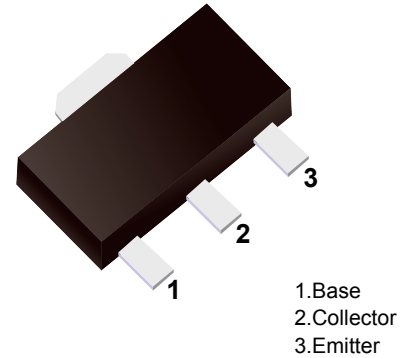


■ PNP Transistors



■ Simplified outline(SOT-89)

■ Features

- Low $V_{CE(sat)}$.
 $V_{CE(sat)} = -0.35V$ (Typ.)
($I_C/I_B = -4A / -0.1A$)
- Excellent DC current gain
- Epitaxial planar type
- PNP silicon transistor

■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	-30	V
Collector-emitter voltage	V_{CEO}	-20	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	I_C	-5	A
Collector current(Pulse)	I_{CP}^*	-10	A
Collector power dissipation	P_C	0.5	W
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

* Single pulse, $P_w=10ms$

■ Electrical Characteristics $T_a = 25^\circ C$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	BV_{CBO}	$I_C=-50 \mu A$	-30			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C=-1mA$	-20			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E=-50 \mu A$	-6			V
Collector cutoff current	I_{CBO}	$V_{CB}=-20V$			-0.5	μA
Emitter cutoff current	I_{EBO}	$V_{EB}=-5V$			-0.5	μA
DC current transfer ratio	$V_{CE(sat)}$	$I_C=-4A, I_B=-0.1A$		0.35	-1	V
Collector-emitter saturation voltage	h_{FE}	$V_{CE}=-2V, I_C=-0.5A$	82		390	
Output capacitance	C_{ob}	$V_{CE}=-6V, I_E=50mA, f=30MHz$		120		pF
Transition frequency	f_T	$V_{CB}=-20V, I_E=0A, f=1MHz$		60		MHz

■ h_{FE} Classification

Type	2SB1386-P	2SB1386-Q	2SB1386-R
Range	82-180	120-270	180-390
Marking	BHP*	BHQ*	BHR*

■ Typical Characteristics

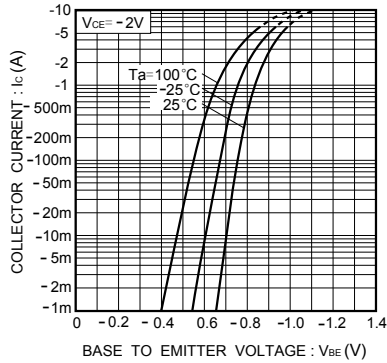


Fig.1 Grounded emitter propagation characteristics

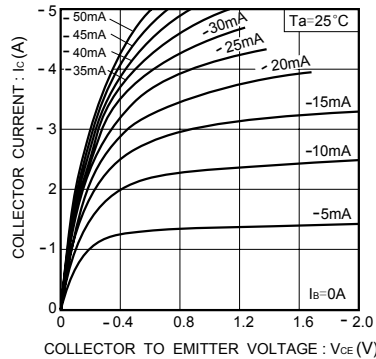


Fig.2 Grounded emitter output characteristics

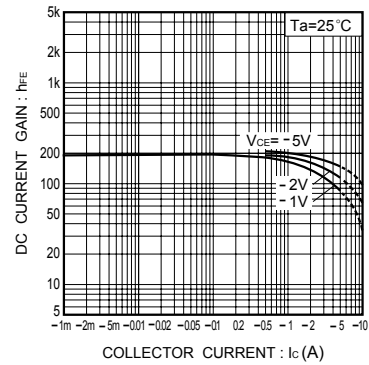


Fig.3 DC current gain vs. collector current (I)

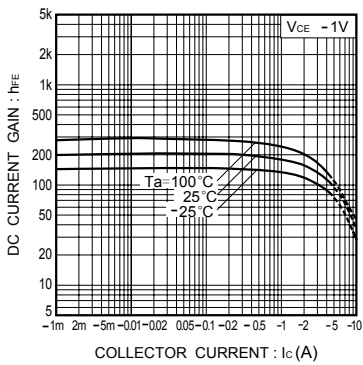


Fig.4 DC current gain vs. collector current (II)

