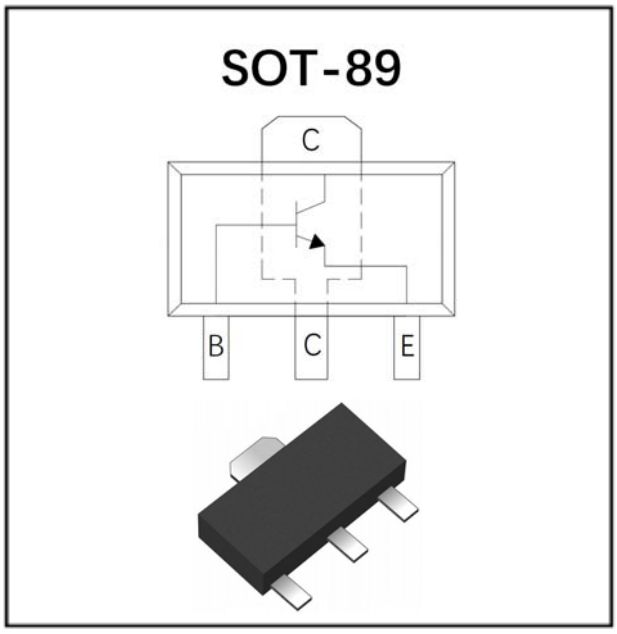
NPN Plastic-Encapsulate Transistor



Features

- Epoxy meets UL-94 V-0 flammability rating and halogen free
- Moisture Sensitivity Level 1
- High power dissipation capability
- Exposed heatsink for excellent thermal and electrical conductivity
- Part no. with suffix “Q” means AEC-Q101 qualified

Application

- Linear voltage regulators、Low-side switches
- Battery-driven devices、MOSFET drivers
- Amplifiers

Mechanical Data

- **Package**: SOT-89
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- Marking: BD.

■Maximum Ratings (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Value
Minimum Collector-Emitter Voltage	V_{CEO}	V	45
Minimum Collector-Base Voltage	V_{CBO}	V	45
Minimum Emitter-Base Voltage	V_{EBO}	V	5
Collector Current	I_C	A	1
Collector Power Dissipation (*)	P_C	mW	500
Thermal Resistance From Junction To Ambient (*)	$R_{\theta JA}$	℃/W	250
Operation Junction Temperature	T_j	℃	-55 to +150
Storage Temperature	T_{stg}	℃	-55 to +150

(*) Device mounted on FR-4 PCB 1.0 x 1.0 x 0.06 inch.

■Electrical Characteristics (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-Emitter Voltage	V_{CEO}	V	I_C=10mA, I_B=0	45		
Collector-Base Voltage	V_{CBO}	V	I_C=100uA, I_E=0	45		
Emitter-Base Voltage	V_{EBO}	V	I_E=100uA, I_C=0	5		
Collector-Base cut-off current	I_{CBO}	nA	V_{CB}=30V			100
Emitter-Base cut-off current	I_{EBO}	nA	V_{EB}=5V			100
DC Current Gain	h_{FE}		V_{CE}=2V I_C=5mA	40		
	h_{FE}		V_{CE}=2V I_C=150mA	100		250
	h_{FE}		V_{CE}=2V I_C=500mA	25		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	I_C=500mA I_B=50mA			0.5
Base-Emitter Voltage	V_{BE}	V	V_{CE}=2V I_C=500mA			1
Transition Frequency	f_T	MHz	I_C=10mA, V_{CE}=5V,f=100MHz		130	

■Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
BCX54-16Q	F2	Approximate 0.055	1000	8000	32000	7” reel

■Characteristics (Typical)

