

**SANYO**

No.2236D

**2SC3993**

NPN Triple Diffused Planar Silicon Transistor

## Switching Regulator Applications

**Features**

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

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

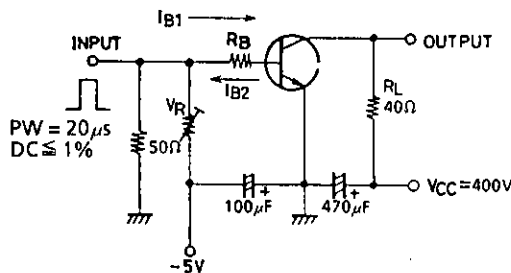
			unit
Collector-to-Base Voltage	$V_{CB0}$	1100	V
Collector-to-Emitter Voltage	$V_{CEO}$	800	V
Emitter-to-Base Voltage	$V_{EBO}$	7	V
Collector Current	$I_C$	16	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 300\mu\text{s}$ , Duty cycle $\leq 10\%$	40 A
Base Current	$I_B$	8	A
Collector Dissipation	$P_C$	$T_c = 25^\circ\text{C}$	250 W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

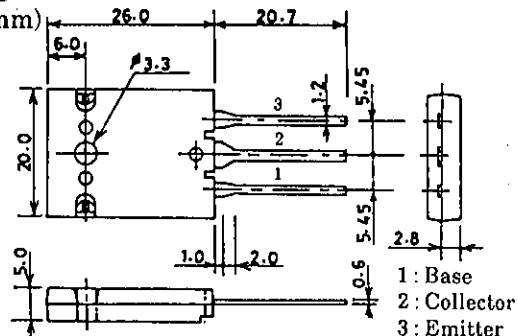
			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 800\text{V}$ , $I_E = 0$			10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}$ , $I_C = 0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE(1)}$	$V_{CE} = 5\text{V}$ , $I_C = 1.2\text{A}$	10*		40*	
	$h_{FE(2)}$	$V_{CE} = 5\text{V}$ , $I_C = 6\text{A}$	8			
Gain-Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}$ , $I_C = 1.2\text{A}$		15		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}$ , $f = 1\text{MHz}$		320		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = 6\text{A}$ , $I_B = 1.2\text{A}$			2.0	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = 6\text{A}$ , $I_B = 1.2\text{A}$			1.5	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1\text{mA}$ , $I_E = 0$	1100			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$ , $R_{BE} = \infty$	800			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\text{mA}$ , $I_C = 0$	7			V
C-E Sustain Voltage	$V_{CEX(sus)}$	$I_C = 8\text{A}$ , $I_{B1} = -I_{B2} = 1.6\text{A}$ , $L = 500\mu\text{H}$ , Clamped	800			V
Rise Time	$t_{on}$	$V_{CC} = 400\text{V}$ ,			0.5	$\mu\text{s}$
Storage Time	$t_{stg}$	$5I_{B1} = -2.5I_{B2} = I_C = 10\text{A}$ ,			3.0	$\mu\text{s}$
Fall Time	$t_f$	$R_L = 40\Omega$			0.3	$\mu\text{s}$

\* : The 2SC3993 are classified by 1.2A  $h_{FE}$  as follows :

10 K 20	15 L 30	20 M 40
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**Switching Time Test Circuit****Package Dimensions 2048B**

