

# BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN

## General Purpose Transistors

(Voltage and Current are Negative  
for PNP Transistors)

### Features

- Pb-Free Package is 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

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.

### THERMAL CHARACTERISTICS

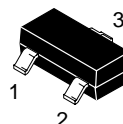
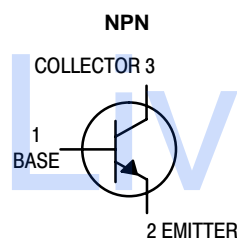
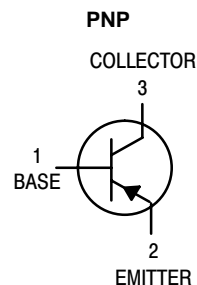
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1), $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (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	$^\circ\text{C}$

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



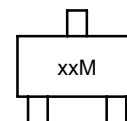
ON Semiconductor®

<http://onsemi.com>



SOT-23  
CASE 318  
STYLE 6

### MARKING DIAGRAM



xx = T1, T2, or U1  
M = Date Code

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

Characteristic	Symbol	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>						
Collector–Emitter Breakdown Voltage ( $I_C = 10\text{ mAdc}$ , $I_B = 0$ )	BCX17, 19 BCX18	$V_{(BR)CEO}$	45 25	– –	– –	Vdc
Collector–Emitter Breakdown Voltage ( $I_C = 10\ \mu\text{Adc}$ , $I_C = 0$ )	BCX17, 19 BCX18	$V_{(BR)CES}$	50 30	– –	– –	Vdc
Collector Cutoff Current ( $V_{CB} = 20\text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = 20\text{ Vdc}$ , $I_E = 0$ , $T_A = 150^\circ\text{C}$ )		$I_{CBO}$	– –	– –	100 5.0	nAdc $\mu\text{Adc}$
Emitter Cutoff Current ( $V_{EB} = 5.0\text{ Vdc}$ , $I_C = 0$ )		$I_{EBO}$	–	–	10	$\mu\text{Adc}$
<b>ON CHARACTERISTICS</b>						
DC Current Gain ( $I_C = 100\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ ) ( $I_C = 300\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ ) ( $I_C = 500\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ )		$h_{FE}$	100 70 40	– – –	600 – –	–
Collector–Emitter Saturation Voltage ( $I_C = 500\text{ mAdc}$ , $I_B = 50\text{ mAdc}$ )		$V_{CE(sat)}$	–	–	0.62	Vdc
Base–Emitter On Voltage ( $I_C = 500\text{ mAdc}$ , $V_{CE} = 1.0\text{ Vdc}$ )		$V_{BE(on)}$	–	–	1.2	Vdc

## ORDERING INFORMATION

Device	Marking	Package	Shipping†
BCX17LT1	T1	SOT–23	3,000 Tape & Reel
BCX17LT1G	T1	SOT–23 (Pb–Free)	3,000 Tape & Reel
BCX17LT3	T1	SOT–23	10,000 Tape & Reel
BCX18LT1	T2	SOT–23	3,000 Tape & Reel
BCX19LT1	U1	SOT–23	3,000 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

