

BCX54 / BCX55 / BCX56**BCX54-10 / BCX55-10 / BCX56-10****BCX54-16 / BCX55-16 / BCX56-16****List**

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BCX54 / BCX55 / BCX56**BCX54-10 / BCX55-10 / BCX56-10****BCX54-16 / BCX55-16 / BCX56-16**

Medium Power Transistors
NPN Silicon

Features

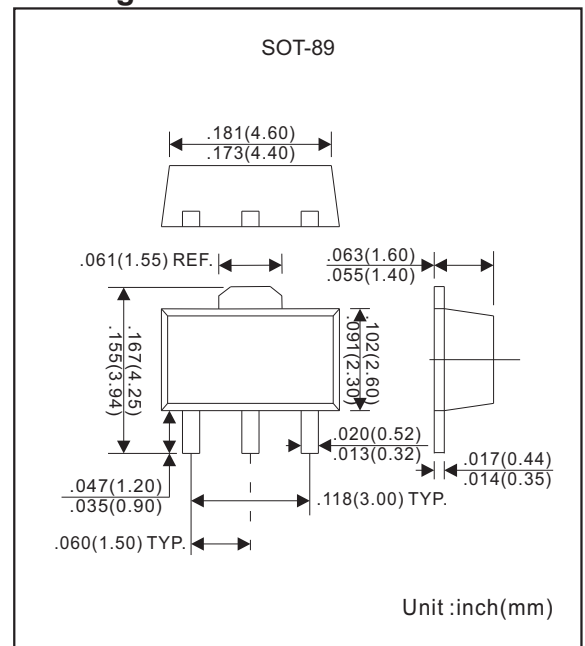
- Low voltage
- High current
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen free part, ex. BCX54-H

Applications

- Driver stages of audio amplifiers

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-89
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.045 gram

Package outline**Maximum ratings** (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	Symbol	Value	UNIT
Collector-base voltage BCX54 BCX55 BCX56	V_{CBO}	45 60 100	V
Collector-emitter voltage BCX54 BCX55 BCX56	V_{CEO}	45 60 80	V
Emitter-base voltage	V_{EBO}	5.0	V
Collector current -continuous	I_C	1.0	A
Collector power dissipation	P_C	500	mW
Typical thermal resistance junction to ambient	$R_{\theta JA}$	250	$^{\circ}\text{C/W}$
Operating junction temperature range	T_J	-55 to +150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

BCX54 / BCX55 / BCX56**BCX54-10 / BCX55-10 / BCX56-10****BCX54-16 / BCX55-16 / BCX56-16****Electrical characteristics** (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