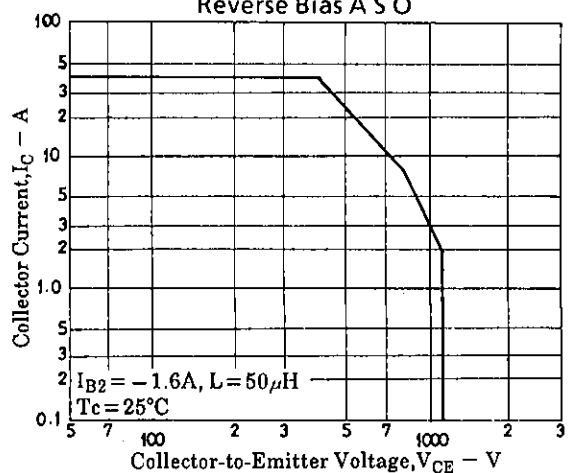
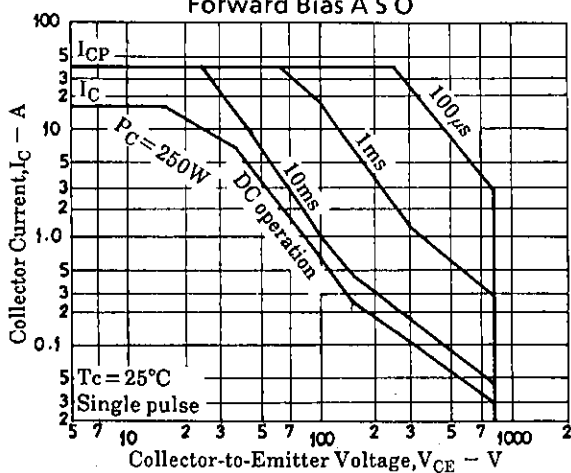
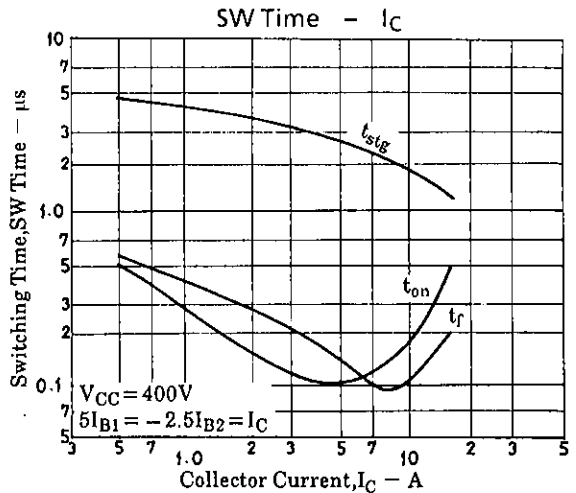
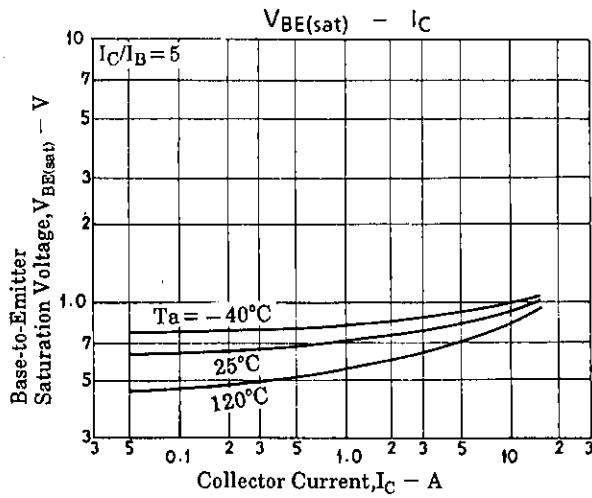
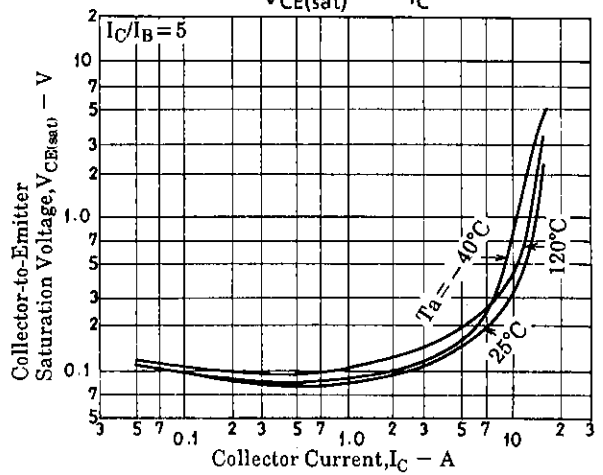
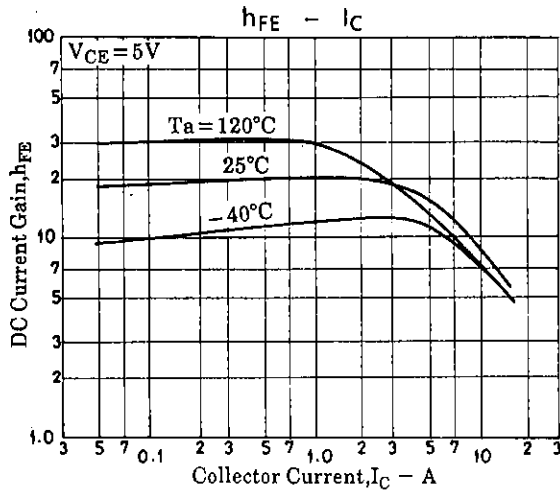
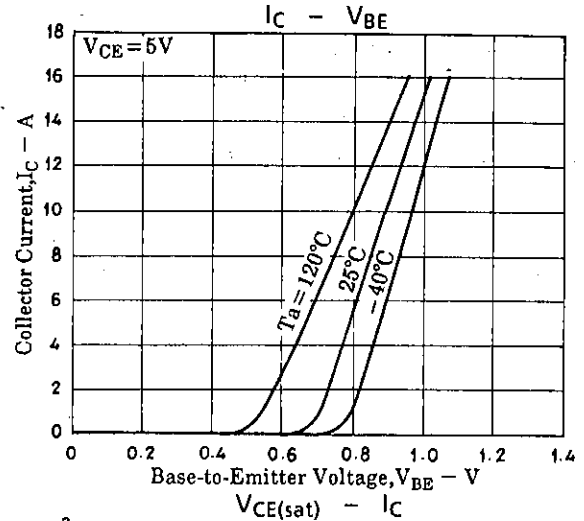
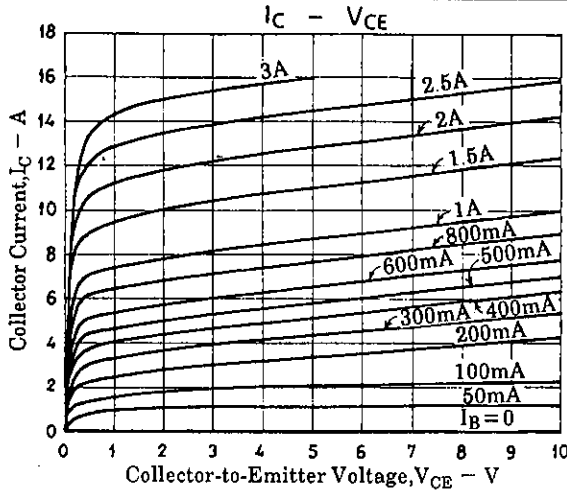
(unit: mm)