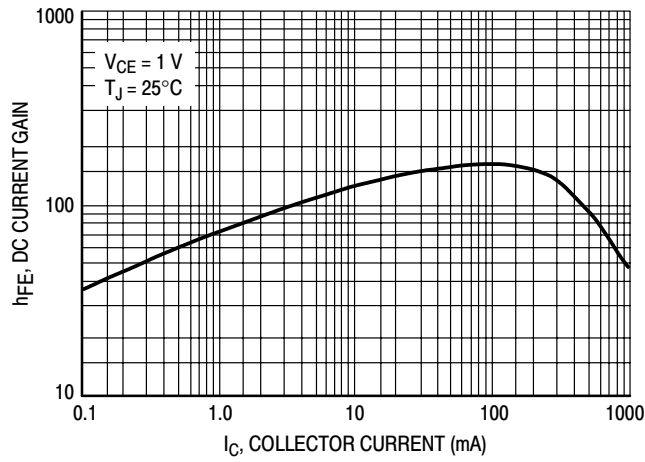


Figure 1. DC Current Gain

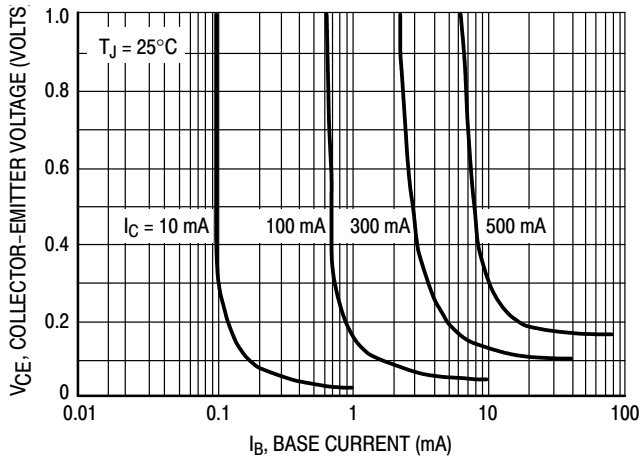


Figure 2. Saturation Region

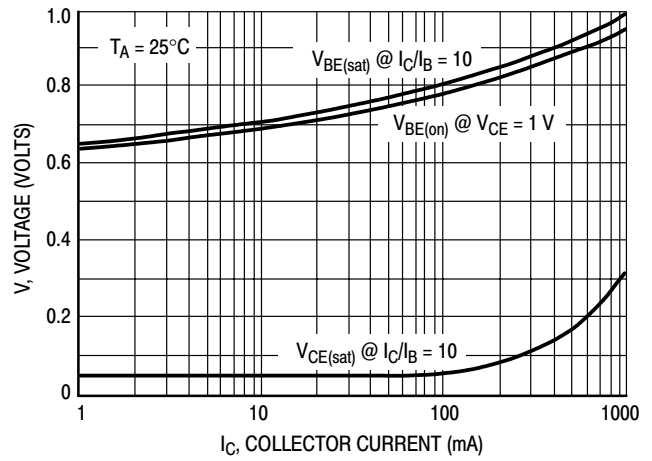


Figure 3. "On" Voltages

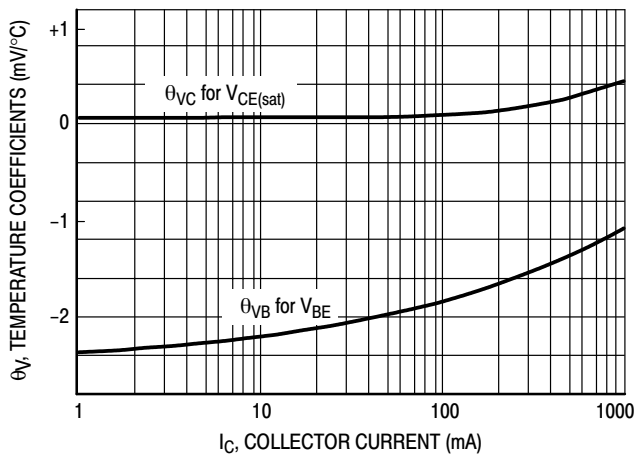


Figure 4. Temperature Coefficients

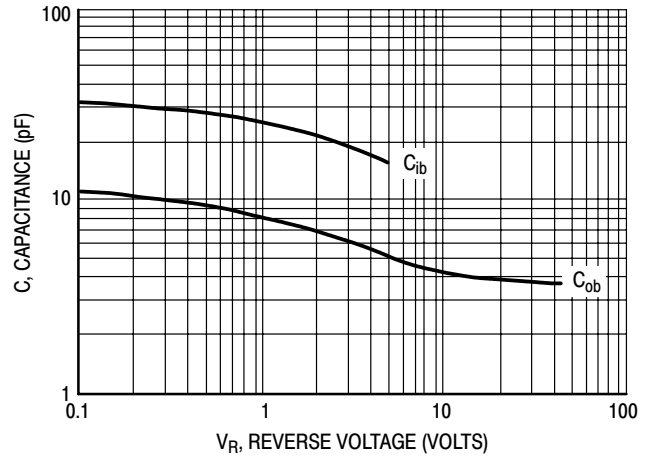
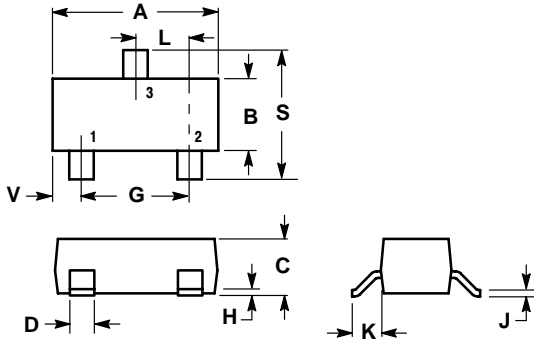


Figure 5. Capacitances

# BCX17LT1, BCX18LT1, PNP BCX19LT1, NPN

## PACKAGE DIMENSIONS

SOT-23 (TO-236)  
CASE 318-08  
ISSUE AK



### NOTES:

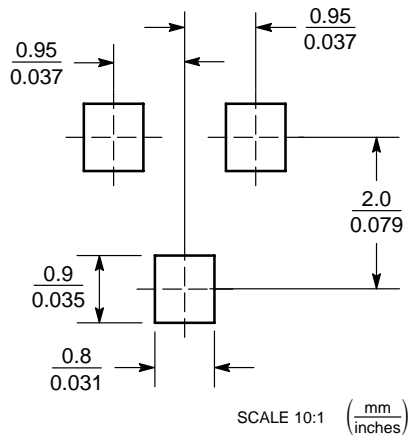
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

### STYLE 6:

- PIN 1. BASE
- EMITTER
- 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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