

Pb Free Plating Product

## 2SC3998



250 Watt NPN Triple Diffused Planar Silicon Transistor

**DESCRIPTION**

- High speed ( $t_f=100\text{ns}$  typ).
- High breakdown voltage ( $V_{CBO}=1500\text{V}$ ).
- High reliability (adoption of HVP process).
- Adoption of MBIT process.

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

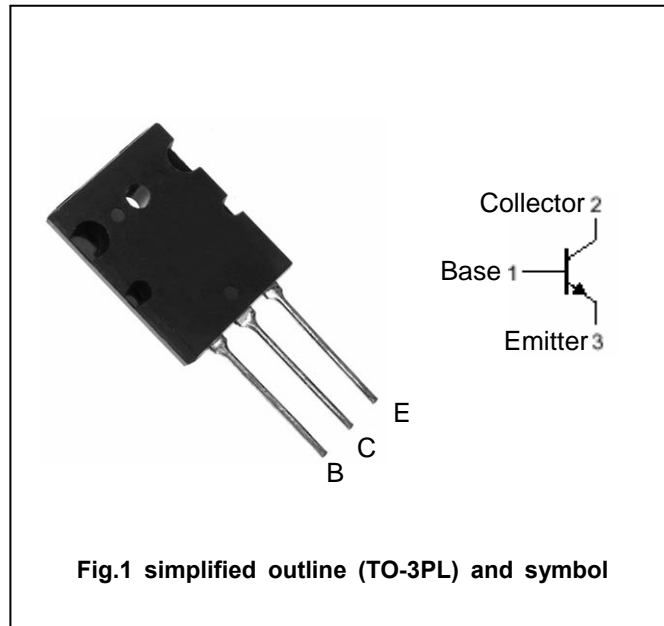


Fig.1 simplified outline (TO-3PL) and symbol

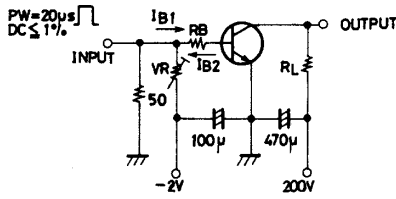
**Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$** 

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		1500	V
Collector-to-Emitter Voltage	$V_{CEO}$		800	V
Emitter-to-Base Voltage	$V_{EBO}$		6	V
Collector Current	$I_C$		25	A
Collector Current (Pulse)	$I_{CP}$		50	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	$^\circ\text{C}$

