

SANYO

No.2234C

2SC3990

NPN Triple Diffused Planar Silicon Transistor

500V/35A 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}	800	V
Collector-to-Emitter Voltage	V_{CE0}	500	V
Emitter-to-Base Voltage	V_{EB0}	7	V
Collector Current	I_C	35	A
Collector Current (Pulse)	I_{CP}	$PW \leq 300\mu\text{s}, \text{duty cycle} \leq 10\%$	50 A
Base Current	I_B	12	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	$^\circ\text{C}$

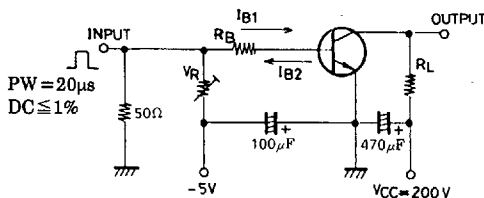
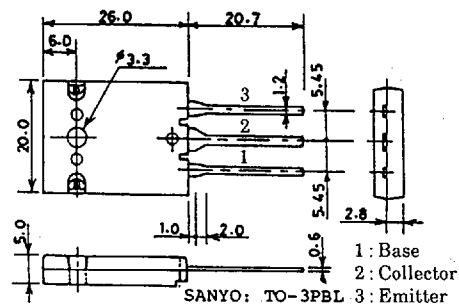
Electrical Characteristics at $T_a = 25^\circ\text{C}$

			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = 500\text{V}, I_E = 0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$			10	μA
DC Current Gain	$h_{FE}(1)$	$V_{CE} = 5\text{V}, I_C = 3.2\text{A}$	15※		50※	
	$h_{FE}(2)$	$V_{CE} = 5\text{V}, I_C = 16\text{A}$	8			
Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 3.2\text{A}$		18		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		400		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = 16\text{A}, I_B = 3.2\text{A}$			1.0	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = 16\text{A}, I_B = 3.2\text{A}$			1.5	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 1\text{mA}, I_E = 0$	800			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, R_{BE} = \infty$	500			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 1\text{mA}, I_C = 0$	7			V

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※ : The 2SC3990 is classified by 3.2A h_{FE} as follows :

15	L	30	20	M	40	30	N	50
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Switching Time Test Circuit**Package Dimensions 2048B**
(unit : mm)**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

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C-E Sustain Voltage

 $V_{CE(sus)}$ $I_C = 15A, I_{B1} = -I_{B2} = 2A$ $L = 200\mu H, \text{clamped}$ min
500

typ

max

unit
V

Rise Time

 t_{on} $V_{CC} = 200V,$ 0.5 μs

Storage Time

 t_{stg} $5I_{B1} = -2.5I_{B2} = I_C = 18A,$ 3.0 μs

Fall Time

 t_f $R_L = 11.1\Omega$ 0.3 μs 