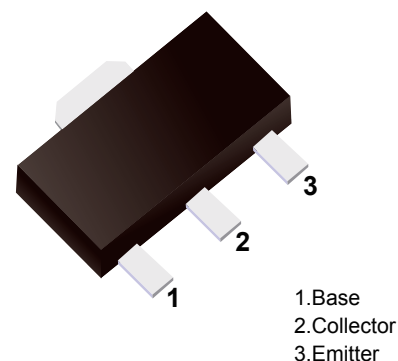


PNP Transistors

■ 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



■ Simplified outline(SOT-89)

■ 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

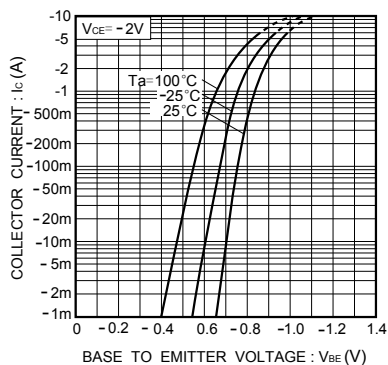


Fig.1 Grounded emitter propagation characteristics

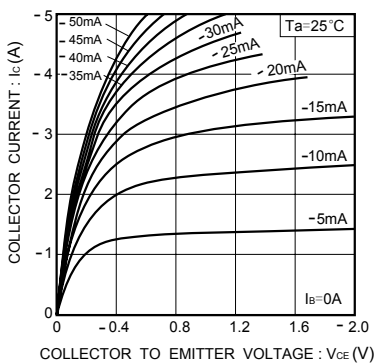


Fig.2 Grounded emitter output characteristics

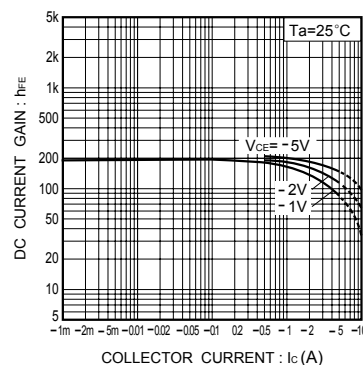


Fig.3 DC current gain vs. collector current (I)

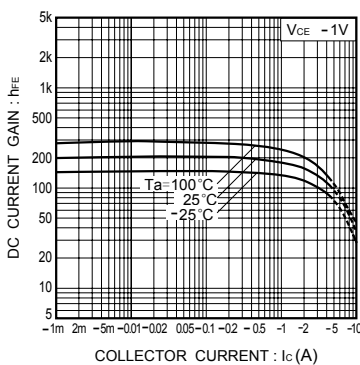


Fig.4 DC current gain vs. collector current (II)

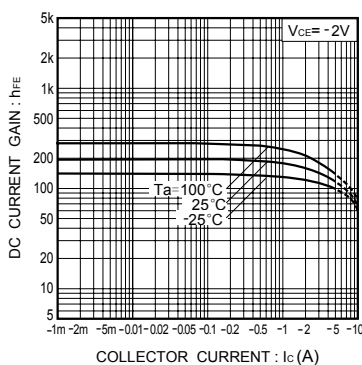


Fig.5 DC current gain vs. collector current (III)

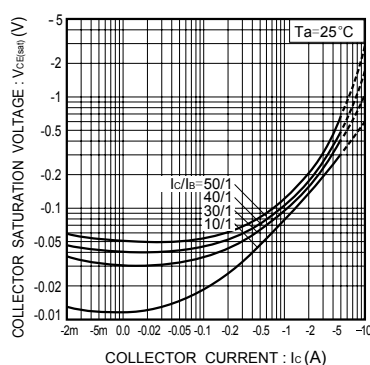


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

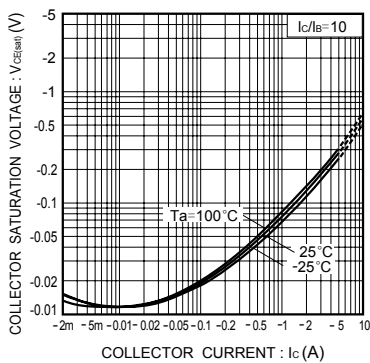


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

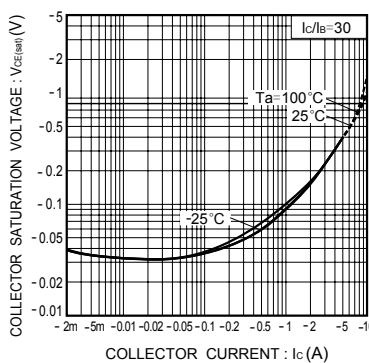


Fig.8 Collector-emitter saturation voltage vs. collector current (III)

