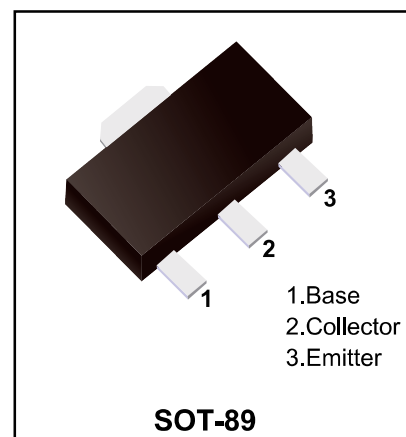


## NPN Plastic-Encapsulate Transistors

### Power Amplifier and Driver.

#### Features

- ◆ Low  $V_{CE(SAT)}$
- ◆ Complementary types: 2SA684



#### Absolute Maximum Rating ( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$BV_{CBO}$	60	V
Collector-Emitter Voltage	$BV_{CEO}$	50	V
Emitter-Base Voltage	$BV_{EBO}$	5	V
Collector Current	$I_C$	1	A
Collector Power Dissipation	$P_C$	1	W
Junction Temperature	$T_j$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	$-55 \sim +150$	$^{\circ}\text{C}$

#### Electrical Characteristics ( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	$BV_{CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	60			V
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = 1\text{mA}, I_B = 0$	50			V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	5			V
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 30\text{V}, I_E = 0$			100	nA
Emitter-base cut-off current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$			100	nA
DC current gain	$h_{FE1}$	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	85		340	
	$h_{FE2}$	$V_{CE} = 5\text{V}, I_C = 1\text{A}$	50			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$			0.4	V
Base-emitter On Voltage	$V_{BE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$			1.2	V
Transition frequency	$f_T$	$V_{CE} = -10\text{V}, I_C = 50\text{mA}$	50			MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$		40		pF

