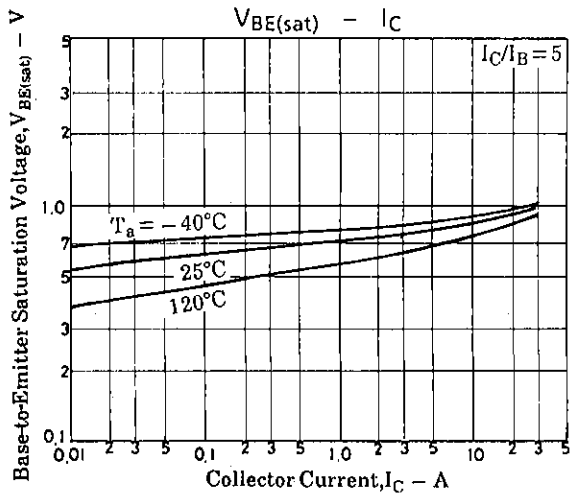
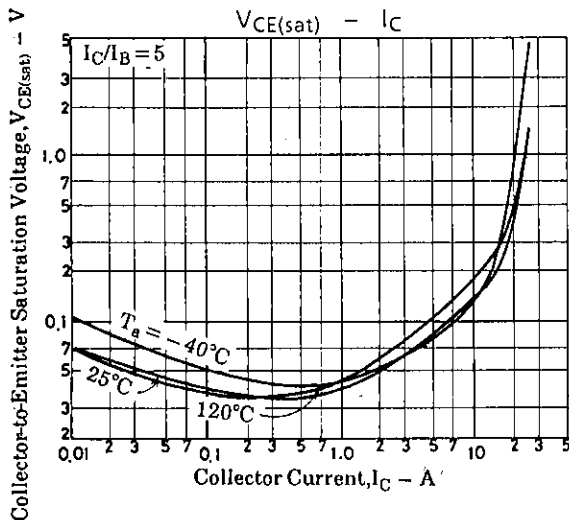
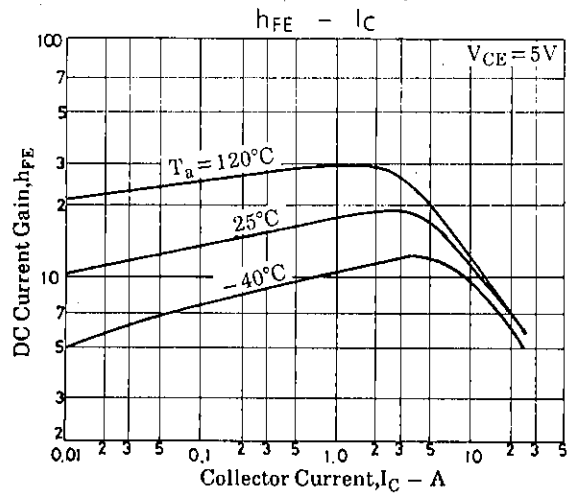
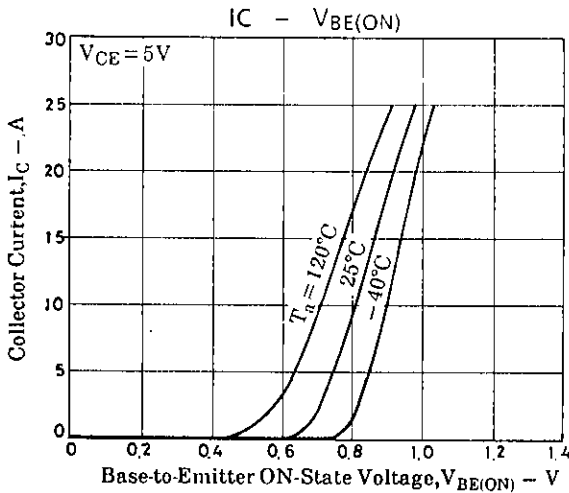
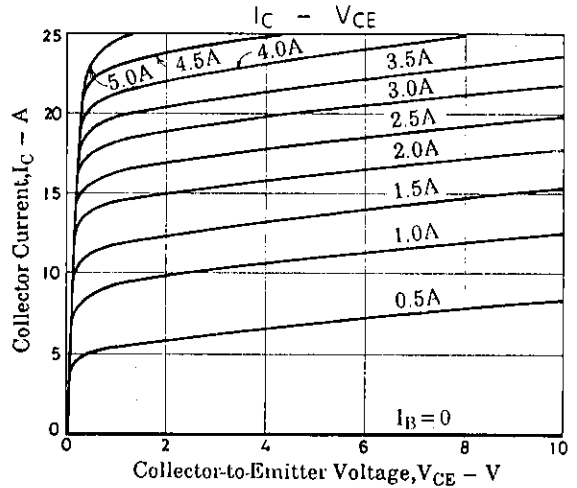
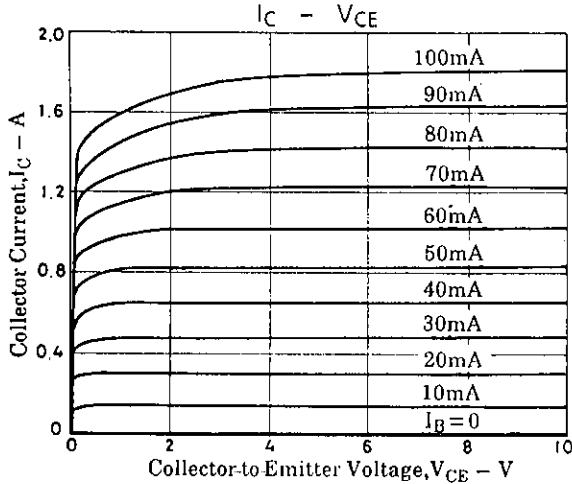


