

BCX51-Q1/BCX52-Q1/BCX53-Q1**BCX51-10-Q1/BCX52-10-Q1/BCX53-10-Q1****BCX51-16-Q1/BCX52-16-Q1/BCX53-16-Q1****List**

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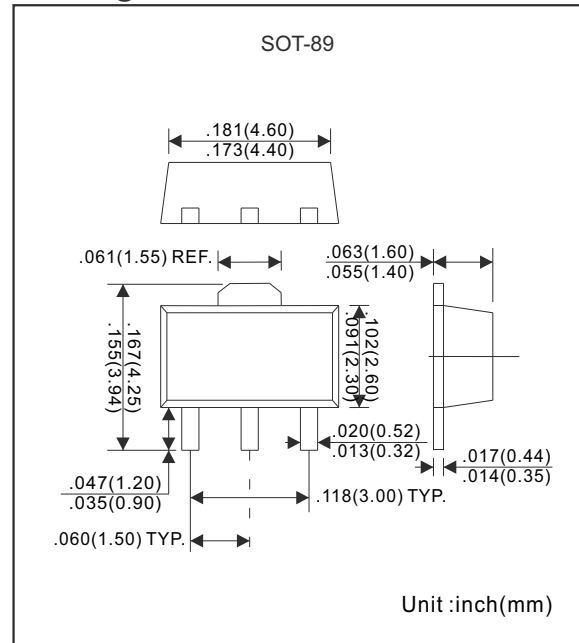
- Low voltage.
- High current.
- -Q1 for automotive and other applications requiring unique site an control change requirements; AEC-Q101 qualified and PPAP capable.

Applications

- Medium power general purpose.
- Driver stages of audio amplifier.

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 to base voltage	BCX51-Q1	$-V_{CBO}$	45	V
	BCX52-Q1		60	
	BCX53-Q1		100	
Collector to Emitter Voltage	BCX51-Q1	$-V_{CEO}$	45	V
	BCX52-Q1		60	
	BCX53-Q1		80	
Emitter to base voltage		$-V_{EBO}$	5	V
Collector current		$-I_C$	1	A
Total power dissipation		P_C	500	mW
Thermal resistance form junction to ambient		$R_{\theta JA}$	250	$^\circ\text{C}/\text{W}$
Junction temperature		T_J	+150	$^\circ\text{C}$
Storage temperature		T_{STG}	-55 ~ +150	$^\circ\text{C}$

BCX51-Q1/BCX52-Q1/BCX53-Q1**BCX51-10-Q1/BCX52-10-Q1/BCX53-10-Q1****BCX51-16-Q1/BCX52-16-Q1/BCX53-16-Q1****Electrical characteristics** (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

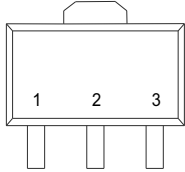
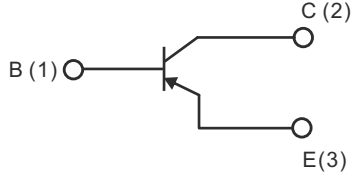
Parameter		Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	BCX51-Q1	$-I_C=100\mu\text{A}$, $I_E=0$	$-V_{(BR)CBO}$	45			V
	BCX52-Q1			60			
	BCX53-Q1			100			
Collector-emitter breakdown voltage	BCX51-Q1	$-I_C=10\text{mA}$, $I_B=0$	$-V_{(BR)CEO}$	45			V
	BCX52-Q1			60			
	BCX53-Q1			80			
Emitter-base breakdown voltage		$-I_E=100\mu\text{A}$, $I_C=0$	$-V_{(BR)EBO}$	5			V
Collector cut-off current		$-V_{CB}=30\text{V}$, $I_E=0$	$-I_{CBO}$			0.1	μA
Emitter cut-off current		$-V_{EB}=5\text{V}$, $I_C=0$	$-I_{EBO}$			0.1	μA
DC current gain (Note 1)	$-V_{CE}=2\text{V}$, $-I_C=5\text{mA}$		$h_{FE(1)}$	63			
	$-V_{CE}=2\text{V}$, $-I_C=150\text{mA}$		$h_{FE(2)}$	63		250	
	$-V_{CE}=2\text{V}$, $-I_C=0.5\text{A}$		$h_{FE(3)}$	40			
Collector-emitter saturation voltage (Note 1)		$-I_C=0.5\text{A}$, $-I_B=50\text{mA}$	$-V_{CE(sat)}$			0.5	V
Base-emitter voltage (Note 1)		$-V_{CE}=2\text{V}$, $-I_C=0.5\text{A}$	$-V_{BE}$			1	V
Transition frequency		$-V_{CE}=5\text{V}$, $-I_C=10\text{mA}$, $f=100\text{MHZ}$	f_T		50		MHZ

