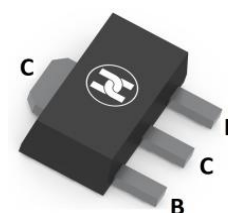


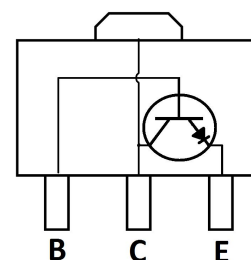
BIPOLAR TRANSISTOR (NPN)

FEATURES

- Complementary to BC869
- High Current
- Low Voltage
- Surface Mount device



SOT-89



MECHANICAL DATA

- Case: SOT-89
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.055 grams (approximate)

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	32	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	1	A
Collector Power Dissipation	P_C	500	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	250	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~+150	$^\circ\text{C}$

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

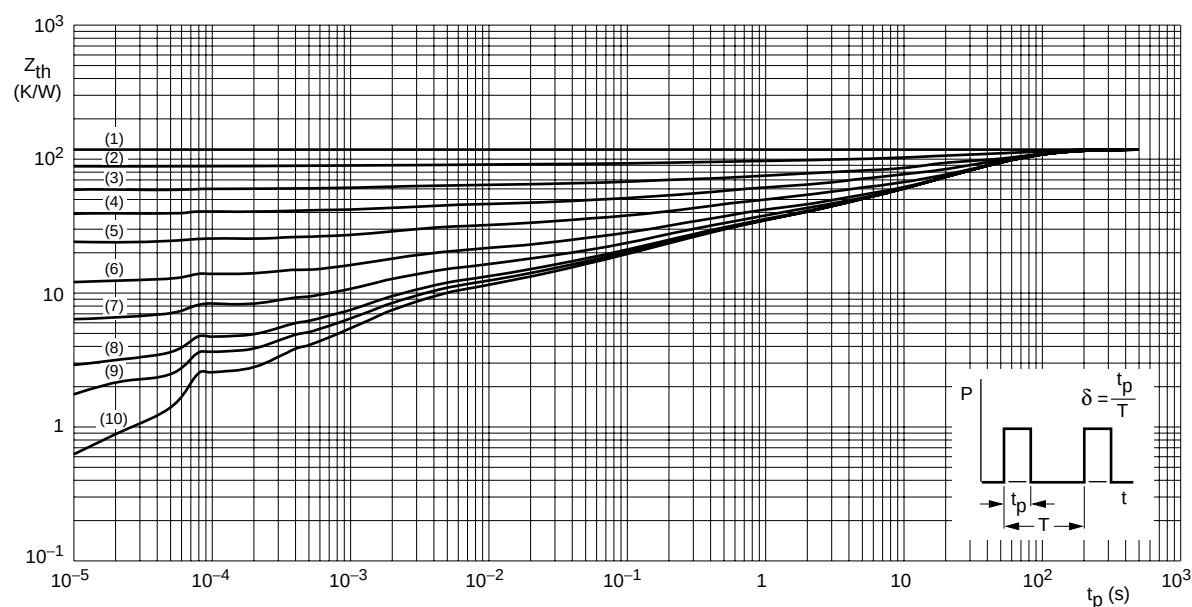
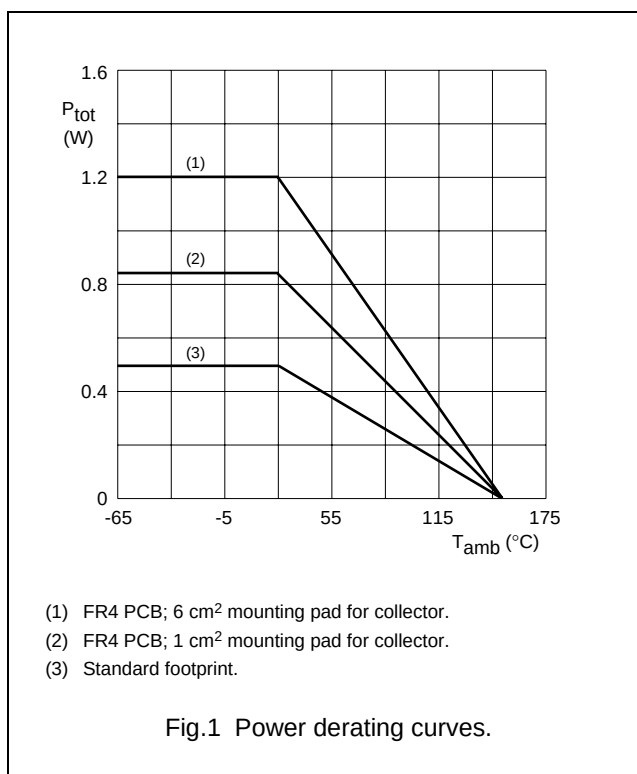
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	32			V	$I_C=100\mu\text{A}$, $I_E=0$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	20			V	$I_C=1\text{mA}$, $I_B=0$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu\text{A}$, $I_C=0$
Collector cut-off current	I_{CBO}			0.1	μA	$V_{CB}=25\text{V}$, $I_E=0$
Emitter cut-off current	I_{EBO}			0.1	μA	$V_{EB}=5\text{V}$, $I_C=0$
DC current gain	h_{FE}	85		375		$V_{CE}=1\text{V}$, $I_C=500\text{mA}$
		60				$V_{CE}=1\text{V}$, $I_C=1\text{A}$
		50				$V_{CE}=10\text{V}$, $I_C=5\text{mA}$
Collector-emitter saturation voltage	$V_{CE(sat)}$			0.5	V	$I_C=1\text{A}$, $I_B=100\text{mA}$
Base-emitter voltage	V_{BE}		0.62		V	$V_{CE}=10\text{V}$, $I_C=5\text{mA}$
				1	V	$V_{CE}=1\text{V}$, $I_C=1\text{A}$
Transition frequency	f_T	40			MHz	$V_{CE}=5\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$

