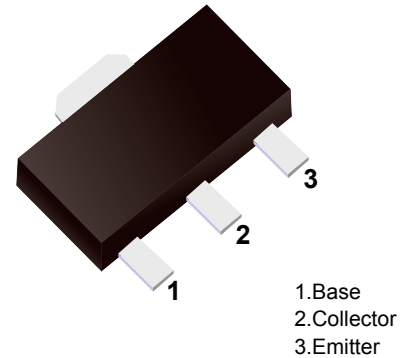


■ NPN Transistors



■ Simplified outline(SOT-89)

■ Features

- Low  $V_{CE(sat)}$
- Compliments to 2SB1132

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

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	40	V
Collector-Emitter Voltage	$V_{CEO}$	32	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current (DC) $P_w=20\text{ms, duty}=1/2$	$I_c$	1	A
		2	A
Collector Power Dissipation	$P_c$ *	0.5	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\* mounted on a 40x40x0.7mm ceramic board.

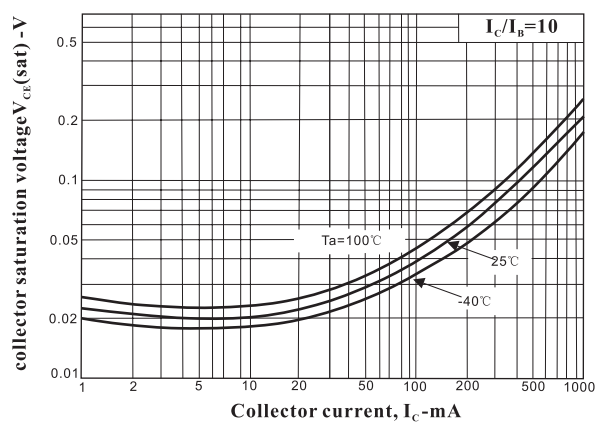
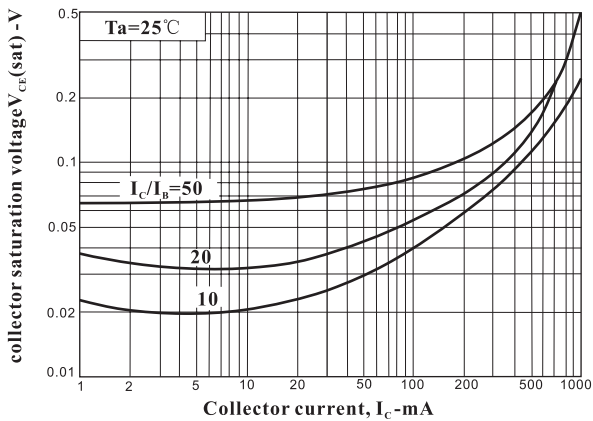
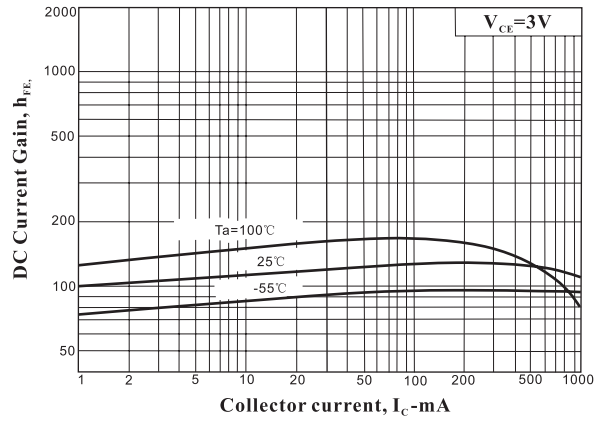
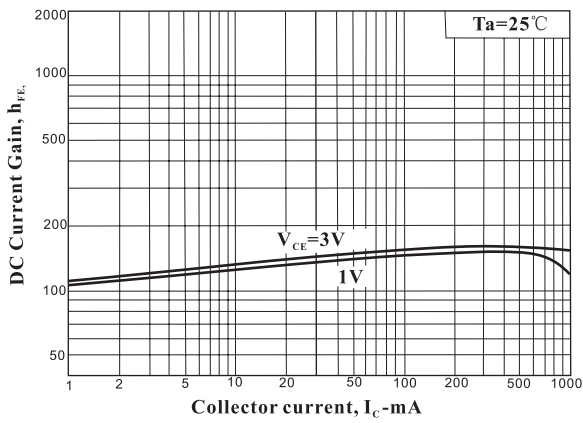
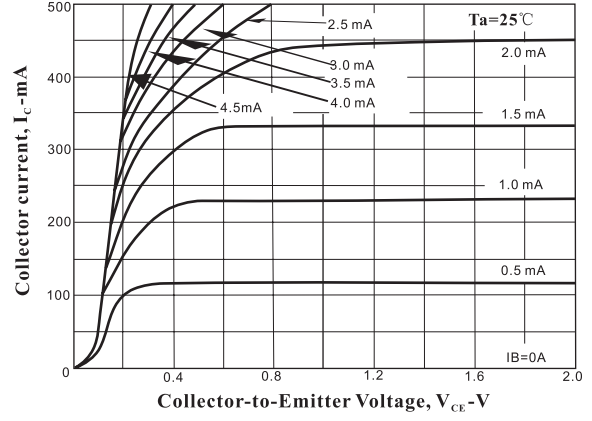
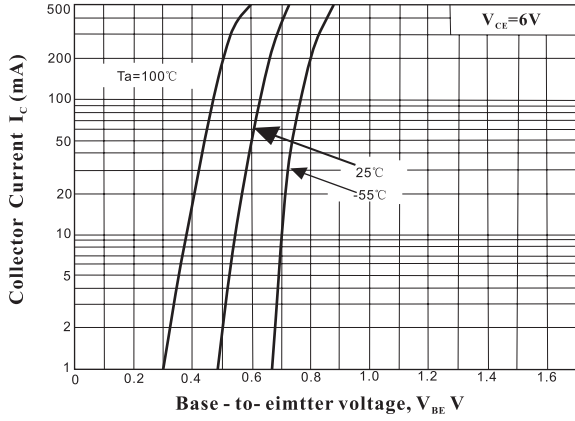
■ Electrical Characteristics  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_c = 50 \mu\text{A}, I_E = 0$	40			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_c = 1 \text{mA}, I_B = 0$	32			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = 50 \mu\text{A}$	5			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 20 \text{V}, I_E = 0$			0.5	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 4 \text{V}, I_c = 0$			0.5	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_c = 500 \text{mA}, I_B = 50 \text{mA}$		0.15	0.4	V
DC current gain	$h_{FE}$	$V_{CE} = 3 \text{V}, I_c = 100 \text{mA}$	82		390	
Collector output capacitance	$C_{ob}$	$V_{CB} = 10 \text{V}, I_E = 0, f = 1 \text{MHz}$		15		pF
Transition frequency	$f_r$	$V_{CE} = 5 \text{V}, I_c = -50 \text{mA}, f = 100 \text{MHz}$		150		MHz

