

BC807-16W-Q1/BC807-25W-Q1/ BC807-40W-Q1

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General Purpose Transistors PNP Silicon

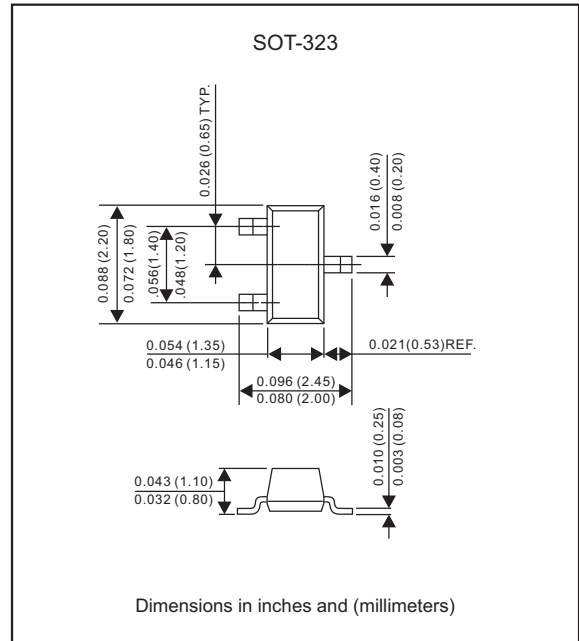
Features

- Collector current capability $I_C = -500$ mA.
- Collector-emitter voltage $V_{CEO(max)} = -45$ V.
- General purpose switching and amplification.
- We declare that the material of product compliance with RoHS requirements.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free part, ex. BC807-16W-Q1-H.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

Package outline



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

PARAMETER	Symbol	Value	UNIT
Collector-Base voltage	V_{CBO}	-50	V
Collector-Emitter voltage	V_{CEO}	-45	V
Emitter-Base voltage	V_{EBO}	-5.0	V
Collector Current — Continuous	I_C	-500	mAdc

Thermal characteristics (AT $T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Total device dissipation FR-5 board(1)	$T_A = 25^\circ\text{C}$	P_D			150	mW
	Derate above 25°C				1.2	mW/ $^\circ\text{C}$
Thermal resistance	Junction to ambient	$R_{\theta JA}$			833	$^\circ\text{C}/\text{W}$
Total device dissipation alumina substrate(2)	$T_A = 25^\circ\text{C}$	P_D			200	mW
	Derate above 25°C				1.6	mW/ $^\circ\text{C}$
Thermal resistance	Junction to ambient	$R_{\theta JA}$			625	$^\circ\text{C}/\text{W}$
Operation junction temperature range		T_J	-55		+150	$^\circ\text{C}$
Storage temperature range		T_{STG}	-55		+150	$^\circ\text{C}$

1.FR-5 = 1.0 X 0.75 X 0.062 in.

2.Alumina = 0.4 X 0.3 X 0.024 in. 99.5% alumina.

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Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Off characteristics

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Collector-Emitter breakdown voltage	$I_C = -10\text{mA}$	$V_{(BR)CEO}$	-45			V
Collector-Emitter breakdown voltage	$I_C = -10\mu\text{A}$, $V_{EB} = 0$	$V_{(BR)CES}$	-50			V
Emitter-Base breakdown voltage	$I_E = -1.0\mu\text{A}$	$V_{(BR)EBO}$	-5.0			V
Collector cut-off current	$V_{CB} = -45\text{V}$, $I_E = 0$	I_{CBO}			-0.1	μA
	$V_{CE} = -40\text{V}$, $I_B = 0$	I_{CEO}			-0.2	μA
Emitter cut-off current	$V_{EB} = -4\text{V}$, $I_C = 0$	I_{EBO}			-0.1	μA