#### $h_{FE}(2)$ Classification

Classification	Q	R	S
Range	85-170	120-240	170-340
Marking	1384Q	1384R	1384S

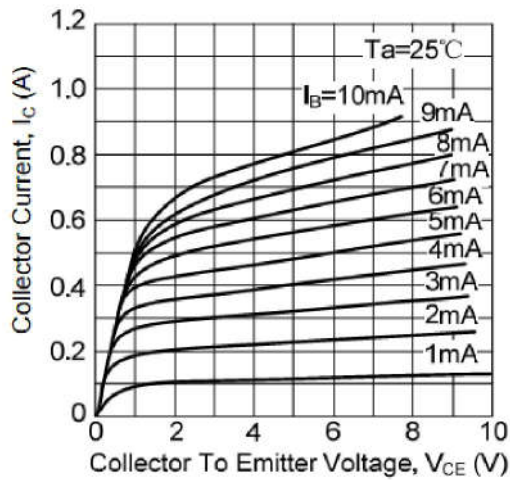


Figure 1. Static Characteristic

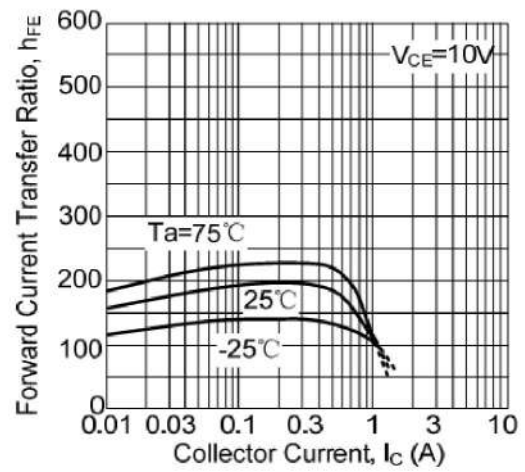


Figure 2. DC current Gain

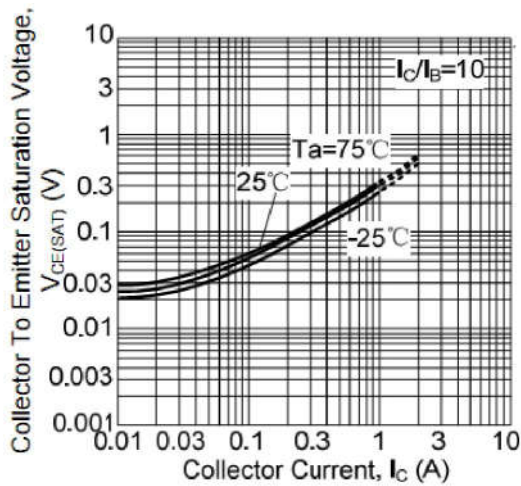


Figure 3. Collector-Emitter Saturation Voltage

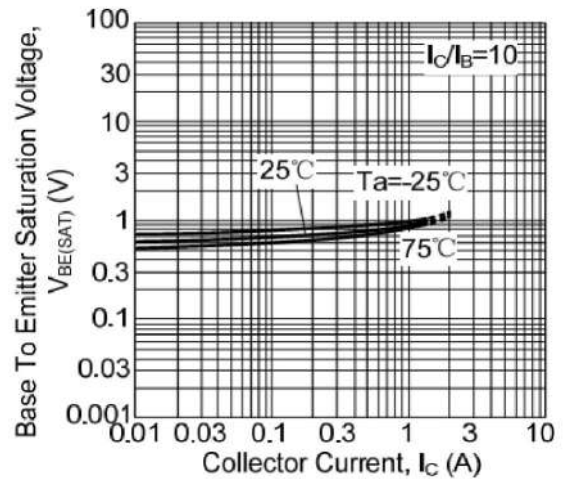


Figure 4. Base-Emitter Saturation Voltage

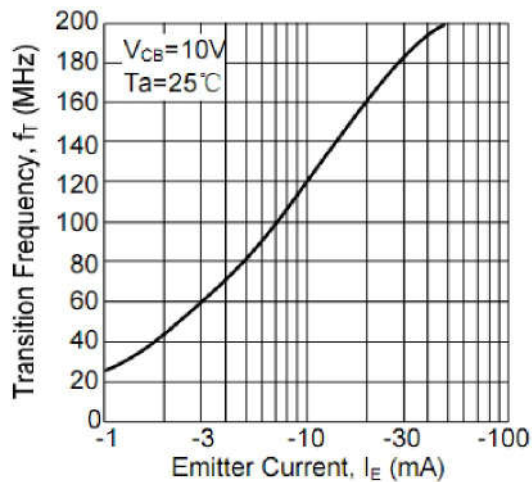


Figure 5. Current Gain Bandwidth Product

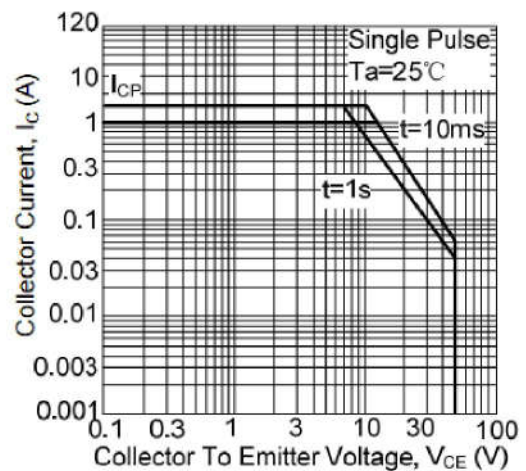


Figure 6. Safe Operating Area

### Ordering information

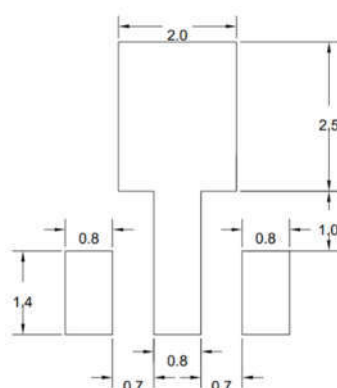
Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

### Package Dimensions

#### SOT-89

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

### The recommended mounting pad size



UNIT:MM

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