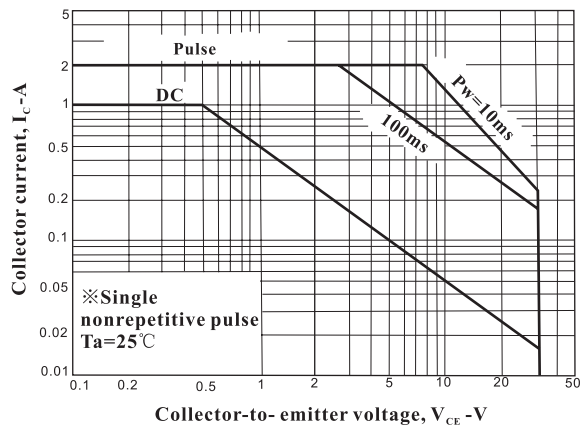
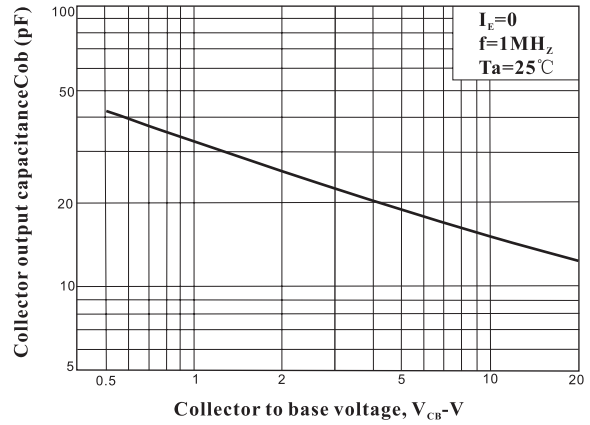
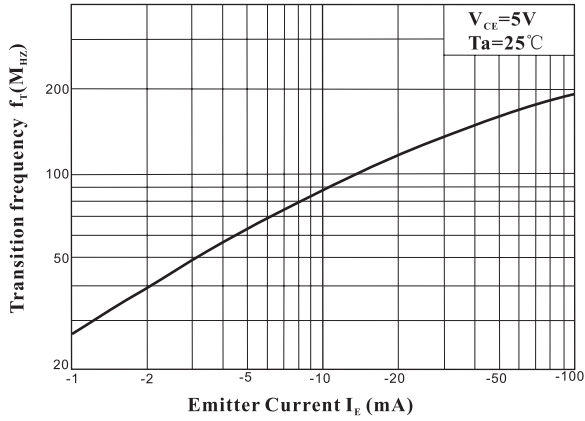
■  $h_{FE}$  Classification