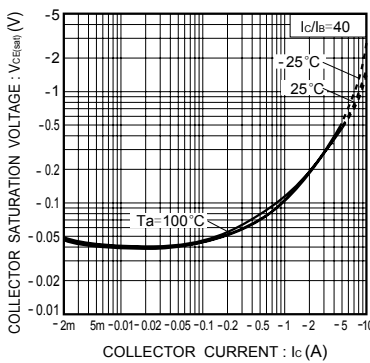


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

■ Typical Characteristics

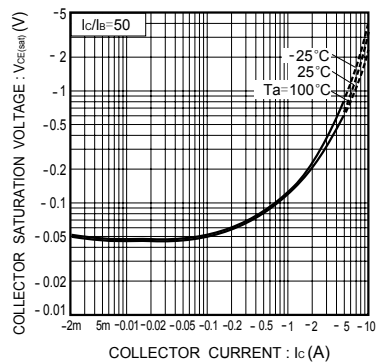


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

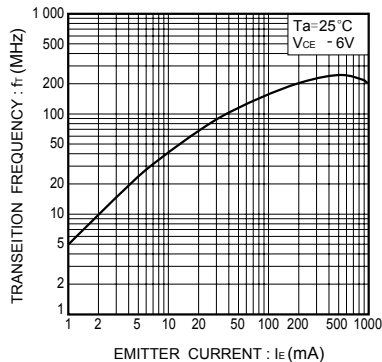


Fig.11 Gain bandwidth product vs. emitter current

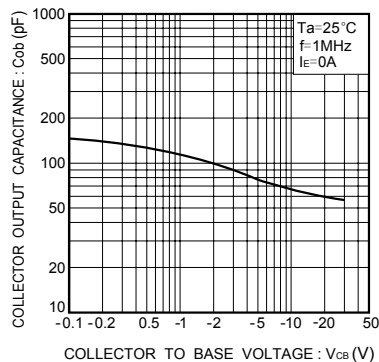


Fig.12 Collector output capacitance vs. collector-base voltage

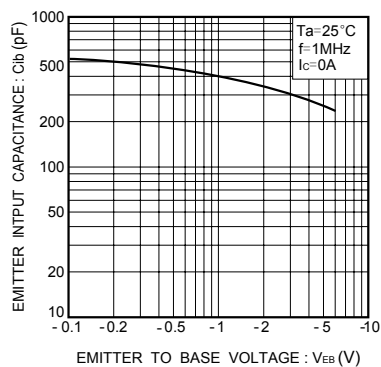


Fig.13 Emitter input capacitance vs. emitter-base voltage

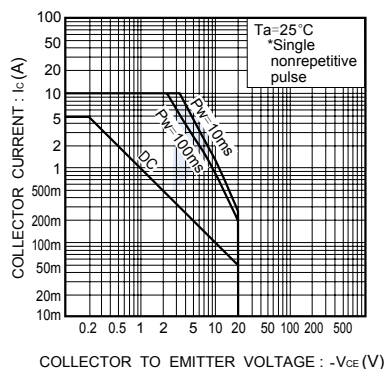
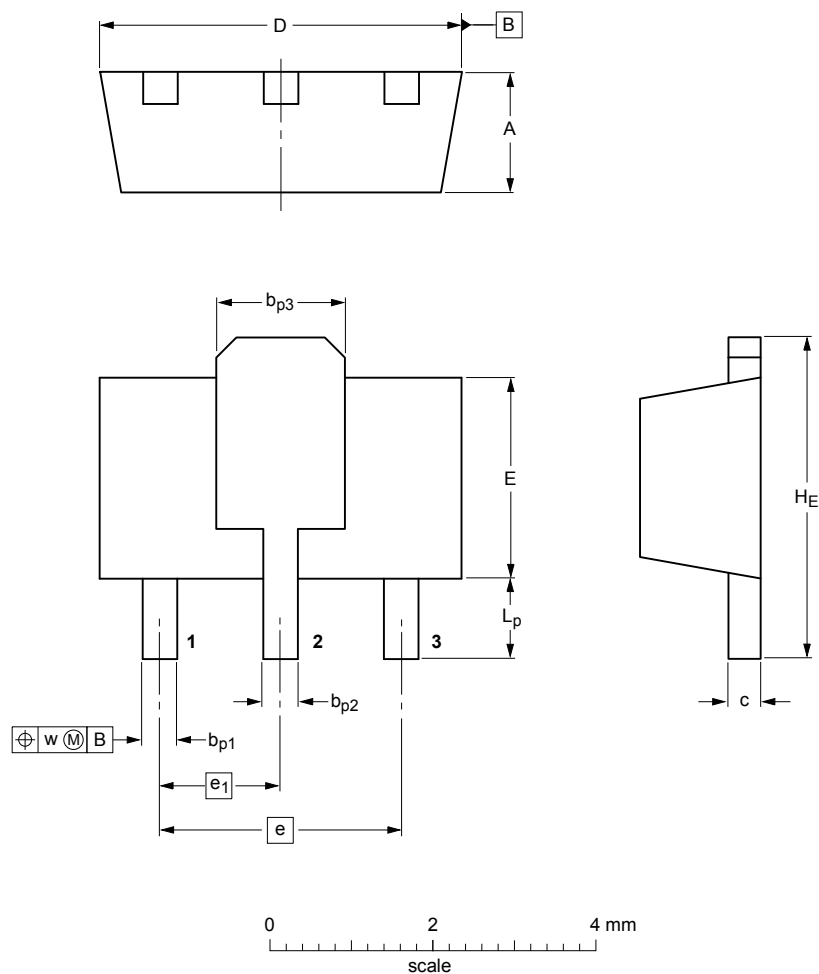


Fig.14 Safe operation area

■ 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