Fig.1-Static Characteristic

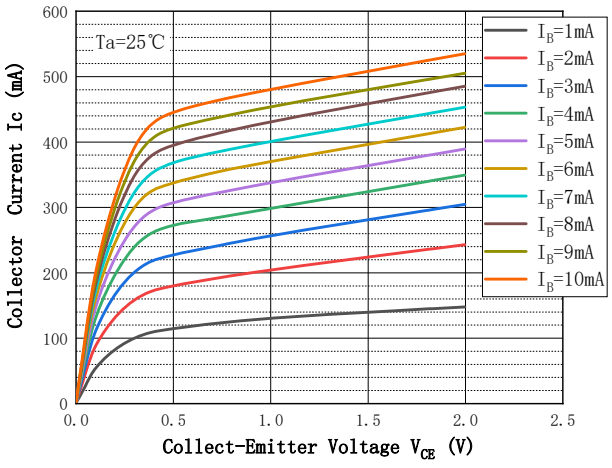


Fig.2 - DC Current Gian

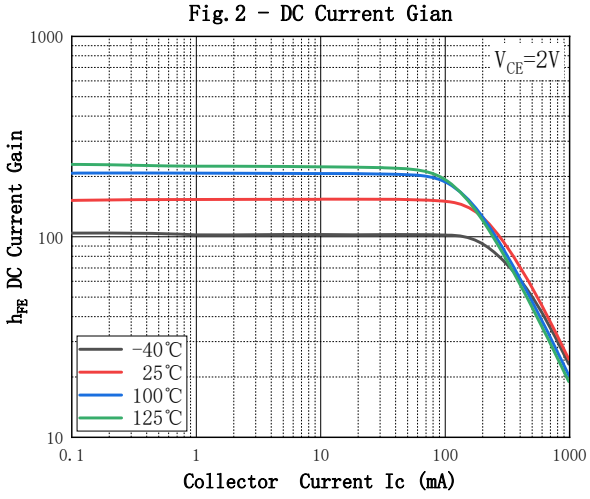


Fig. 3 - Collect-Emitter Saturation Voltage

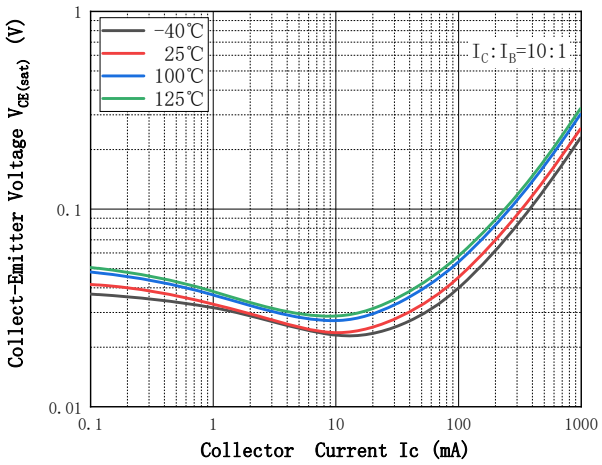


Fig. 4 - Base-Emitter Voltage

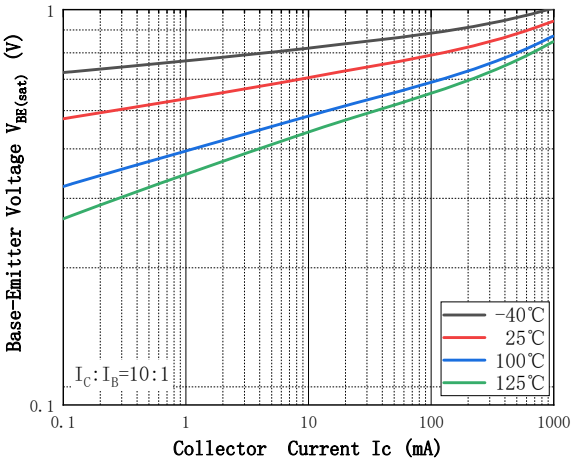


Fig. 5 - Base-Emitter On Voltage

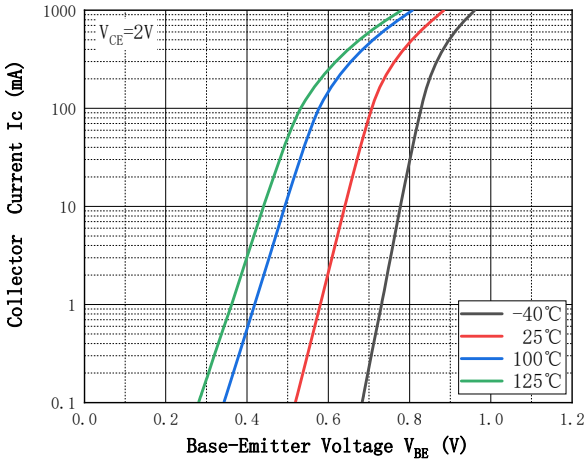


Fig. 6 - Cob/Cib—V_{CB}/V_{EB}

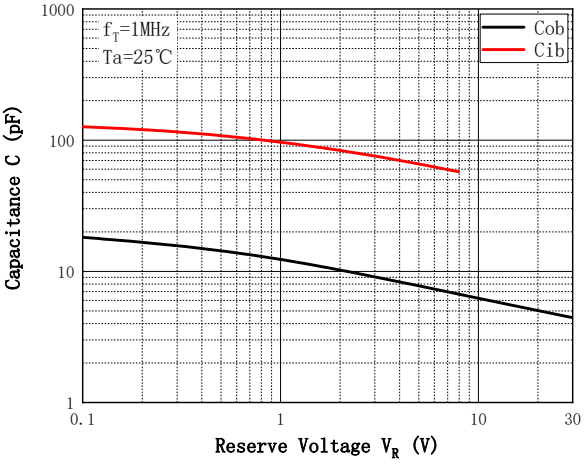
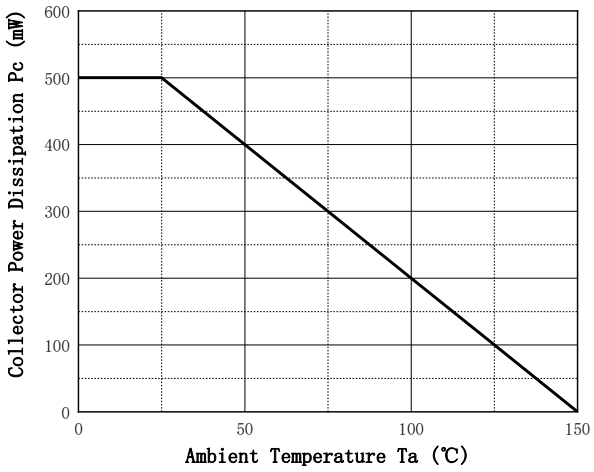
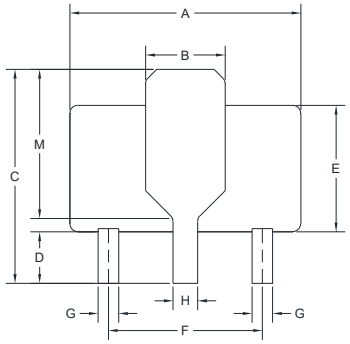


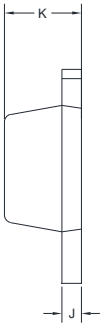
Fig. 7 - Collector Power Derating Curve