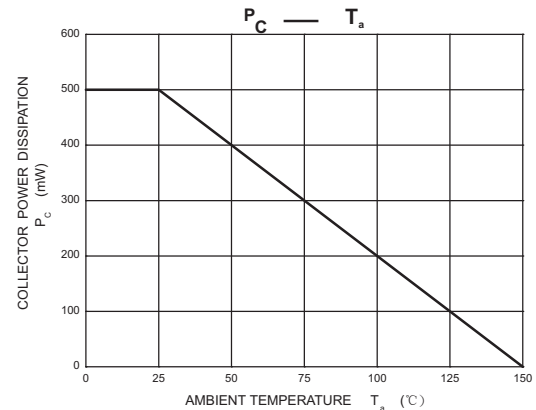
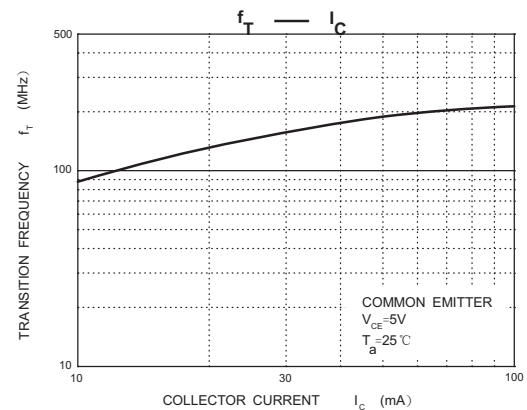
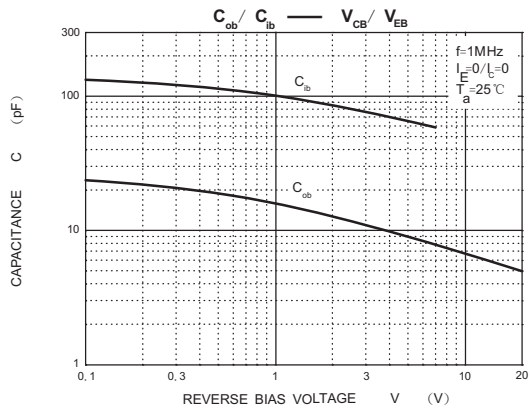
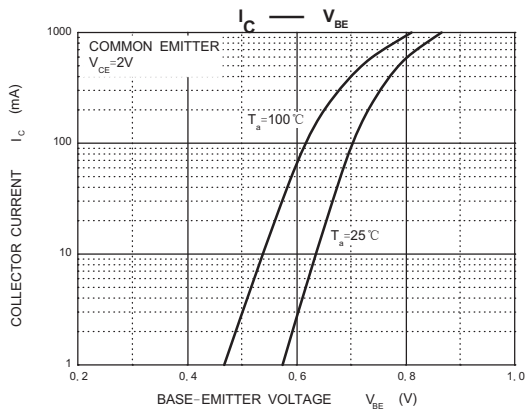
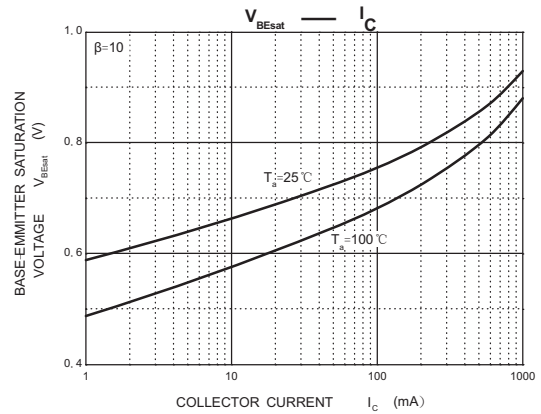
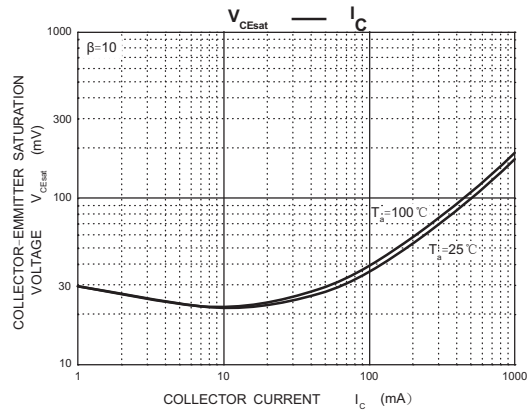
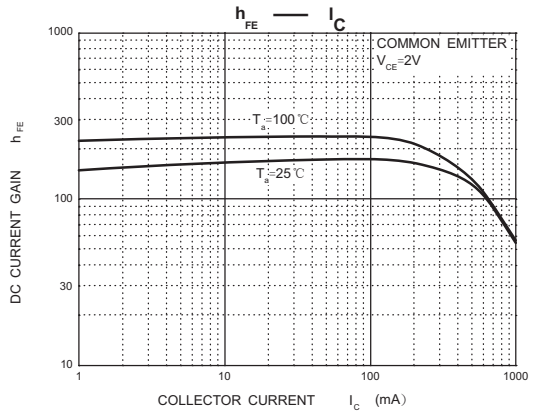
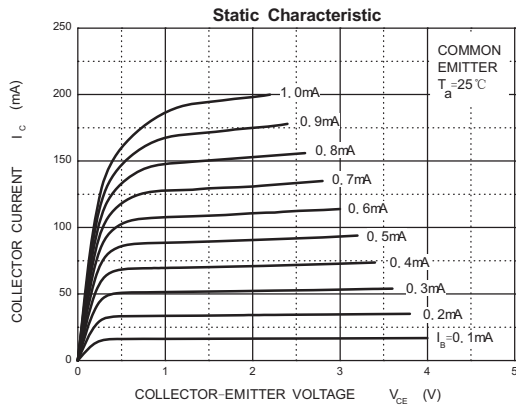
PARAMETER	CONDITIONS	Symbol	Min.	Typ.	Max.	UNIT
Collector- base breakdown voltage	$I_C = 100\mu\text{A}, I_E = 0$ BCX54 BCX55 BCX56	$V_{(BR)CBO}$	45 60 100			V
Collector-emitter breakdown voltage	$I_C = 10\text{mA}, I_B = 0$ BCX54 BCX55 BCX56	$V_{(BR)CEO}$	45 60 80			V
Emitter-base breakdown voltage	$I_E = 100\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5.0			V
Collector cutoff current	$V_{CB} = 30\text{V}, I_E = 0$	I_{CBO}			0.1	μA
Emitter cutoff current	$V_{EB} = 5\text{V}, I_C = 0$	I_{EBO}			0.1	μA
DC current gain*	$V_{CE} = 2\text{V}, I_C = 5\text{mA}$ $V_{CE} = 2\text{V}, I_C = 150\text{mA}$ $V_{CE} = 2\text{V}, I_C = 500\text{mA}$	h_{FE}	40 63 25		- 250 -	
Collector-emitter saturation voltage*	$I_C = 500\text{mA}, I_B = 50\text{mA}$	$V_{CE(sat)}$			0.5	V
Base -emitter voltage*	$V_{CE} = 2\text{V}, I_C = 500\text{mA}$	V_{BE}			1.0	V
Transition frequency	$V_{CE} = 5\text{V}, I_C = 10\text{mA}, f=100\text{MHz}$	f_T		130		MHZ