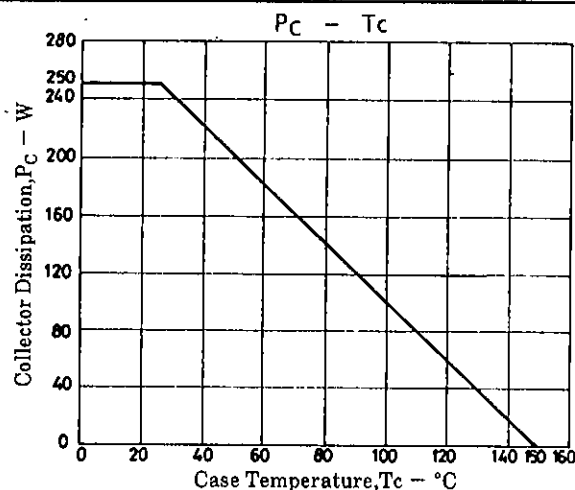
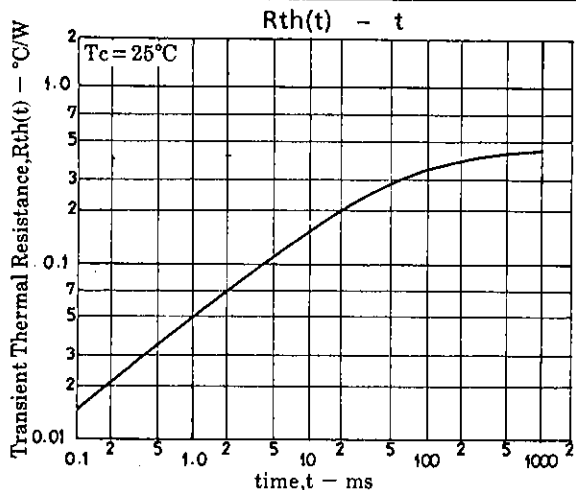


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