CLASSIFICATION OF h_{FE}

Rank	BC868-10	BC868-16	BC868-25
Range	85-160	100-250	160-375
Marking	CBC	CCC	CDC

BIPOLAR TRANSISTOR (NPN)

Typical Characteristics



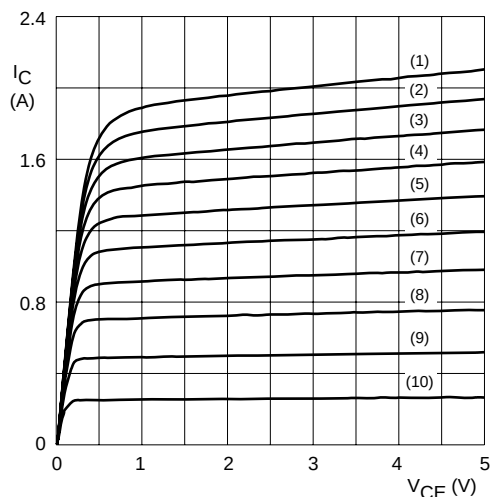
Mounted on FR4 printed-circuit board; mounting pad for collector 1 cm².

- | | | | | |
|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|
| (1) $\delta = 1$. | (3) $\delta = 0.5$. | (5) $\delta = 0.2$. | (7) $\delta = 0.05$. | (9) $\delta = 0.01$. |
| (2) $\delta = 0.75$. | (4) $\delta = 0.33$. | (6) $\delta = 0.1$. | (8) $\delta = 0.02$. | (10) $\delta = 0$. |

Fig.2 Transient thermal impedance as a function of pulse time; typical values.

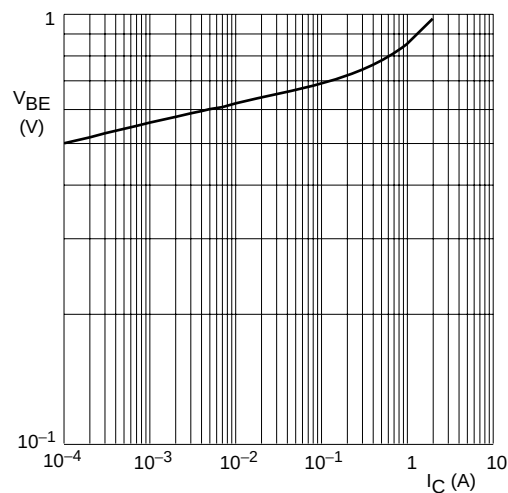
BIPOLAR TRANSISTOR (NPN)