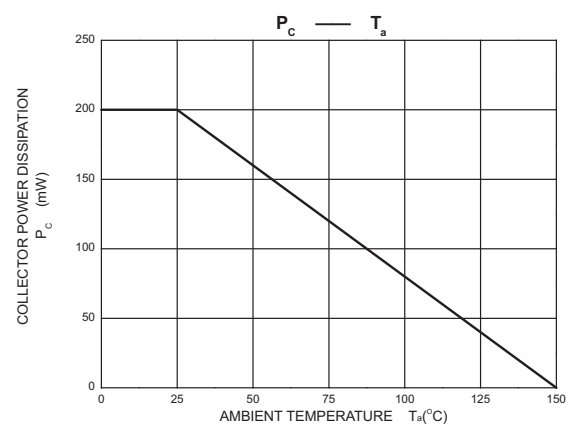
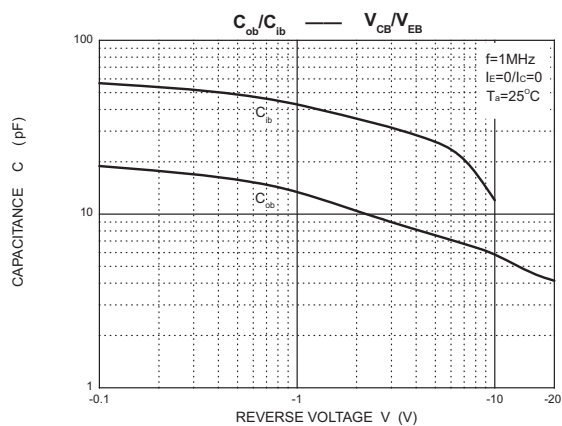
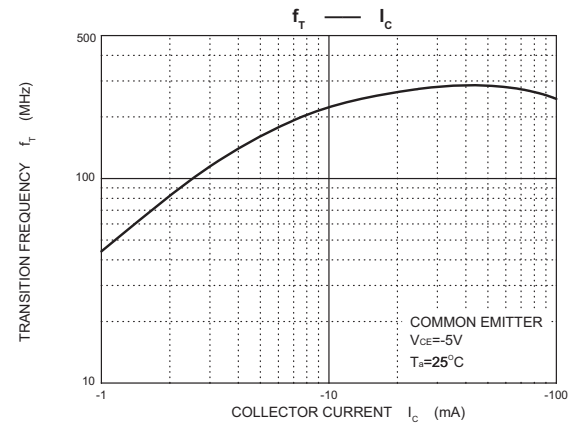
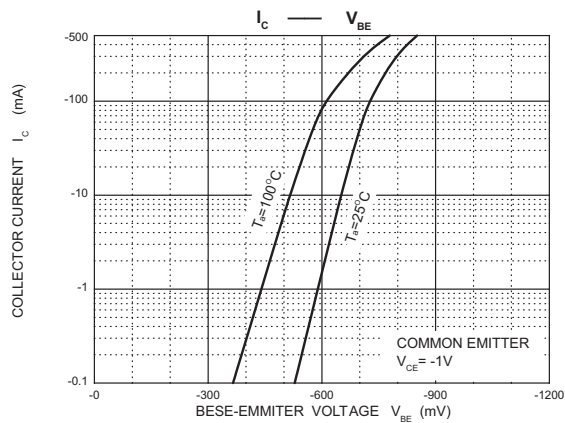
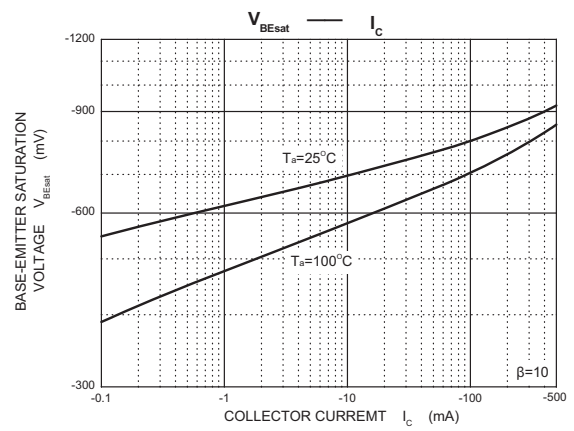
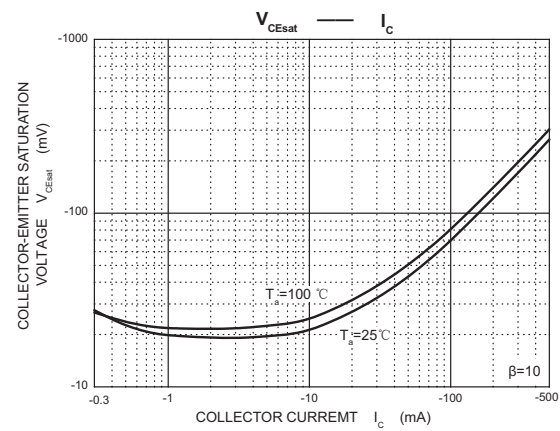
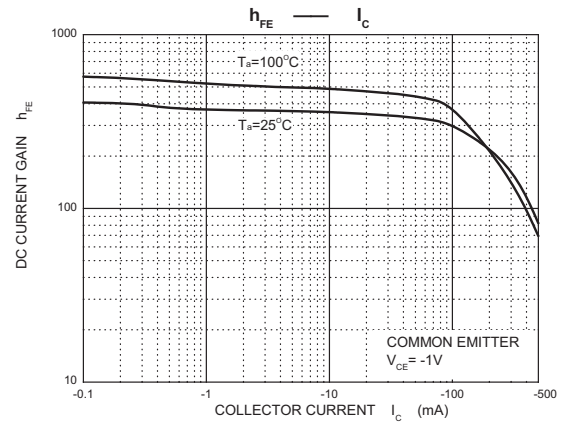
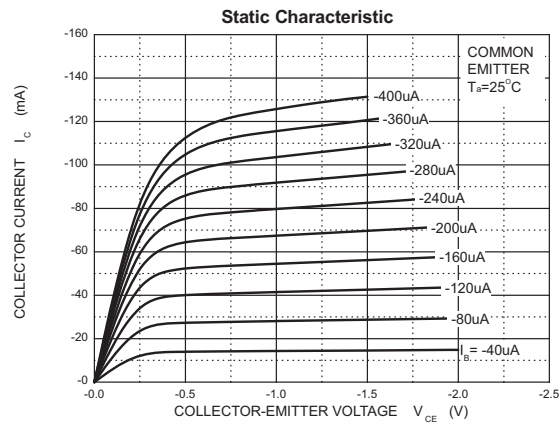
On characteristics