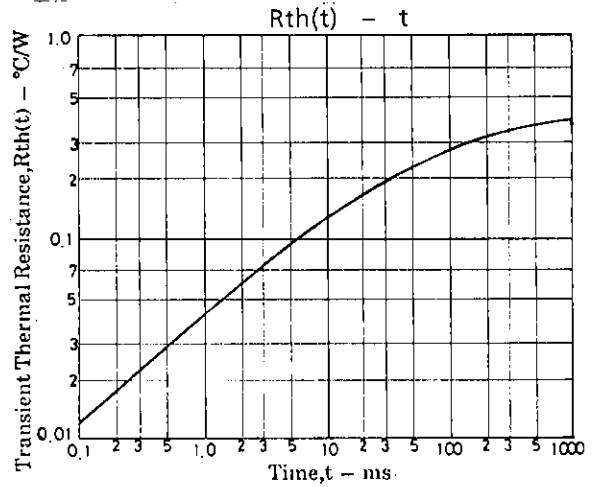
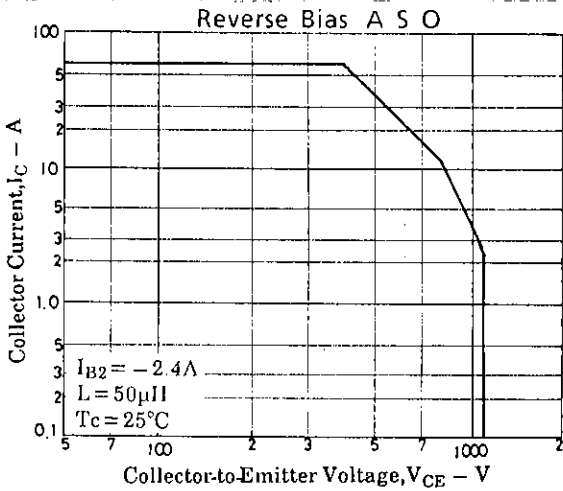
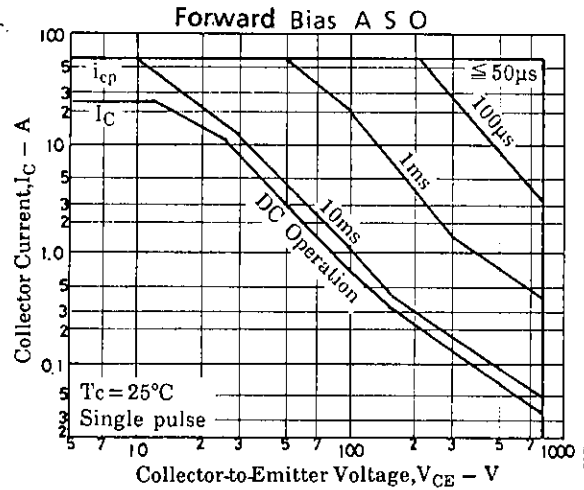
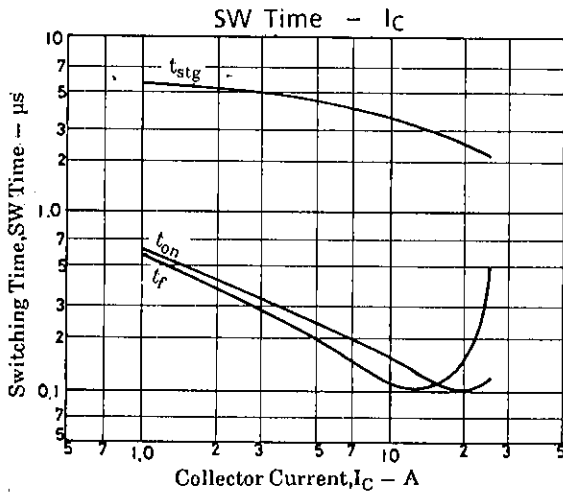
Unit (Resistance :  $\Omega$ , Capacitance : F)

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		min	typ	max	unit
C-E Sustain Voltage	$V_{CEX(sus)}$	800			V
Turn-ON Time	$t_{on}$			0.5	$\mu s$
Storage Time	$t_{stg}$			3.0	$\mu s$
Fall Time	$t_f$			0.3	$\mu s$

$I_C = 12A$   
 $I_{B1} = -I_{B2} = 2.4A$   
 $L = 50\mu H, \text{clamped}$   
 $V_{CC} = 400V$   
 $5I_{B1} = -2.5I_{B2} = I_C = 20A$   
 $R_L = 20\Omega$





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