Typical Characteristics



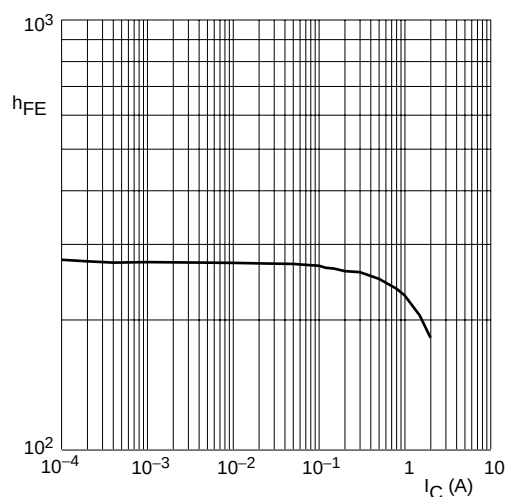
- | | | |
|-----------------------------|----------------------------|-----------------------------|
| (1) $I_B = 10 \text{ mA}$. | (5) $I_B = 6 \text{ mA}$. | (9) $I_B = 2 \text{ mA}$. |
| (2) $I_B = 9 \text{ mA}$. | (6) $I_B = 5 \text{ mA}$. | (10) $I_B = 1 \text{ mA}$. |
| (3) $I_B = 8 \text{ mA}$. | (7) $I_B = 4 \text{ mA}$. | |
| (4) $I_B = 7 \text{ mA}$. | (8) $I_B = 3 \text{ mA}$. | |

Fig.3 Collector current as a function of collector-emitter voltage; typical values.



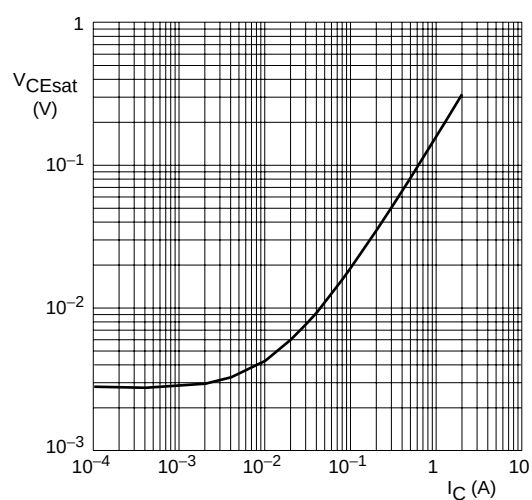
$V_{CE} = 1 \text{ V}$.

Fig.4 Base-emitter voltage as function of collector current; typical values.



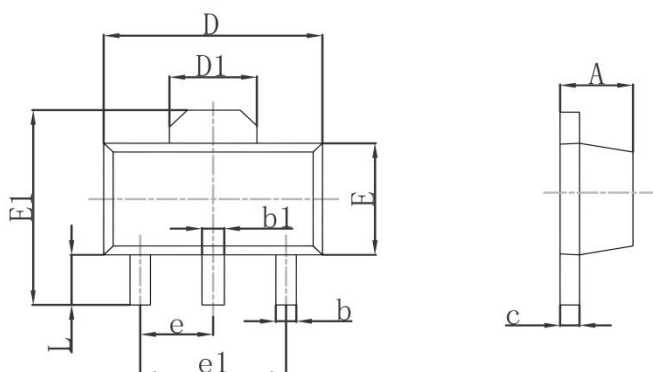
$V_{CE} = 1 \text{ V}$.

Fig.5 DC current gain as a function of collector current; typical values.

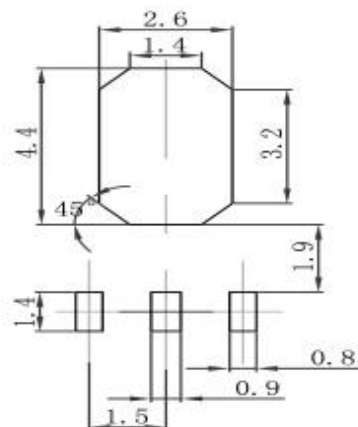


$I_C/I_B = 10$.