* Measured using pulse current.

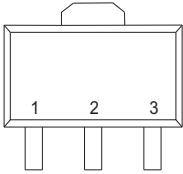
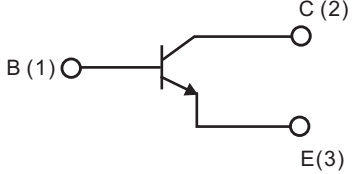
Classification of h_{FE}

Rank	BCX54 BCX55 BCX56	BCX54-10 BCX55-10 BCX56-10	BCX54-16 BCX55-16 BCX56-16
Range	63-250	63-160	100-250

Rating and characteristic curves (BCX54 / BCX55 / BCX56)

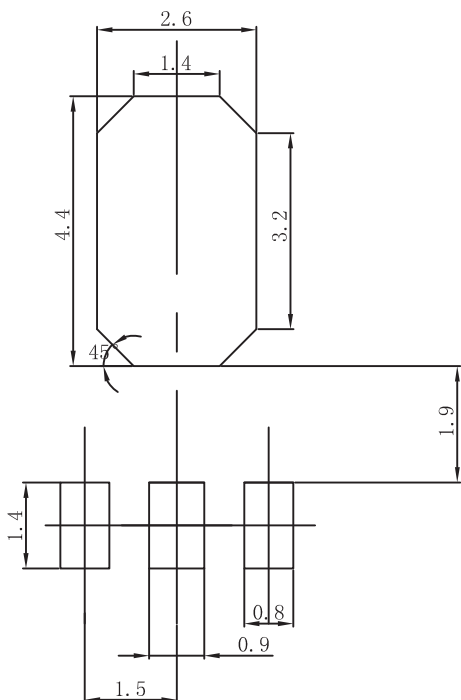


BCX54 / BCX55 / BCX56**BCX54-10 / BCX55-10 / BCX56-10****BCX54-16 / BCX55-16 / BCX56-16****Pinning information**

