

# BC640, BC640-16

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector – Emitter Breakdown Voltage (I <sub>C</sub> = -10 mAdc, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	-80	–	–	Vdc
Collector – Base Breakdown Voltage (I <sub>C</sub> = -100 µAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	-80	–	–	Vdc
Emitter – Base Breakdown Voltage (I <sub>E</sub> = -10 µAdc, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	-5.0	–	–	Vdc
Collector Cutoff Current (V <sub>CB</sub> = -30 Vdc, I <sub>E</sub> = 0) (V <sub>CB</sub> = -30 Vdc, I <sub>E</sub> = 0, T <sub>A</sub> = 125°C)	I <sub>CBO</sub>	– –	– –	-100 -10	nAdc µAdc

### ON CHARACTERISTICS (Note 1)

DC Current Gain (I <sub>C</sub> = -5.0 mAdc, V <sub>CE</sub> = -2.0 Vdc) (I <sub>C</sub> = -150 mAdc, V <sub>CE</sub> = -2.0 Vdc)  (I <sub>C</sub> = -500 mA, V <sub>CE</sub> = -2.0 V)	h <sub>FE</sub>	25 40 100 25	– – – –	– 160 250 –	–
Collector – Emitter Saturation Voltage (I <sub>C</sub> = -500 mAdc, I <sub>B</sub> = -50 mAdc)	V <sub>CE(sat)</sub>	– –	-0.25 -0.5	-0.5 –	Vdc
Base – Emitter On Voltage (I <sub>C</sub> = -500 mAdc, V <sub>CE</sub> = -2.0 Vdc)	V <sub>BE(on)</sub>	–	–	-1.0	Vdc

### DYNAMIC CHARACTERISTICS

Current Gain – Bandwidth Product (I <sub>C</sub> = -50 mAdc, V <sub>CE</sub> = -2.0 Vdc, f = 100 MHz)	f <sub>T</sub>	–	150	–	MHz
Output Capacitance (V <sub>CB</sub> = -10 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz)	C <sub>ob</sub>	–	9.0	–	pF
Input Capacitance (V <sub>EB</sub> = -0.5 Vdc, I <sub>C</sub> = 0, f = 1.0 MHz)	C <sub>ib</sub>	–	110	–	pF

1. Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle 2.0%.

## ORDERING INFORMATION

Device	Package	Shipping
BC640G	TO-92 (Pb-Free)	5000 Units / Bulk
BC640ZL1G	TO-92 (Pb-Free)	2000 Units / Ammo Box
BC640-16	TO-92	5000 Units / Bulk
BC640-16G	TO-92 (Pb-Free)	5000 Units / Bulk

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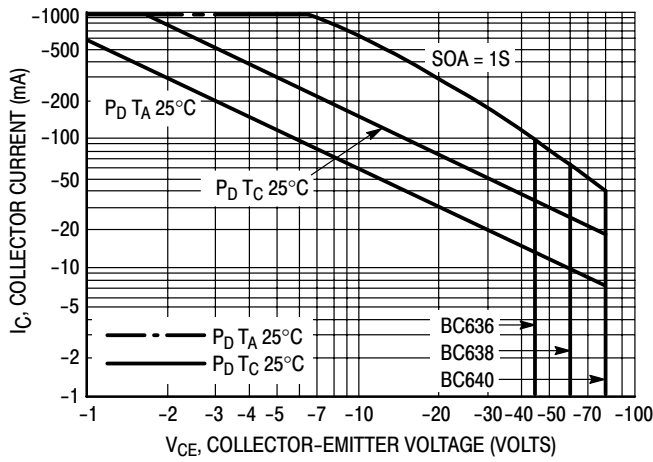