■SOT-89 Package Outline Dimensions



BOTTOM VIEW

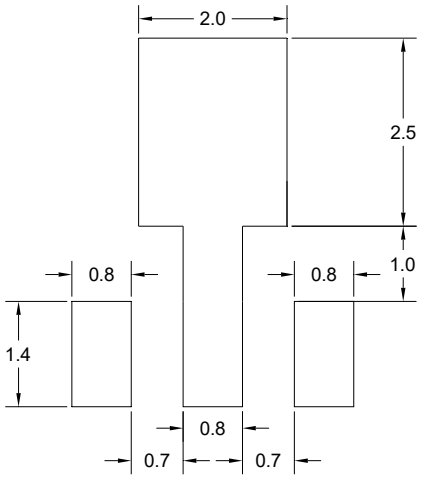


SIDE VIEW

SIDE VIEW

DIMENSIONS				
DIM	INCHES		MM	
	MIN.	MAX.	MIN.	MAX.
A	0.173	0.181	4.400	4.600
B	0.061 TYP.		1.550 TYP.	
C	0.155	0.167	3.940	4.250
D	0.031	0.047	0.800	1.200
E	0.094	0.102	2.400	2.600
F	0.118 TYP.		3.00 TYP.	
G	0.014	0.019	0.360	0.480
H	0.017	0.022	0.440	0.560
J	0.014	0.017	0.350	0.440
K	0.055	0.063	1.400	1.600
L	0.059 TYP.		1.500 TYP.	
M	0.108 TYP.		2.750 TYP.	

■SOT-89 Suggested Pad Layout



UNIT:MM

SUGGESTED SOLDER PAD LAYOUT

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