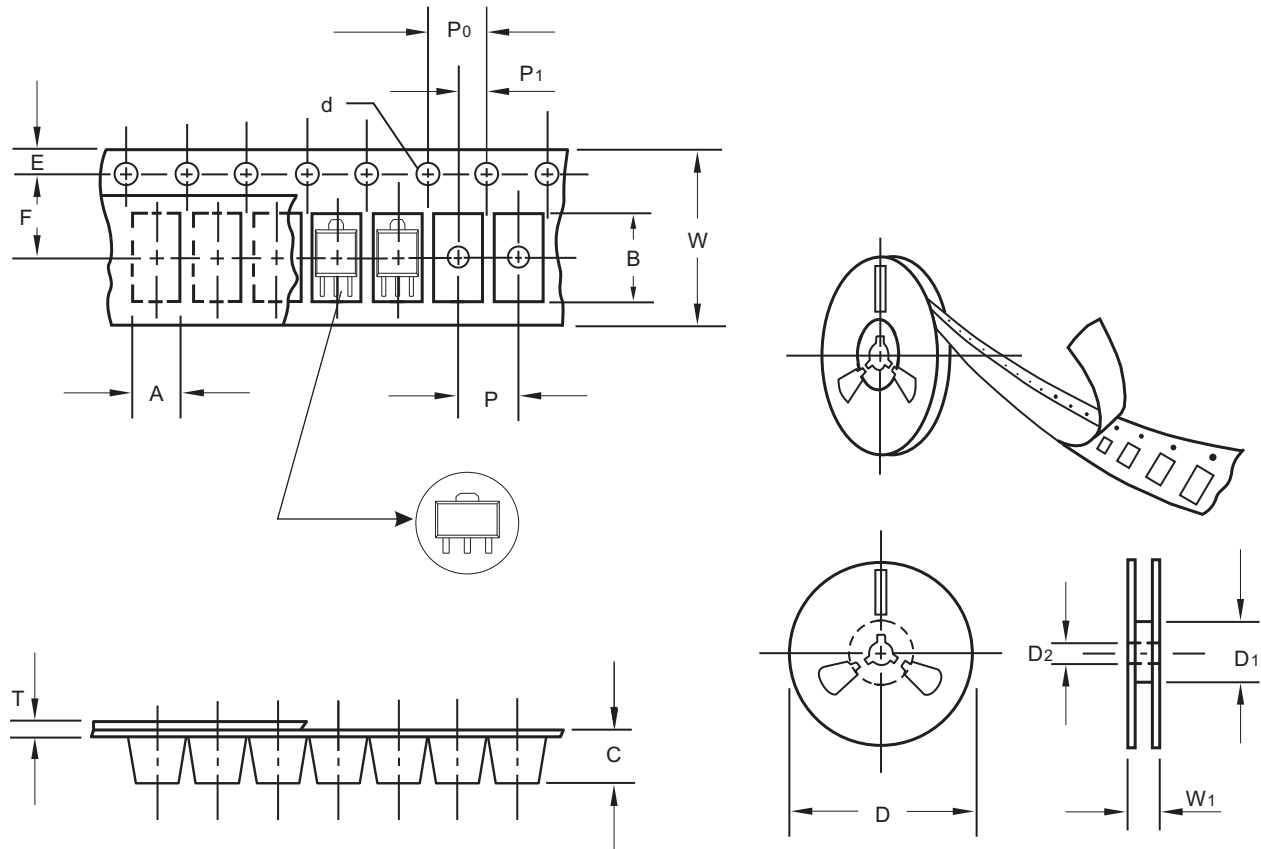
Pin	Simplified outline	Symbol
Pin1 BASE Pin2 COLLECTOR Pin3 EMITTER		