Fig.6 Collector-emitter saturation voltage as a function of collector current; typical values.

BIPOLAR TRANSISTOR (NPN)
SOT-89 Package Outline Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550REF		0.061REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	3.000TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

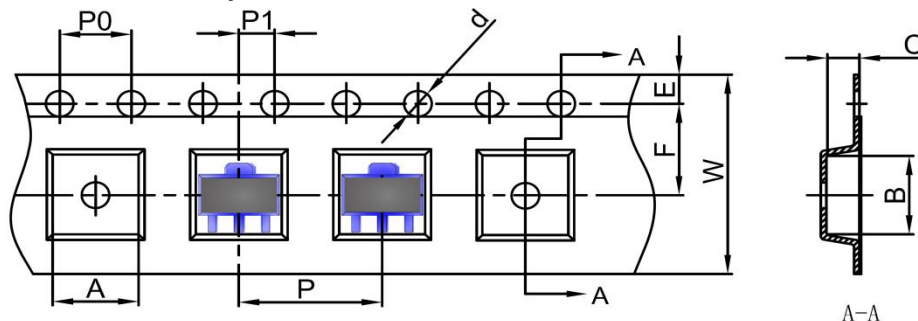
SOT-89 Suggested Pad Layout

Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

BIPOLAR TRANSISTOR (NPN)

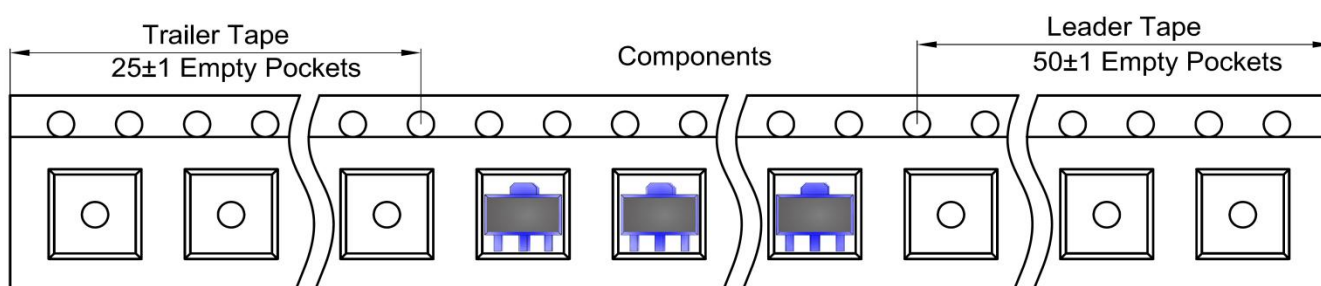
SOT-89 Tape and Reel

SOT-89 Embossed Carrier Tape

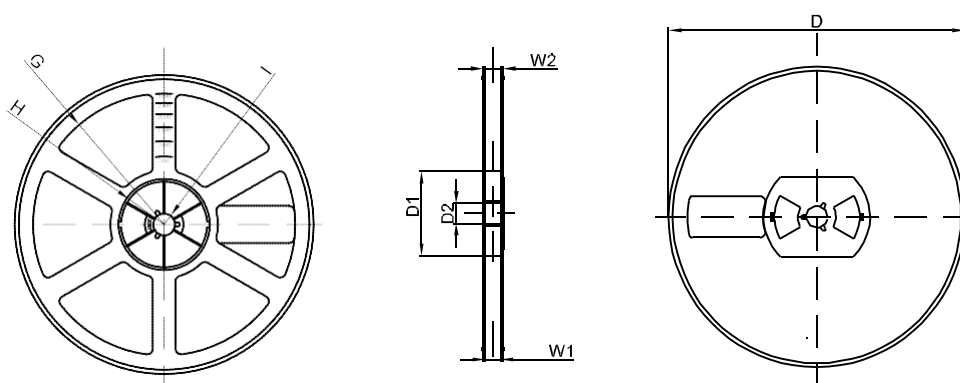


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-89	4.85	4.45	1.85	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-89 Tape Leader and Trailer



SOT-89 Reel



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	13.20	16.50
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1