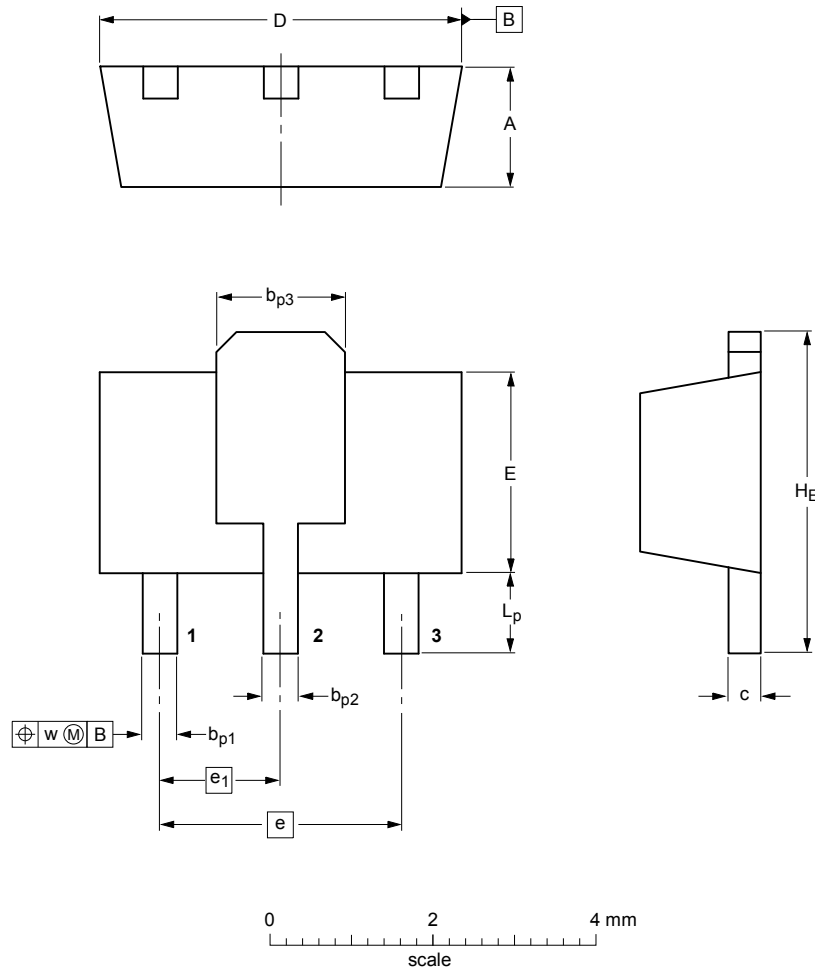
Type	2SD1664-P	2SD1664-Q	2SD1664-R
Range	82-180	120-270	180-390
Marking	DAP*	DAQ*	DAR*

■ Typical Characteristics



■ Typical Characteristics





**DIMENSIONS (mm are the original dimensions)**

UNIT	A	bp1	bp2	bp3	c	D	E	e	e1	HE	Lp	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

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