Marking

Type number	Marking code
BCX54	BA
BCX55	BE
BCX56	BH
BCX54-10	BC
BCX55-10	BG
BCX56-10	BK
BCX54-16	BD
BCX55-16	BM
BCX56-16	BL

Suggested solder pad layout**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

BCX54 / BCX55 / BCX56**BCX54-10 / BCX55-10 / BCX56-10****BCX54-16 / BCX55-16 / BCX56-16****Packing information**

unit:mm

Item	Symbol	Tolerance	SOT-89
Carrier width	A	0.1	4.85
Carrier length	B	0.1	4.45
Carrier depth	C	0.1	1.85
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	1.0	180.00
7" Reel inner diameter	D1	1.5	60.00
Feed hole diameter	D2	0.2	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
Punch hole pitch	P	0.1	8.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.01	0.292
Tape width	W	0.1	12.00
Reel width	W1	0.2	16.50

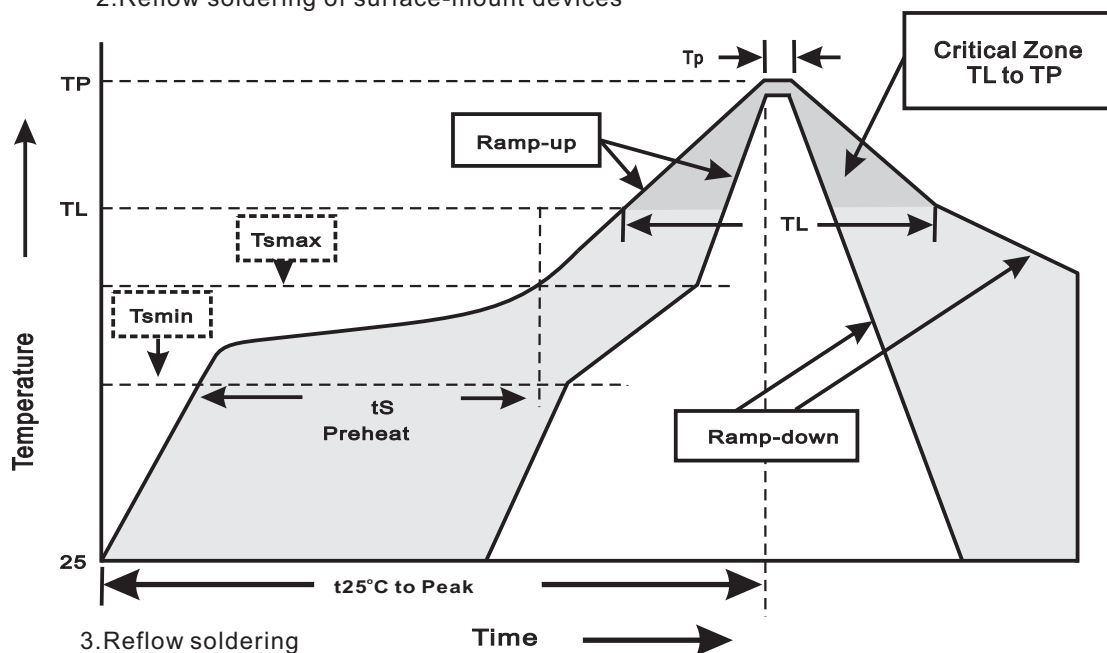
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BCX54 / BCX55 / BCX56**BCX54-10 / BCX55-10 / BCX56-10****BCX54-16 / BCX55-16 / BCX56-16****Reel packing**

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA. (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-89	7"	1,000	8.0	10,000	183*123*183	178	382*257*387	80,000	18.5

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices

**3.Reflow soldering**

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	$<3^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$