Note : 1.Pulse test

Classification of $h_{FE(2)}$

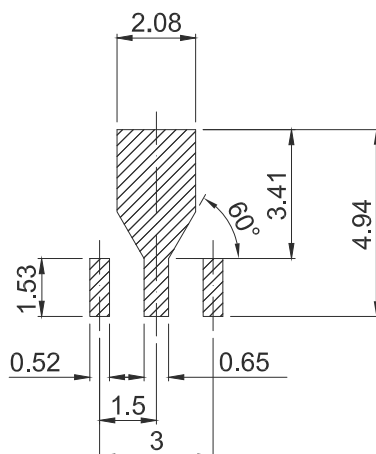
Rank	BCX51-Q1 BCX52-Q1 BCX53-Q1	BCX51-10-Q1 BCX52-10-Q1 BCX53-10-Q1	BCX51-16-Q1 BCX52-16-Q1 BCX53-16-Q1
Range	63 ~ 250	63 ~ 160	100 ~ 250

BCX51-Q1/BCX52-Q1/BCX53-Q1**BCX51-10-Q1/BCX52-10-Q1/BCX53-10-Q1****BCX51-16-Q1/BCX52-16-Q1/BCX53-16-Q1****Pinning information**

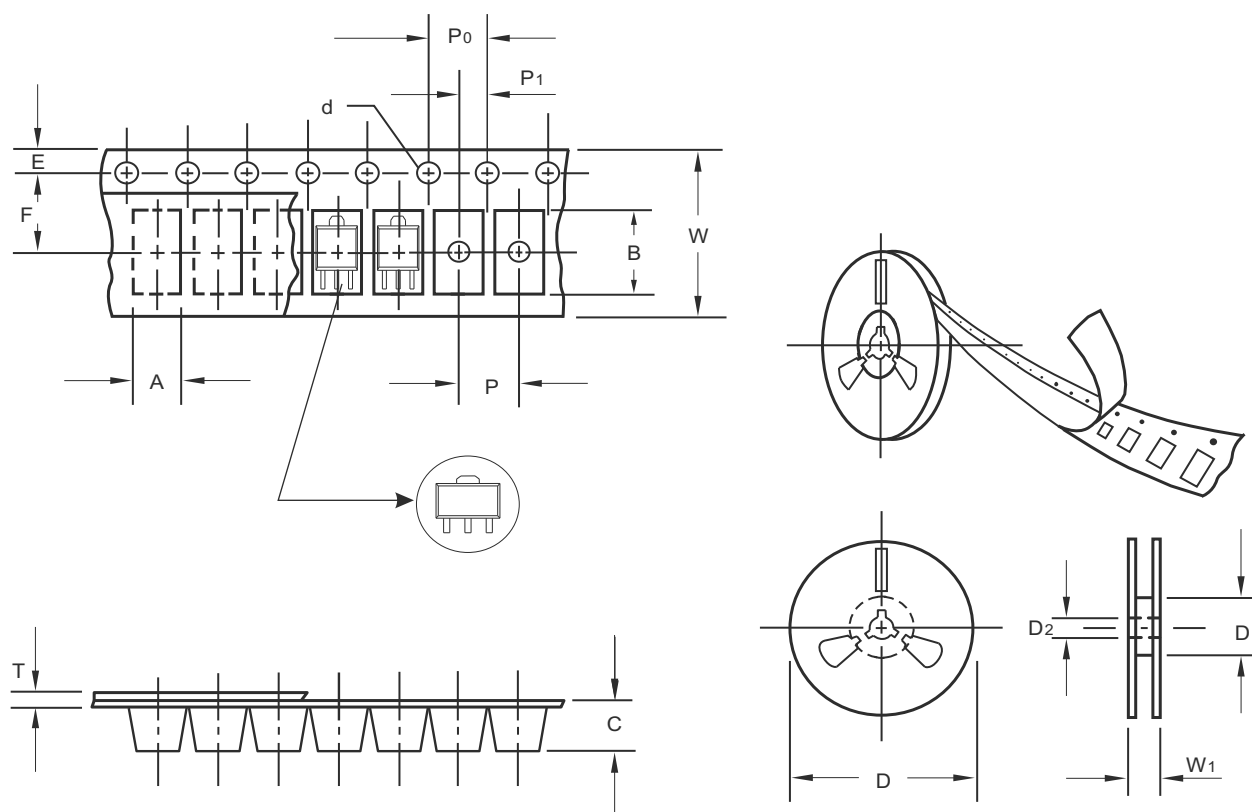
Pin	Simplified outline	Symbol
Pin1 BASE Pin2 COLLECTOR Pin3 EMITTER		

