



TRANSISTOR (NPN)

FEATURES

- Low $V_{CE(sat)}$, $V_{CE(sat)}=0.15V$ (typical).($I_C/I_B=500mA/50mA$)
- Complements to 2SB1132

MAXIMUM RATINGS ($T_A=25^{\circ}C$ unless otherwise noted)

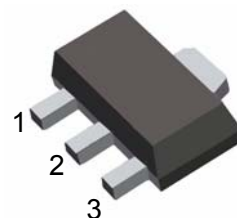
Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	32	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	1	A
P_C	Collector power dissipation	500	mW
T_J	Junction Temperature	150	$^{\circ}C$
T_{stg}	Storage Temperature	-55-150	$^{\circ}C$

SOT-89-3L

1. BASE

2. COLLECTOR

3. EMITTER

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=50\mu A$, $I_E=0$	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA$, $I_B=0$	32			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=50\mu A$, $I_C=0$	5			V
Collector cut-off current	I_{CBO}	$V_{CB}=20V$, $I_E=0$			0.5	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=4V$, $I_C=0$			0.5	μA
DC current gain	h_{FE}	$V_{CE}=3V$, $I_C=100mA$	82		390	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=0.5A$, $I_B=50mA$			0.4	V
Transition frequency	f_T	$V_{CE}=5V$, $I_C=50mA$, $f=100MHz$		150		MHz
Collector output capacitance	C_{ob}	$V_{CB}=10V$, $I_E=0$, $f=1MHz$		15		pF

CLASSIFICATION OF h_{FE}

Rank	P	Q	R
Range	82-180	120-270	180-390
Marking	DAP	DAQ	DAR

TRANSISTOR (NPN)

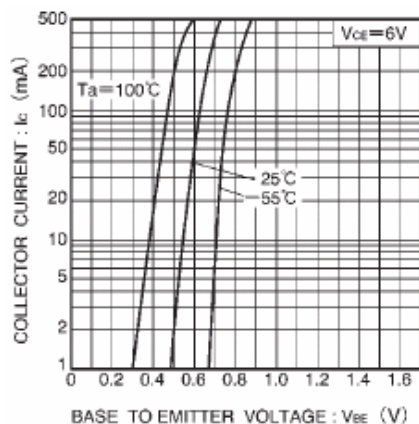


Fig.1 Grounded emitter propagation characteristics

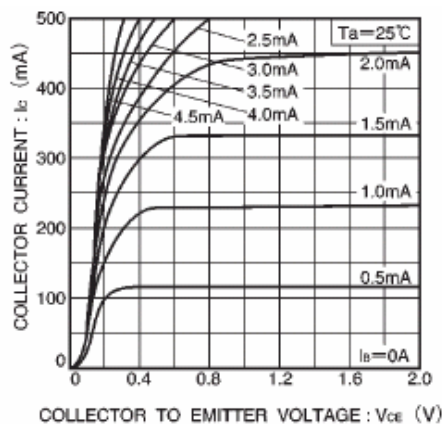


Fig.2 Grounded emitter output characteristics

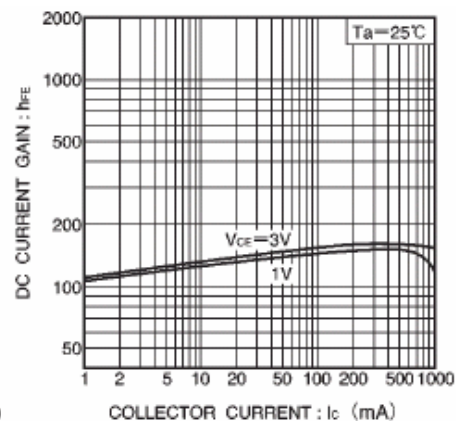


Fig.3 DC current gain vs. collector current (I)

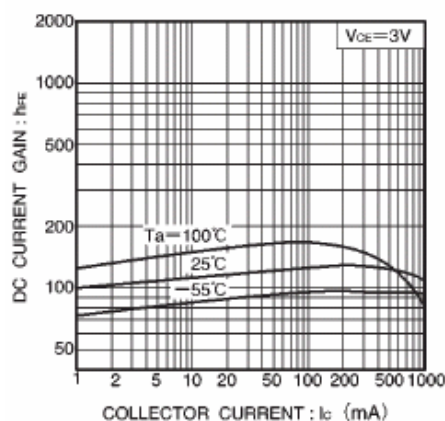


Fig.4 DC current gain vs. collector current (II)

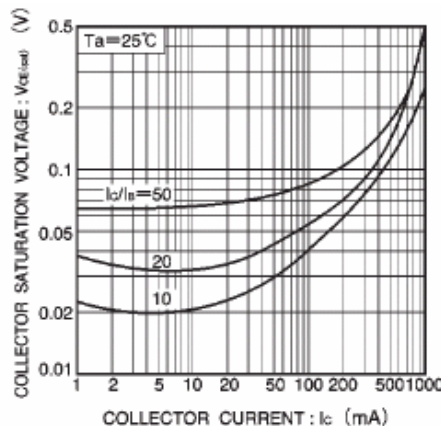


Fig.5 Collector-emitter saturation voltage vs. collector current (I)

