

# BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN



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## General Purpose Transistors

Voltage and Current are Negative for PNP Transistors

### Features

- Pb-Free Packages are Available

### MAXIMUM RATINGS

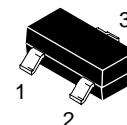
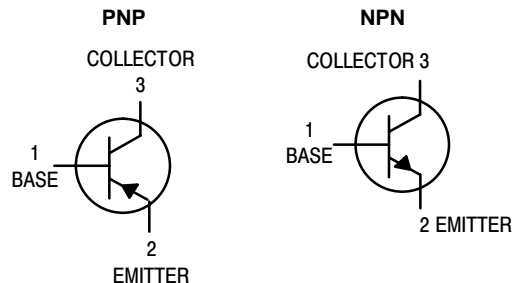
Rating	Symbol	Value	Unit
Collector – Emitter Voltage BCX17LT1, BCX19LT1 BCX18LT1	$V_{CEO}$	45 25	Vdc
Collector – Base Voltage BCX17LT1, BCX19LT1 BCX18LT1	$V_{CBO}$	50 30	Vdc
Emitter – Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current – Continuous	$I_C$	500	mAdc

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board (Note 1), $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

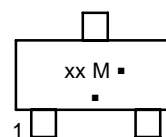
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

- FR–5 =  $1.0 \times 0.75 \times 0.062$  in.
- Alumina =  $0.4 \times 0.3 \times 0.024$  in 99.5% alumina.



SOT-23  
CASE 318  
STYLE 6

### MARKING DIAGRAM



- xx = T1, T2, or U1
- M = Date Code\*
- = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation and/or overbar may vary depending upon manufacturing location.

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

# BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>						
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = 10 mA <sub>dc</sub> , I <sub>B</sub> = 0)	BCX17, 19 BCX18	V <sub>(BR)CEO</sub>	45 25	– –	– –	V <sub>dc</sub>
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = 10 μA <sub>dc</sub> , I <sub>C</sub> = 0)	BCX17, 19 BCX18	V <sub>(BR)CES</sub>	50 30	– –	– –	V <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = 20 V <sub>dc</sub> , I <sub>E</sub> = 0) (V <sub>CB</sub> = 20 V <sub>dc</sub> , I <sub>E</sub> = 0, T <sub>A</sub> = 150°C)		I <sub>CBO</sub>	– –	– –	100 5.0	nA <sub>dc</sub> μA <sub>dc</sub>
Emitter Cutoff Current (V <sub>EB</sub> = 5.0 V <sub>dc</sub> , I <sub>C</sub> = 0)		I <sub>EBO</sub>	–	–	10	μA <sub>dc</sub>
<b>ON CHARACTERISTICS</b>						
DC Current Gain (I <sub>C</sub> = 100 mA <sub>dc</sub> , V <sub>CE</sub> = 1.0 V <sub>dc</sub> ) (I <sub>C</sub> = 300 mA <sub>dc</sub> , V <sub>CE</sub> = 1.0 V <sub>dc</sub> ) (I <sub>C</sub> = 500 mA <sub>dc</sub> , V <sub>CE</sub> = 1.0 V <sub>dc</sub> )		h <sub>FE</sub>	100 70 40	– – –	600 – –	–
Collector–Emitter Saturation Voltage (I <sub>C</sub> = 500 mA <sub>dc</sub> , I <sub>B</sub> = 50 mA <sub>dc</sub> )		V <sub>CE(sat)</sub>	–	–	0.62	V <sub>dc</sub>
Base–Emitter On Voltage (I <sub>C</sub> = 500 mA <sub>dc</sub> , V <sub>CE</sub> = 1.0 V <sub>dc</sub> )		V <sub>BE(on)</sub>	–	–	1.2	V <sub>dc</sub>

## ORDERING INFORMATION

Device	Specific Marking	Package	Shipping†
BCX17LT1	T1	SOT–23	3000 / Tape & Reel
BCX17LT1G		SOT–23 (Pb–Free)	3000 / Tape & Reel
BCX17LT3		SOT–23	10,000 / Tape & Reel
BCX17LT3G		SOT–23 (Pb–Free)	10,000 / Tape & Reel
BCX18LT1	T2	SOT–23	3000 / Tape & Reel
BCX18LT1G		SOT–23 (Pb–Free)	3000 / Tape & Reel
BCX19LT1	U1	SOT–23	3000 / Tape & Reel
BCX19LT1G		SOT–23 (Pb–Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN