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
DC current gain	BC807-16W $I_C = -100\text{mA}$, $V_{CE} = -1.0\text{V}$	h_{FE}	100		250	-
	BC807-25W $I_C = -100\text{mA}$, $V_{CE} = -1.0\text{V}$		160		400	
	BC807-40W $I_C = -100\text{mA}$, $V_{CE} = -1.0\text{V}$		250		600	
Collector-Emitter saturation voltage	$I_C = -500\text{mA}$, $I_B = -50\text{mA}$	$V_{CE(sat)}$			-0.7	V
Base-Emitter saturation voltage	$I_C = -500\text{mA}$, $I_B = -50\text{mA}$	$V_{BE(on)}$			-1.2	V

Small-signal characteristics

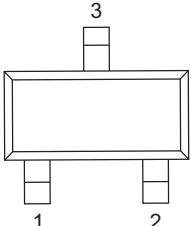
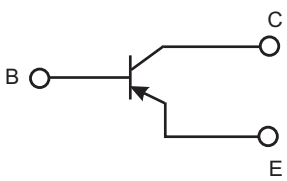
PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Current-gain-bandwidth product	$I_C = -10\text{mA}$, $V_{CE} = -5\text{V}$, $f = 100\text{MHz}$	f_T	100			MHz

Rating and characteristic curves (BC807-16W-Q1/BC807-25W-Q1/BC807-40W-Q1)



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Pinning information

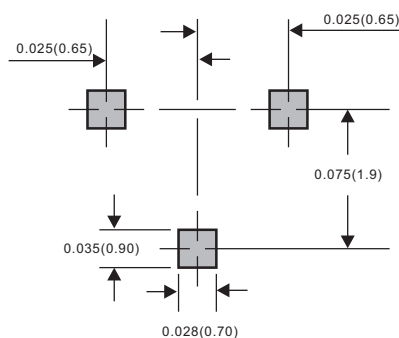
Pin	Simplified outline	Symbol
Pin1 Base Pin2 Emitter Pin3 Collector		