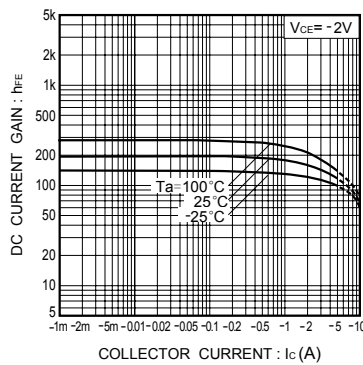


Fig.5 DC current gain vs. collector current (III)

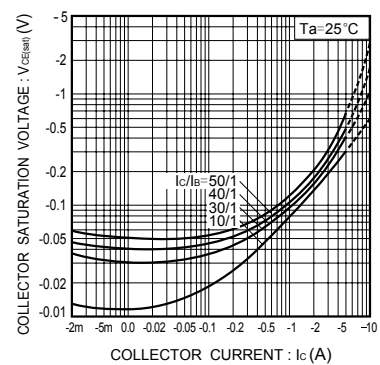


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

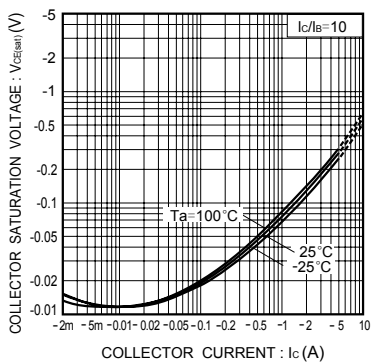


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

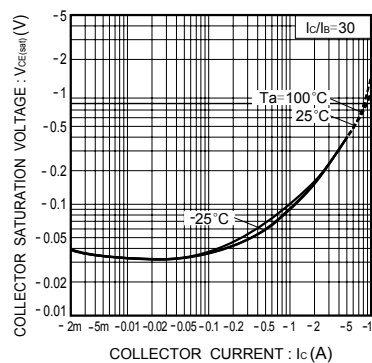


Fig.8 Collector-emitter saturation voltage vs. collector current (III)

