

SANYO	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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			10	μA
DC Current Gain	$h_{FE(1)*}$	$V_{CE} = 5V, I_C = 1.6A$	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

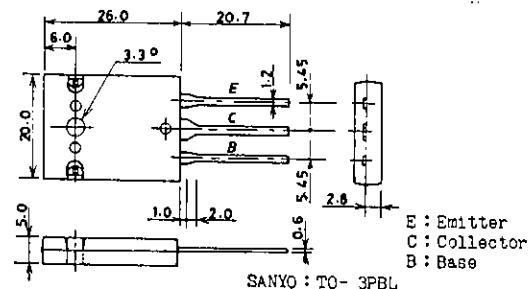
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*: The $h_{FE(1)}$ of the 2SC3994 is classified as follows. When specifying the $h_{FE(1)}$ rank, specify two ranks or more in principle.

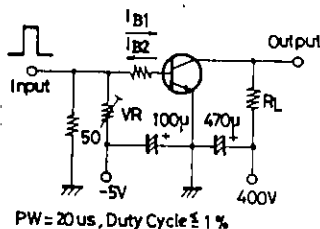
10	K	20	15	L	30	20	M	40
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Package Dimensions 2048

(unit : mm)



Switching Time Test Circuit

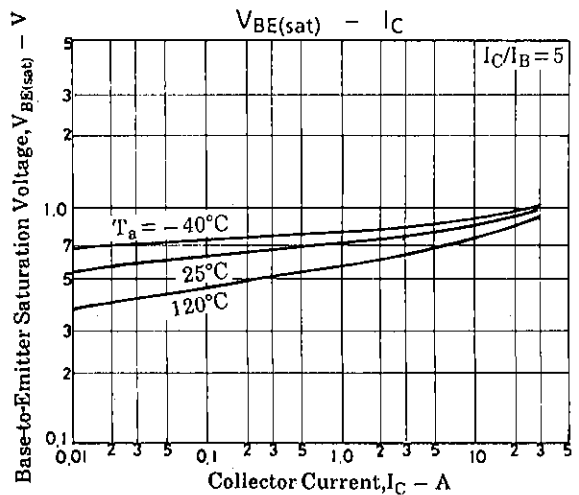
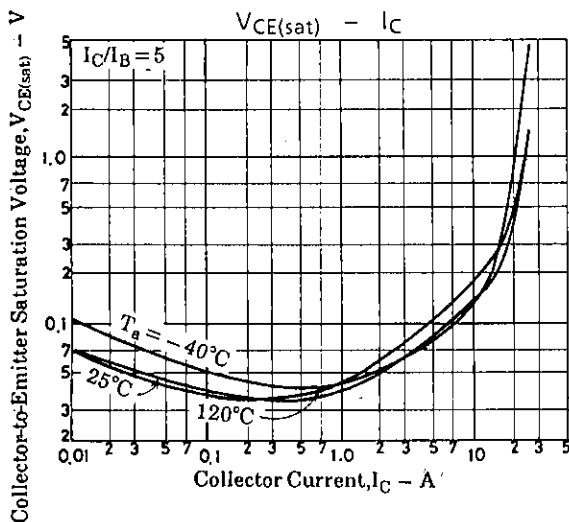
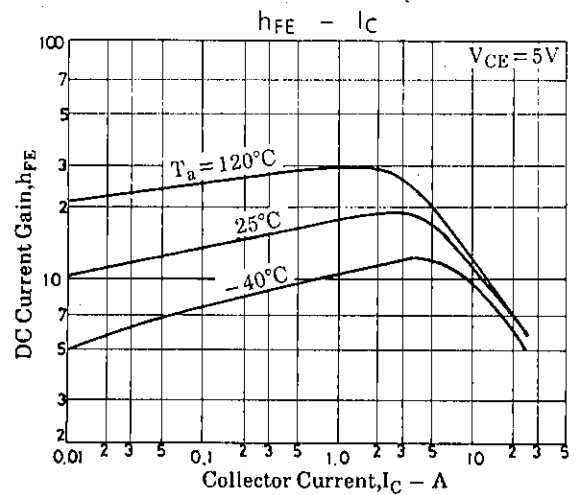
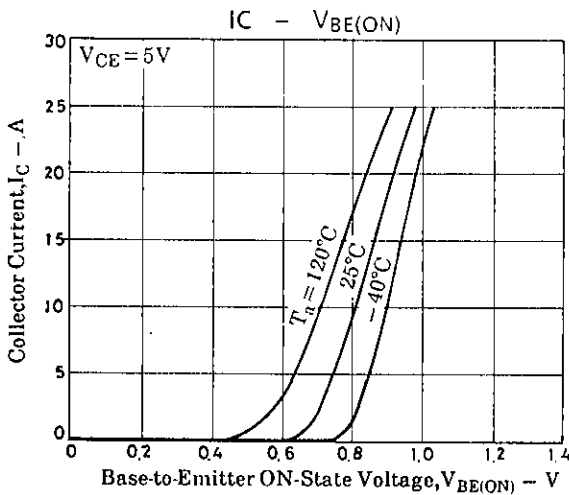
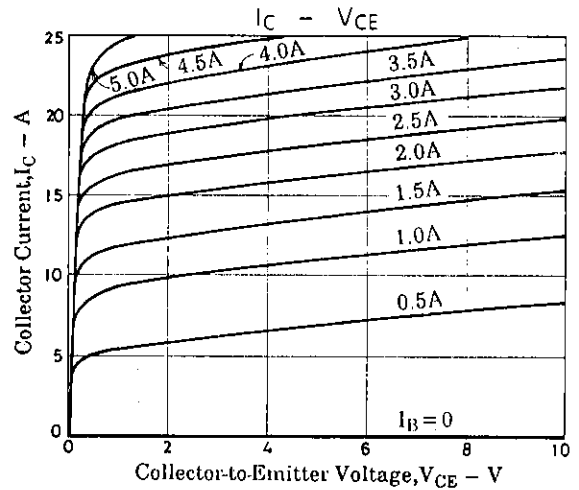
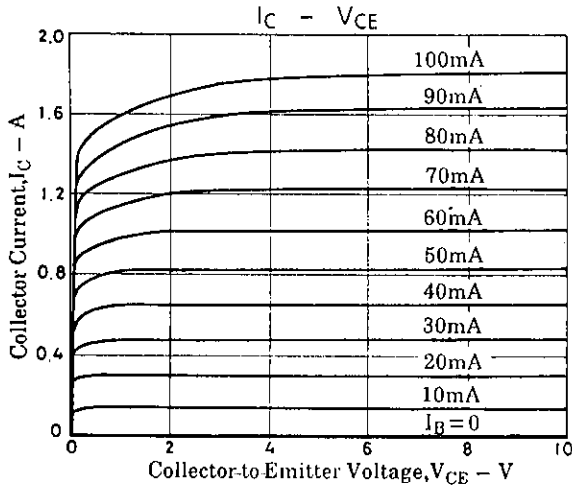