Marking

Type numbe	Marking code
BC807-16W-Q1	5A
BC807-25W-Q1	5B
BC807-40W-Q1	5C

Suggested solder pad layout

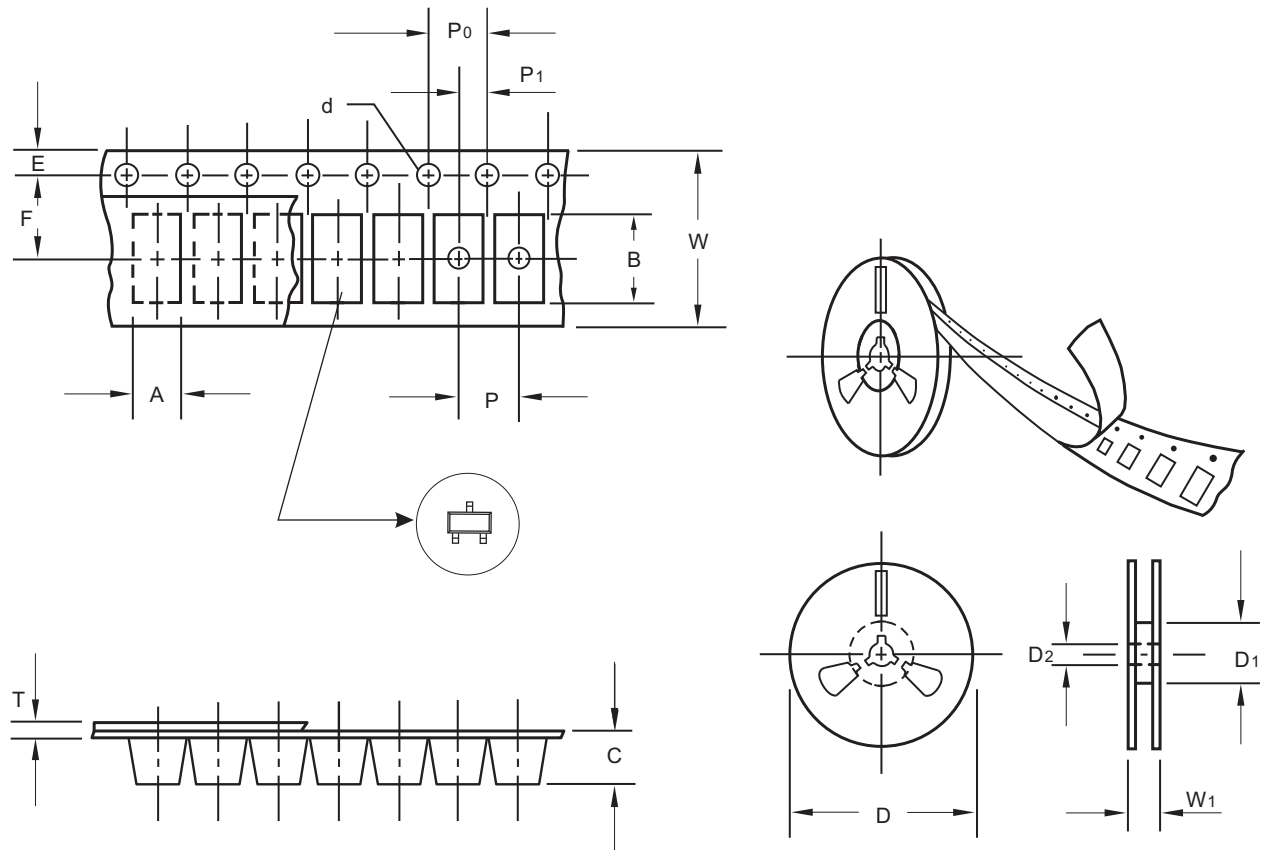
SOT-323



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	1.47
Carrier length	B	0.1	2.95
Carrier depth	C	0.1	1.15
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	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

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

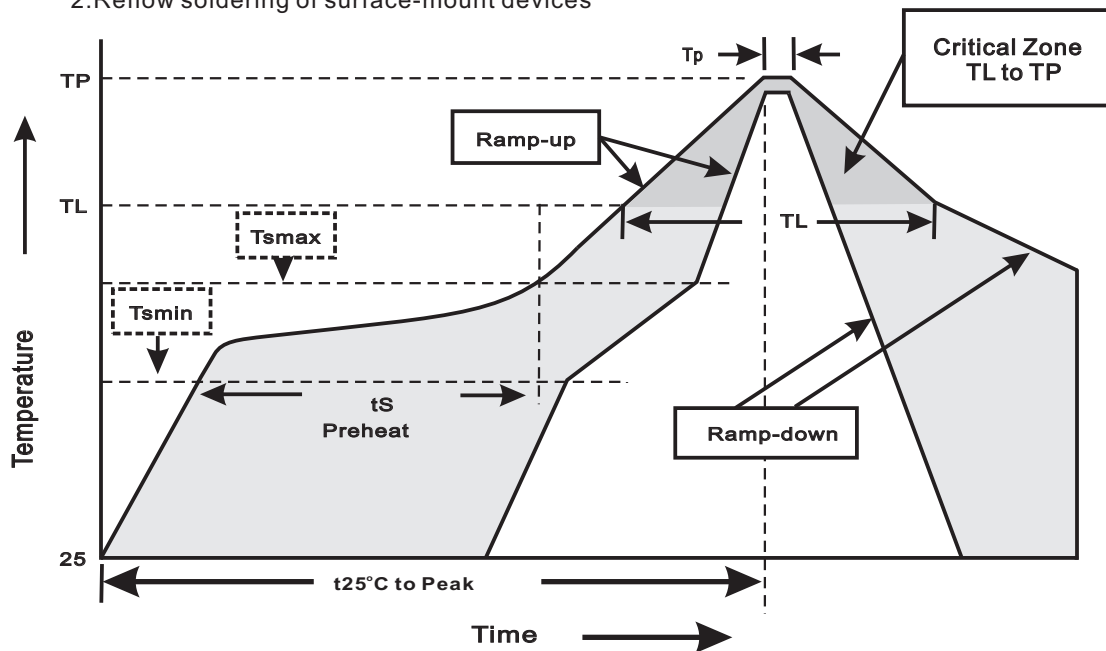
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Reel packing

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-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

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)	$<3^\circ\text{C/sec}$
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	$<3^\circ\text{C/sec}$
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	$<6^\circ\text{C/sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$