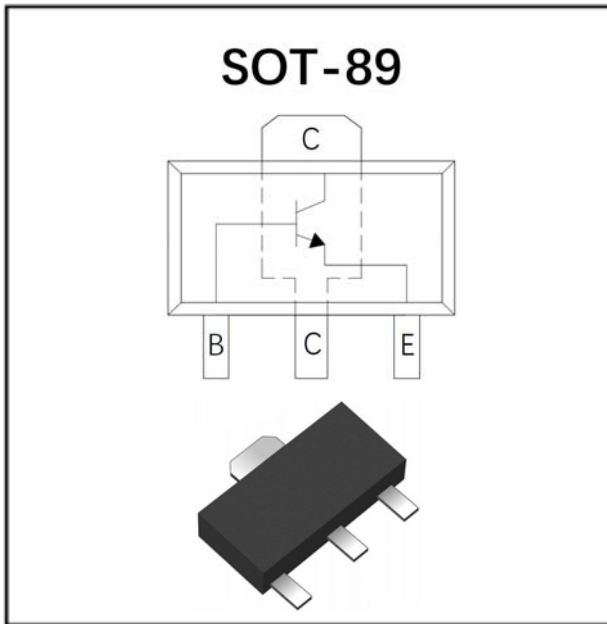


## NPN Plastic-Encapsulate Transistor



### 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°C 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 (*)	$R_{\theta JA}$	°C/W	250
Operation Junction Temperature	$T_j$	°C	-55 to +150
Storage Temperature	$T_{stg}$	°C	-55 to +150

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



# BCX54-16Q

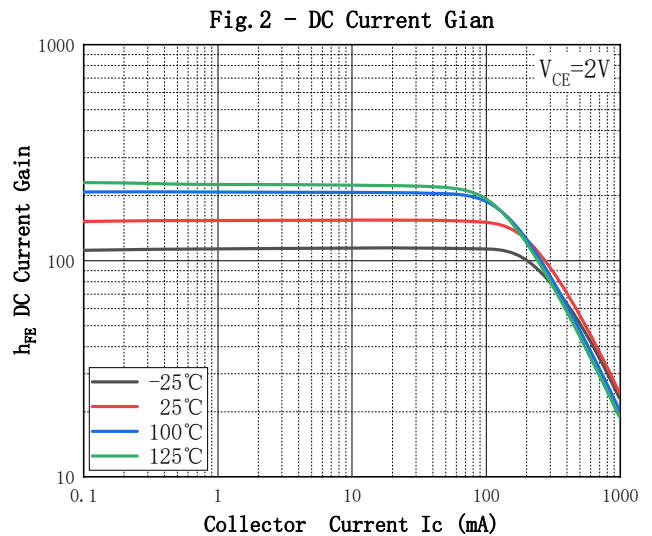
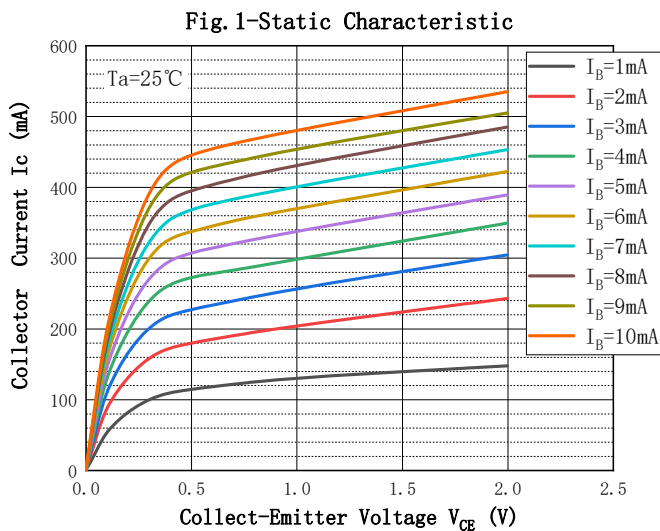
## ■Electrical Characteristics (Ta=25°C unless otherwise noted)

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	$I_C=100\mu A, I_E=0$	45		
Emitter-Base Voltage	$V_{EBO}$	V	$I_E=100\mu A, I_C=0$	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		
	$h_{FE}$		$V_{CE}=2V, I_C=150mA$	63		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)

PREFERRED 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)