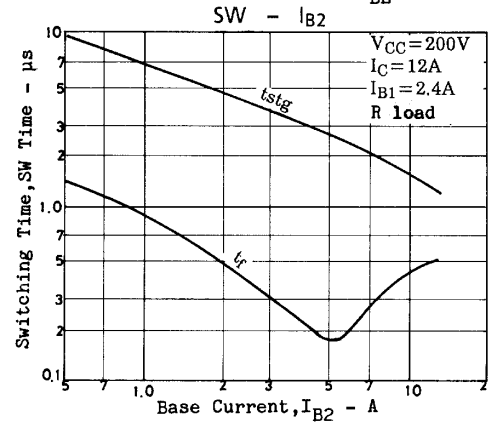
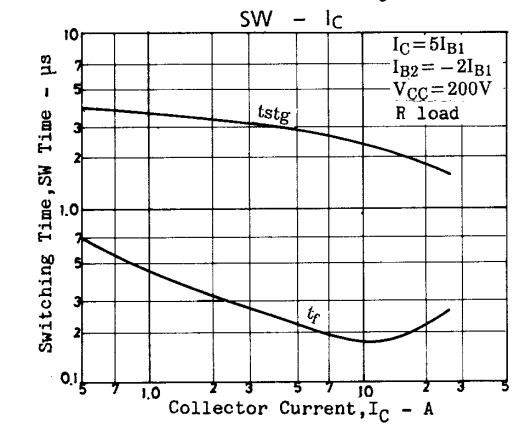
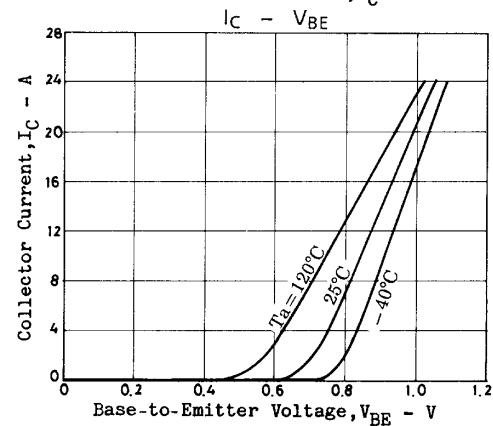
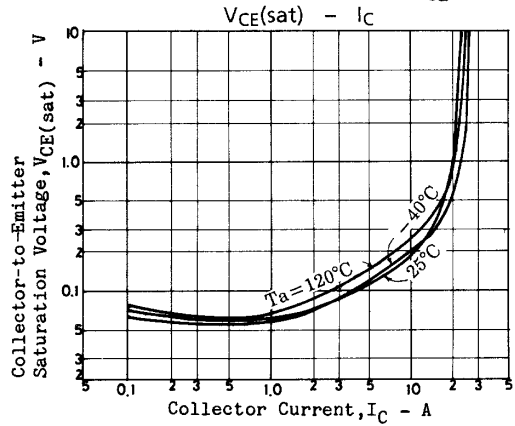
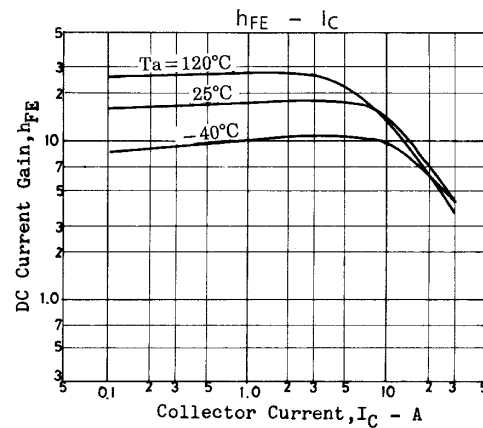
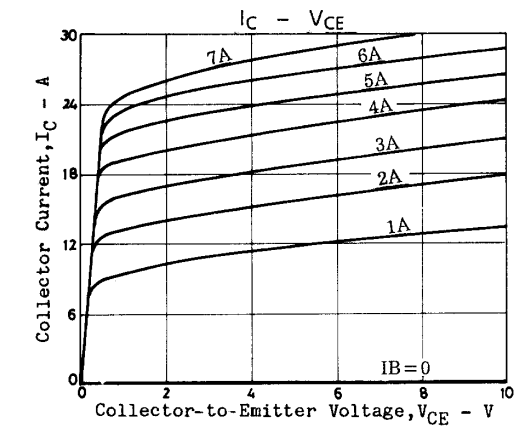
**Electrical Characteristics at  $T_a = 25^\circ\text{C}$** 