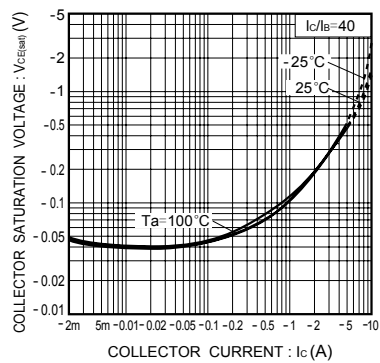


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

■ Typical Characteristics

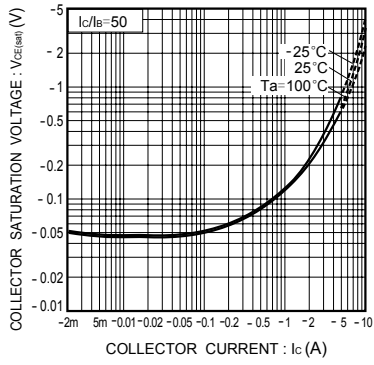


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

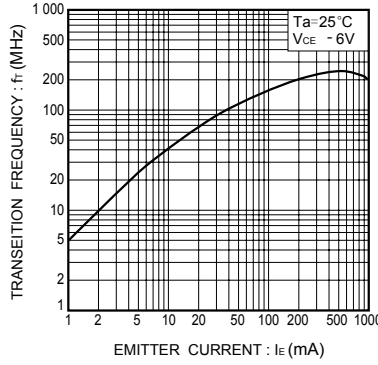


Fig.11 Gain bandwidth product vs. emitter current

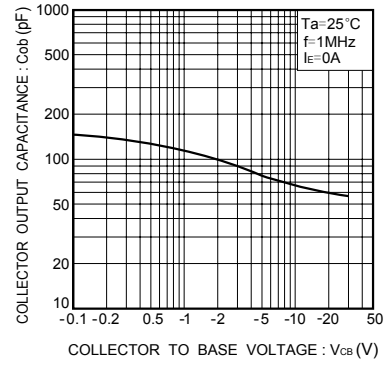


Fig.12 Collector output capacitance vs. collector-base voltage

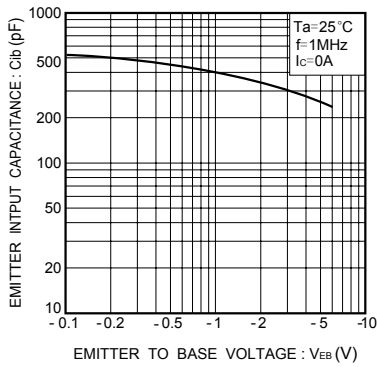


Fig.13 Emitter input capacitance vs. emitter-base voltage

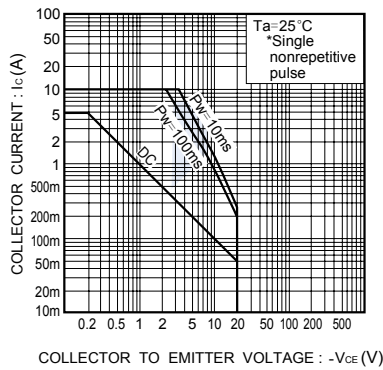
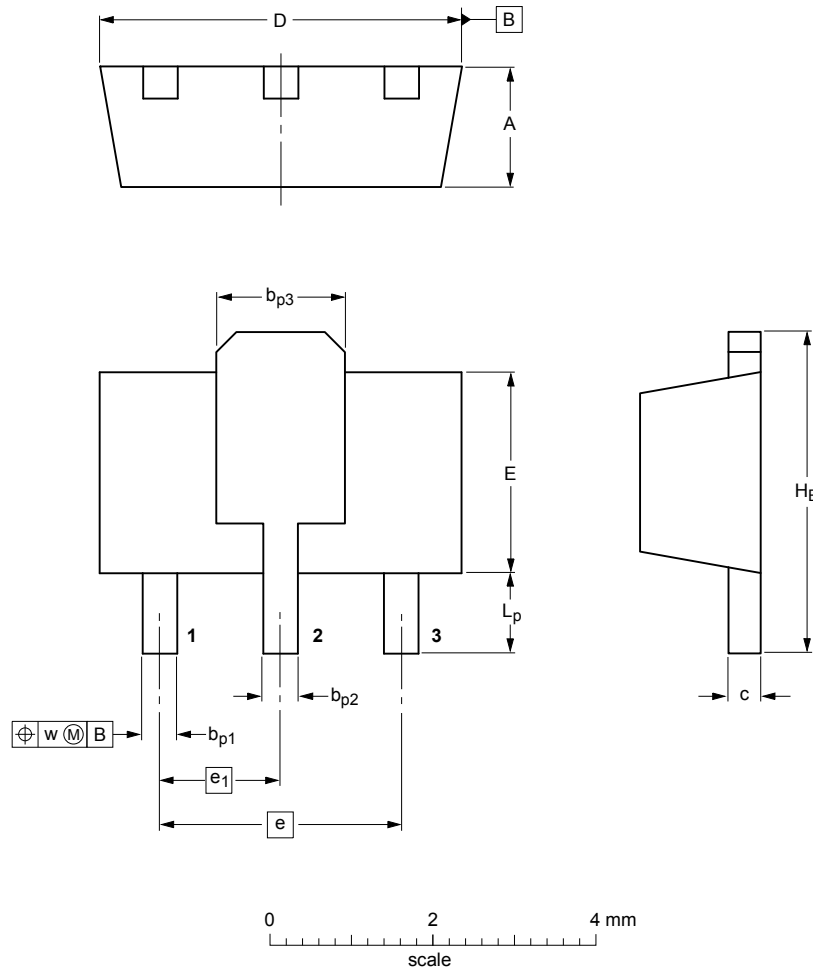


Fig.14 Safe operation area

Package Outline

SOT-89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b _{p1}	b _{p2}	b _{p3}	c	D	E	e	e ₁	H _E	L _p	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT-89	Tape/Reel, 7" reel	1000	EIA-481-1