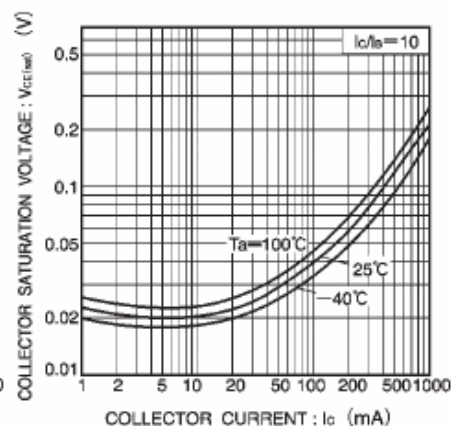


Fig.6 Collector-emitter saturation voltage vs. collector current (II)

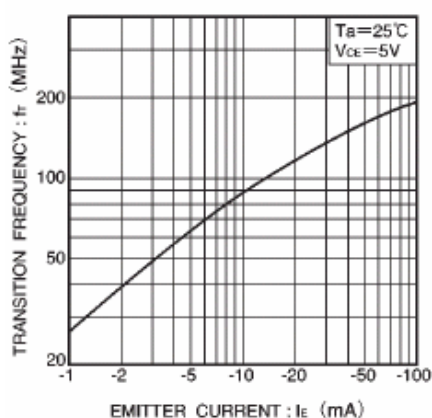


Fig.7 Gain bandwidth product vs. emitter current

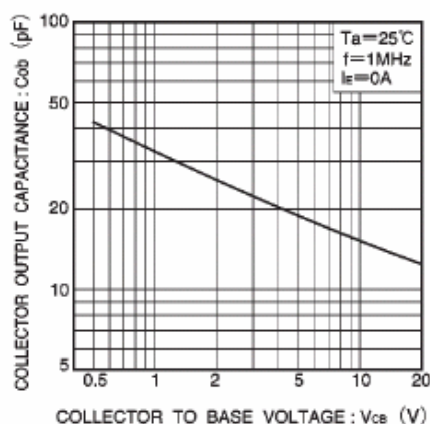


Fig.8 Collector output capacitance vs. collector-base voltage

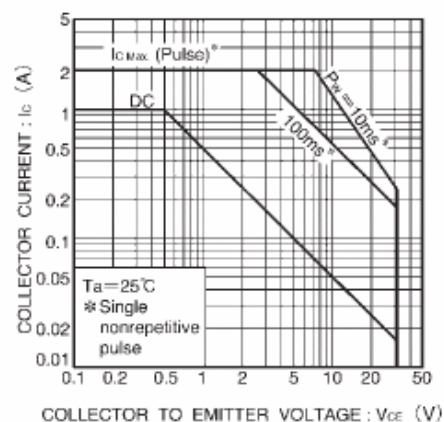


Fig.9 Safe operating area (2SD1664)

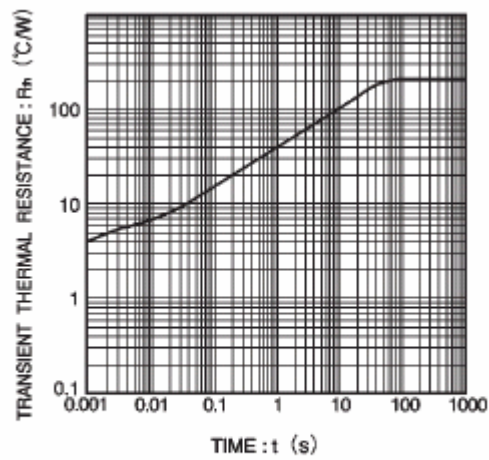
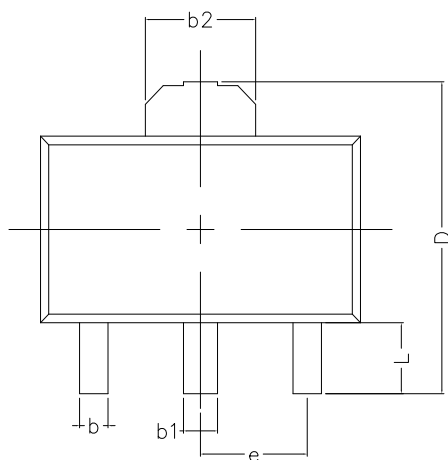
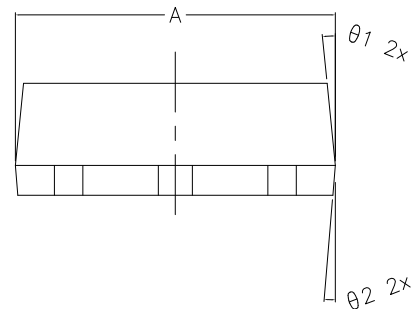
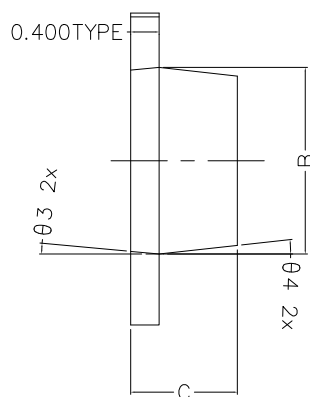
TRANSISTOR (NPN)


Fig.10 Transient thermal resistance
(2SD1664)

**TRANSISTOR (NPN)****SOT-89-3L Package Outline Dimensions (Units: mm)**

TOP VIEW



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	4.450	4.550	4.650
B	2.450	2.550	2.650
C	1.400	1.500	1.600
D	4.100	4.200	4.300
L	0.850	0.950	1.050
b	0.350	0.400	0.450
b1	0.430	0.480	0.530
b2	1.500	1.550	1.600
e	1.500TYPE		
θ_1	6° TYPE		
θ_2	5° TYPE		
θ_3	5° TYPE		
θ_4	6° TYPE		