Marking

Type Number	Marking Code
BCX51-Q1	AA
BCX52-Q1	AE
BCX53-Q1	AH
BCX51-10-Q1	AC
BCX52-10-Q1	AG
BCX53-10-Q1	AK
BCX51-16-Q1	AD
BCX52-16-Q1	AM
BCX53-16-Q1	AL

Suggested solder pad layout**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

BCX51-Q1/BCX52-Q1/BCX53-Q1**BCX51-10-Q1/BCX52-10-Q1/BCX53-10-Q1****BCX51-16-Q1/BCX52-16-Q1/BCX53-16-Q1****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

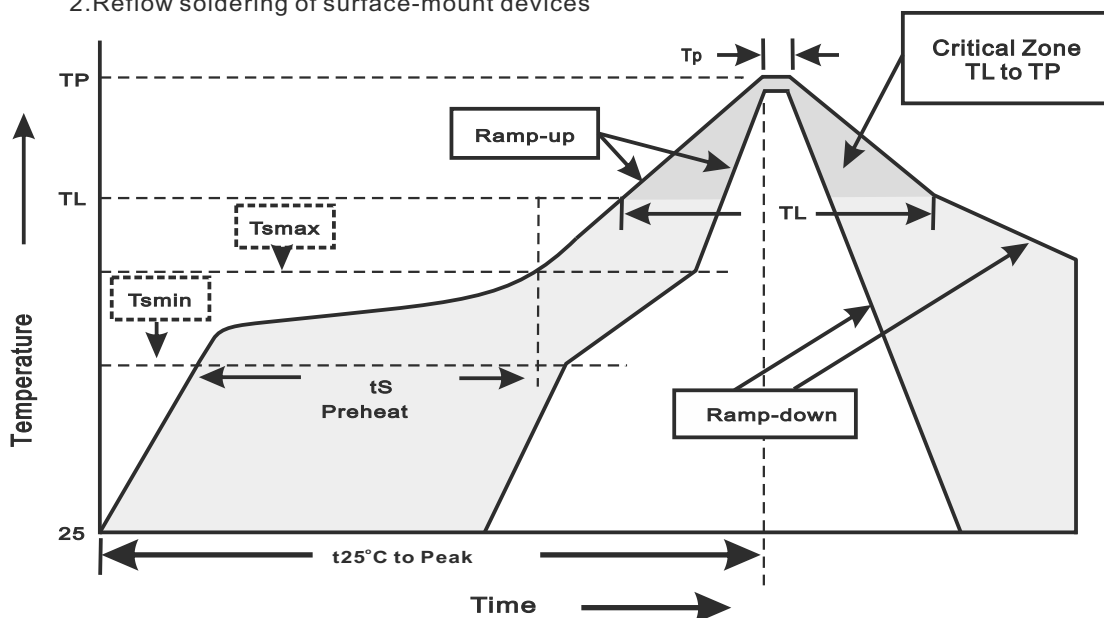
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

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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°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} to T _L -Ramp-upRate	<3°C/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	<6°C/sec
Time 25°C to Peak Temperature	<6minutes