# BCX54-16Q

Fig. 3 - Collect-Emmitter Saturation Voltage

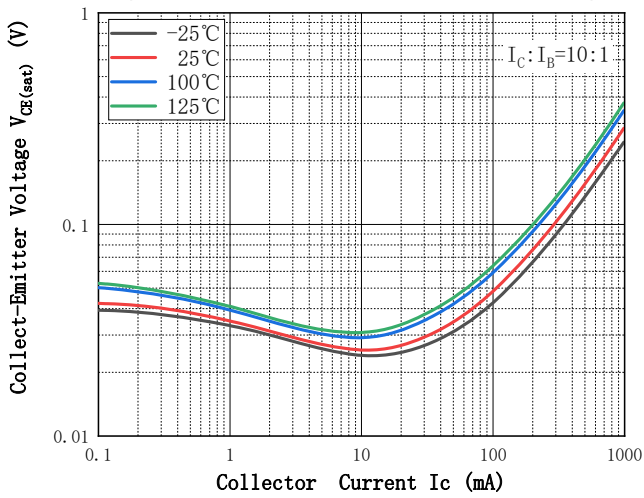


Fig. 4 - Base-Emmitter Voltage

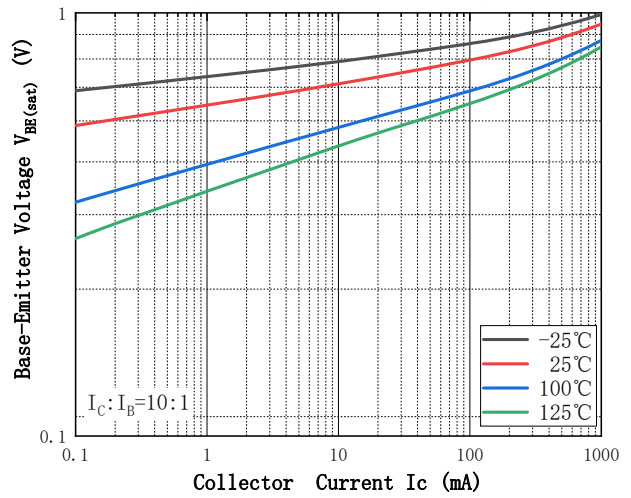


Fig. 5 - Base-Emmitter On Voltage

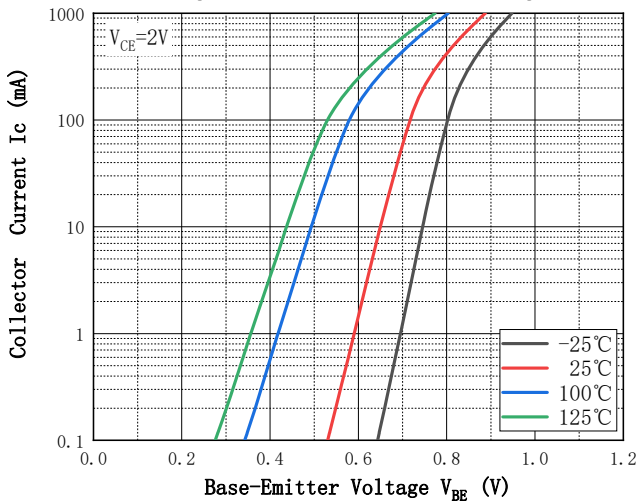


Fig. 6 -  $C_{ob}/C_{ib}-V_{CB}/V_{EB}$

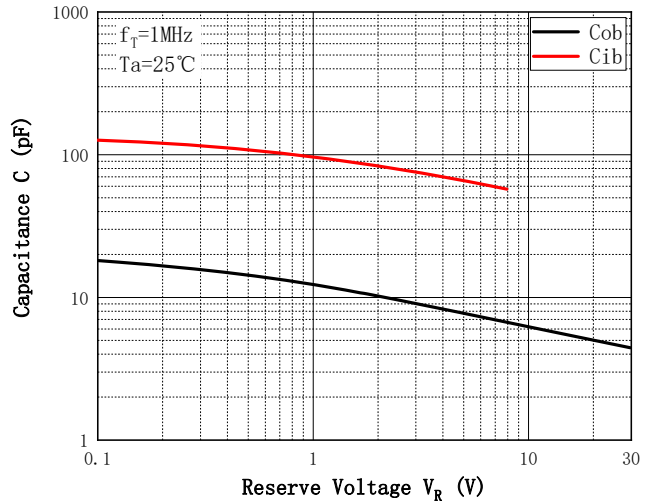
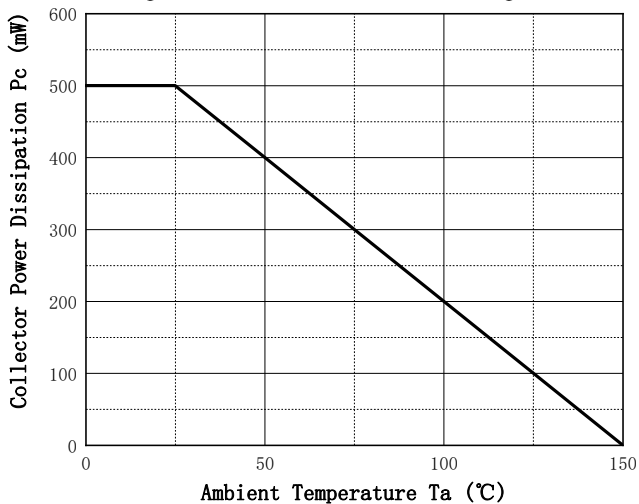


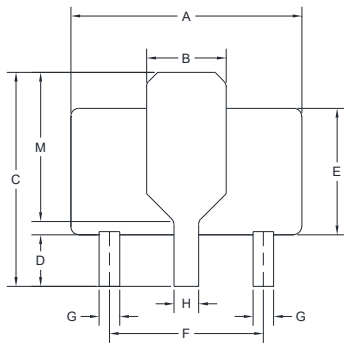
Fig. 7 - Collector Power Derating Curve



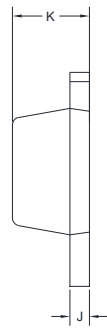


# BCX54-16Q

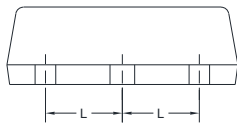
## ■SOT-89 Package Outline Dimensions



BOTTOM VIEW



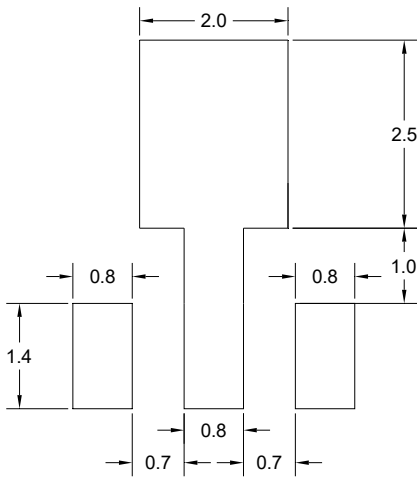
SIDE VIEW



SIDE VIEW

DIM	DIMENSIONS			
	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



## BCX54-16Q

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