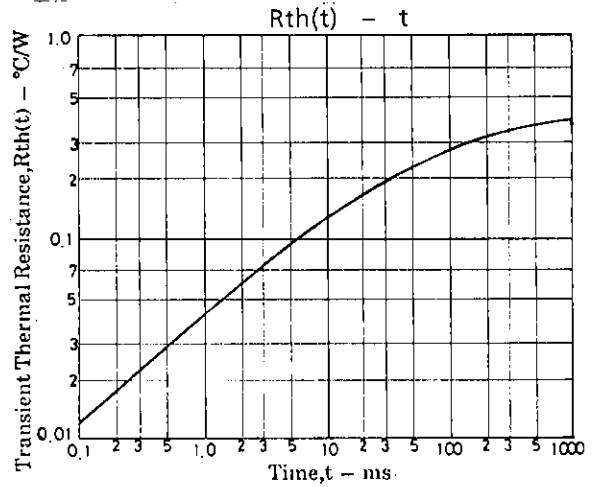
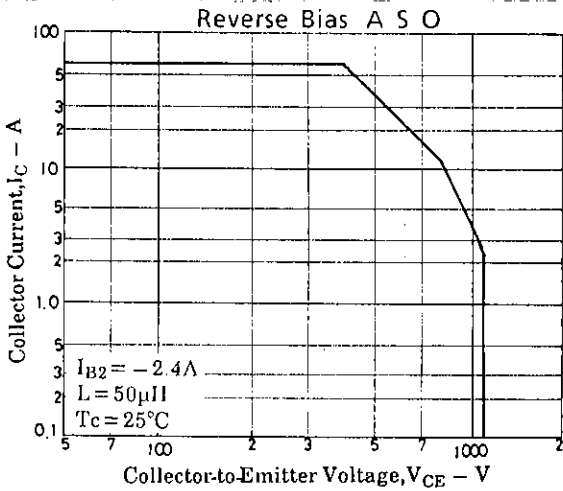
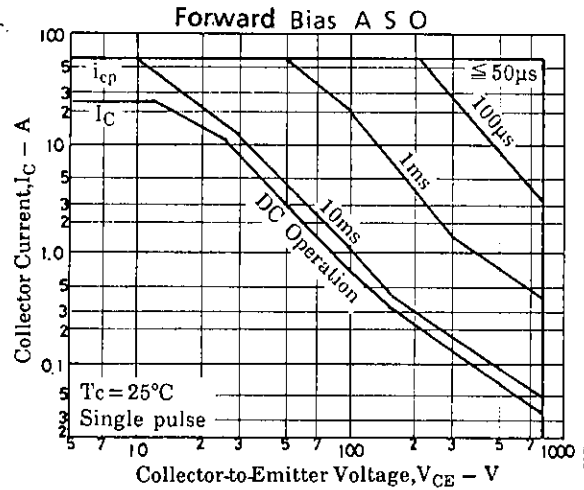
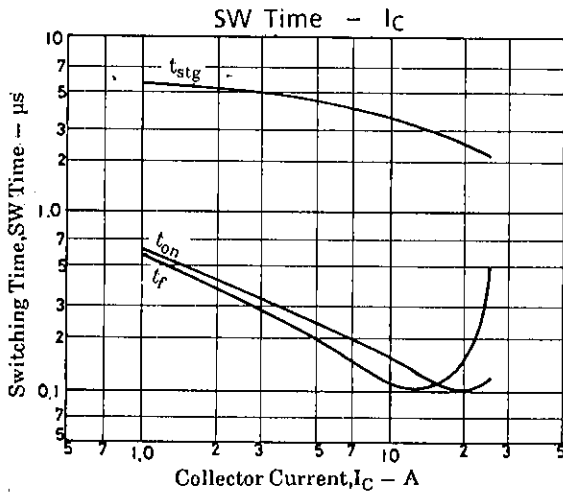
Unit (Resistance : Ω , Capacitance : F)

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

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





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