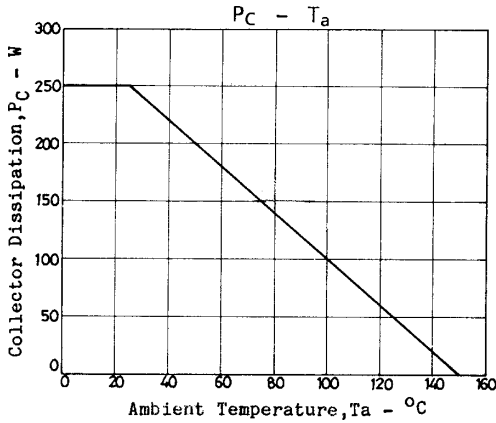
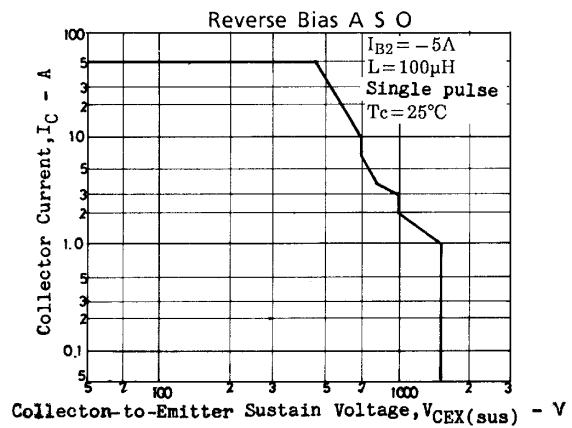
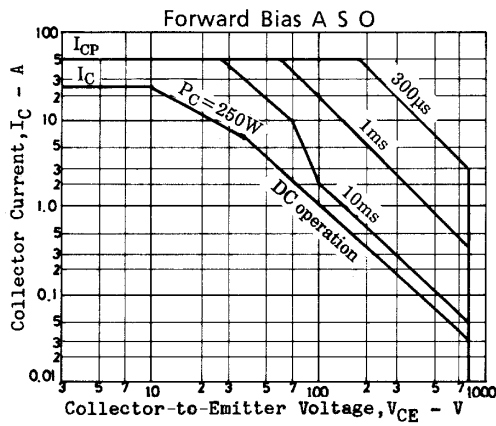
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CES}$	$V_{CE}=1500\text{V}$			1.0	mA
Collector-to-Emitter Sustain Voltage	$V_{CEO(sus)}$	$I_C=100\text{mA}, I_B=0$	800			V
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			1.0	mA
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=800\text{V}, I_E=0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE}=5\text{V}, I_C=1.0\text{A}$	8		30	
	$h_{FE2}$	$V_{CE}=5\text{V}, I_C=20\text{A}$	4		8	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=20\text{A}, I_B=5\text{A}$			5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=20\text{A}, I_B=5\text{A}$			1.5	V
Storage Time	$t_{stg}$	$I_C=12\text{A}, I_{B1}=2.4\text{A}, I_{B2}=-4.8\text{A}$			3.0	$\mu\text{s}$
Fall Time	$t_f$	$I_C=12\text{A}, I_{B1}=2.4\text{A}, I_{B2}=-4.8\text{A}$			0.2	$\mu\text{s}$

Switching Time Test Circuit



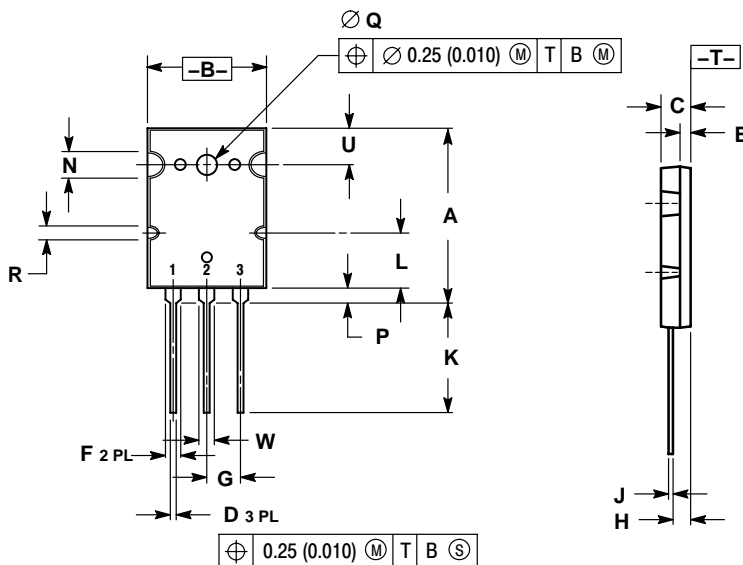
Unit (resistance:Ω, capacitance:F)





Mechanical Dimensions

TO-3PL



- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: MILLIMETER.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	28.0	29.0	1.102	1.142
B	19.3	20.3	0.760	0.800
C	4.7	5.3	0.185	0.209
D	0.93	1.48	0.037	0.058
E	1.9	2.1	0.075	0.083
F	2.2	2.4	0.087	0.102
G	5.45 BSC		0.215 BSC	
H	2.6	3.0	0.102	0.118
J	0.43	0.78	0.017	0.031
K	17.6	18.8	0.693	0.740
L	11.2 REF		0.411 REF	
N	4.35 REF		0.172 REF	
P	2.2	2.6	0.087	0.102
Q	3.1	3.5	0.122	0.137
R	2.25 REF		0.089 REF	
U	6.3 REF		0.248 REF	
W	2.8	3.2	0.110	0.125

STYLE 2:  
 PIN 1. BASE  
 2. COLLECTOR  
 3. EMITTER