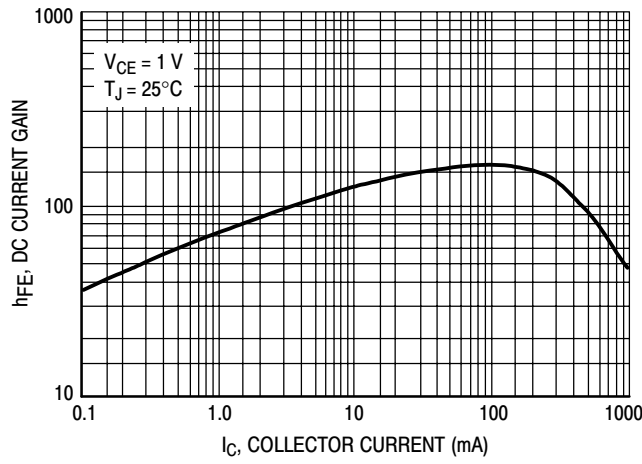


Figure 1. DC Current Gain

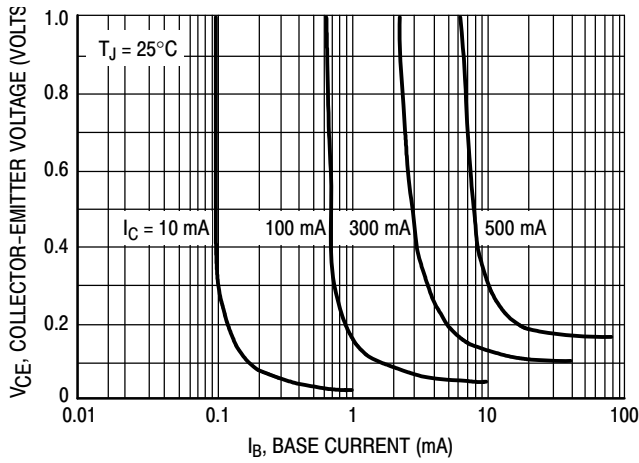


Figure 2. Saturation Region

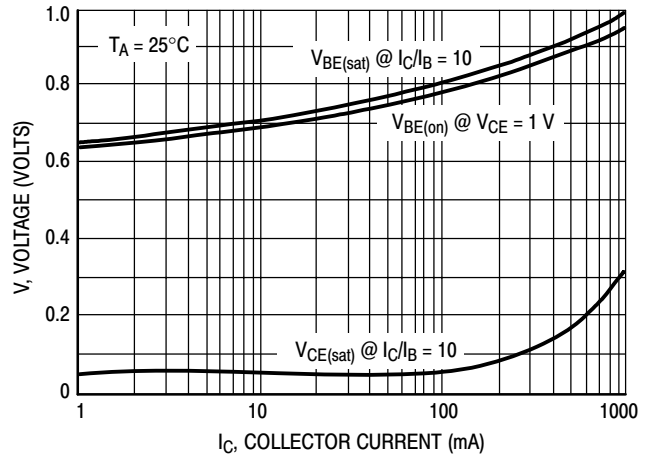


Figure 3. "On" Voltages

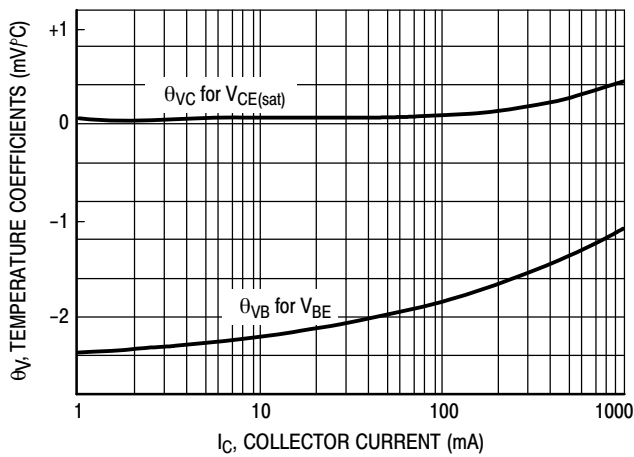


Figure 4. Temperature Coefficients

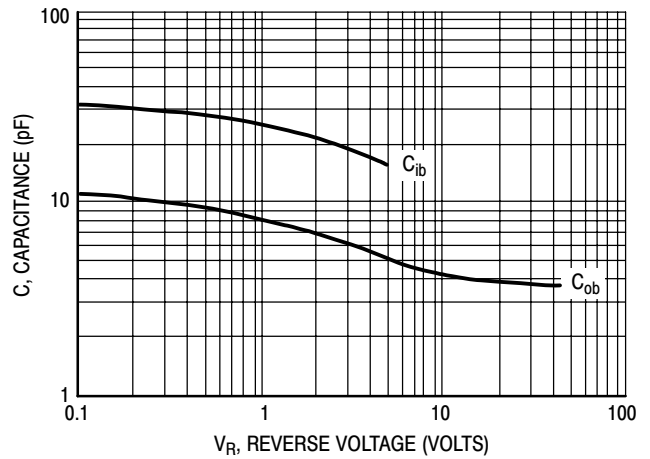


Figure 5. Capacitances

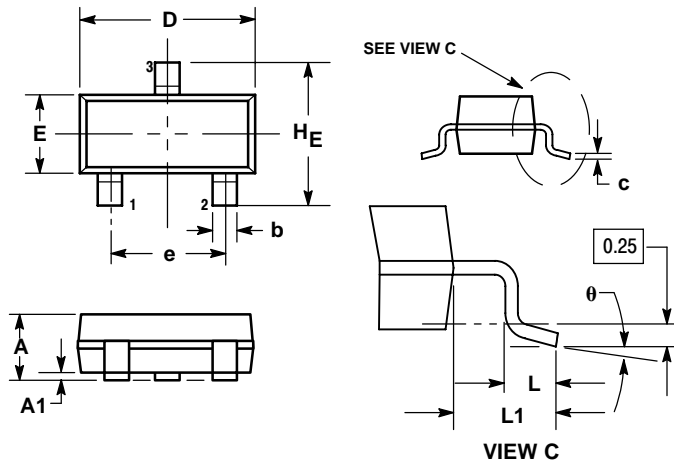
# BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN

## PACKAGE DIMENSIONS

SOT-23 (TO-236)

CASE 318-08

ISSUE AN



### NOTES:

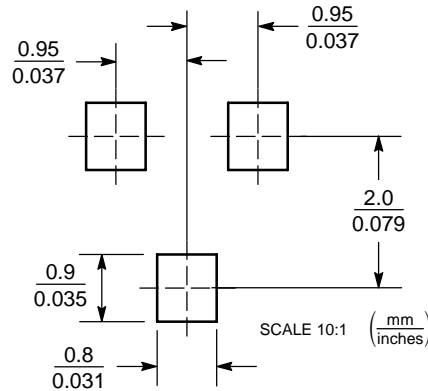
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104

### STYLE 6:

1. BASE
2. EMITTER
3. COLLECTOR

## SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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