

SANYO

No.2836

2SC3991

NPN Triple Diffused Planar Silicon Transistor

500V/50A Switching Regulator Applications**Features**

- High breakdown voltage, high reliability
- Fast switching speed (t_f : typ 0.1 μ s)
- 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	50	A
Collector Current (Pulse)	I_{CP}	$PW \leq 300\mu\text{s}, \text{duty cycle} \leq 10\%$	70 A
Base Current	I_B	14	A
Collector Dissipation	P_C	3.5	W
		$T_C=25^\circ\text{C}$	300 W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

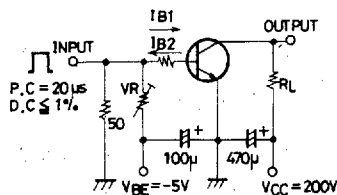
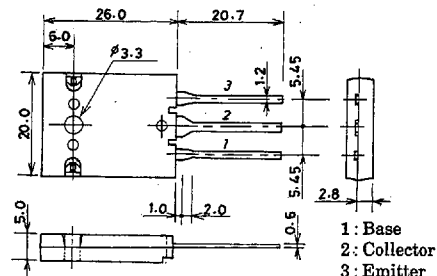
Electrical Characteristics at $T_a=25^\circ\text{C}$

			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	$h_{FE}(1)^*$	$V_{CE}=5\text{V}, I_C=4.8\text{A}$	15		50	
	$h_{FE}(2)$	$V_{CE}=5\text{V}, I_C=24\text{A}$	8			

Continued on next page.

*: The $h_{FE}(1)$ of the 2SC3991 is classified as follows. When specifying the $h_{FE}(1)$ rank, specify two ranks or more in principle.

15	L	30	20	M	40	30	N	50
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Switching Time Test CircuitUnit (Resistance : Ω , Capacitance : F)**Package Dimensions 2048B
(unit:mm)**

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			min	typ	max	unit
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=4.8A$		18		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		560		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=24A, I_B=4.8A$			1.0	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=24A, I_B=4.8A$			1.5	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	800			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10mA, R_{BE}=\infty$	500			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
C-E Sustain Voltage	$V_{CEX(sus)}$	$I_C=15A, I_{B1}=-I_{B2}=2A$	500			V
		$L=100\mu H, \text{clamped}$				
Turn-on Time	t_{on}	$V_{CC}=200V$		0.5		μs
Storage Time	t_{stg}	$5I_{B1}=-2.5I_{B2}=I_C=26A$		3.0		μs
Fall Time	t_f	$R_L=7.7\Omega$		0.3		μs