Figure 1. Active Region Safe Operating Area

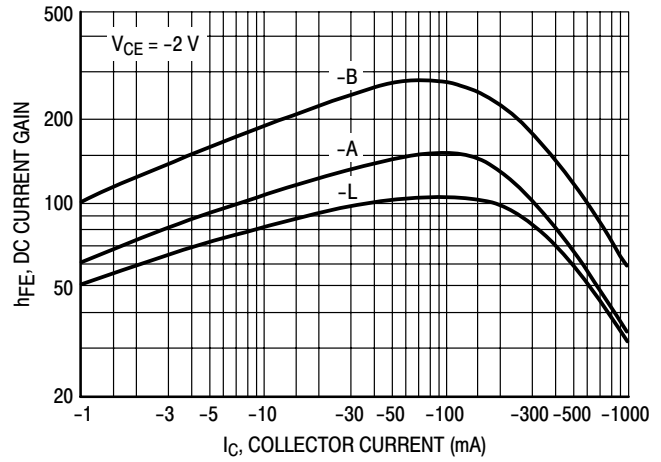


Figure 2. DC Current Gain

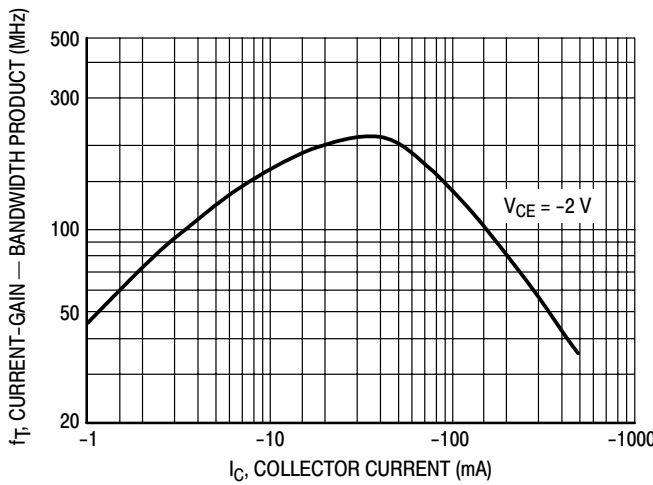


Figure 3. Current Gain Bandwidth Product

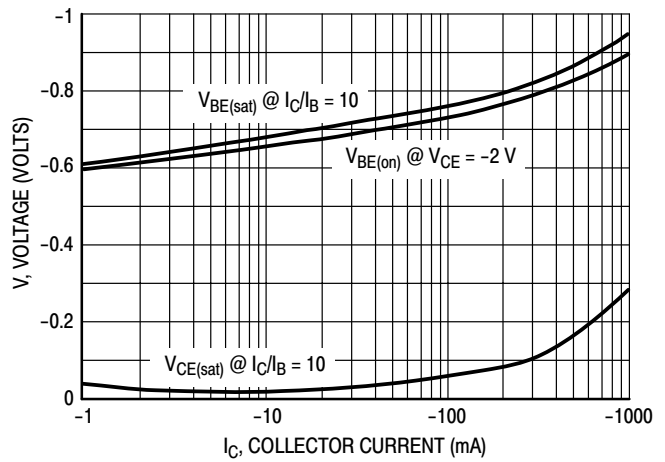


Figure 4. "Saturation" and "On" Voltages

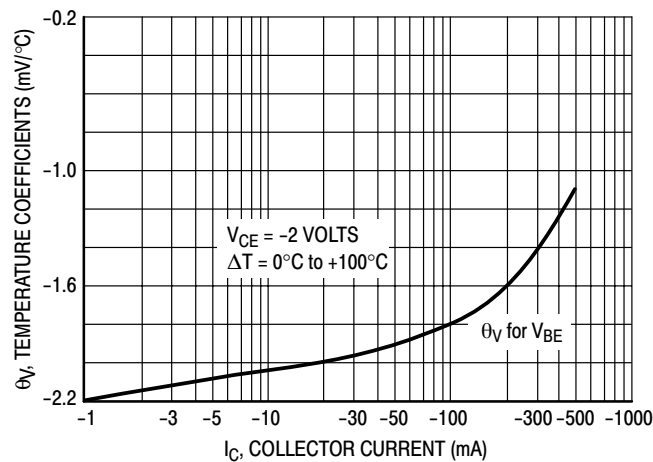
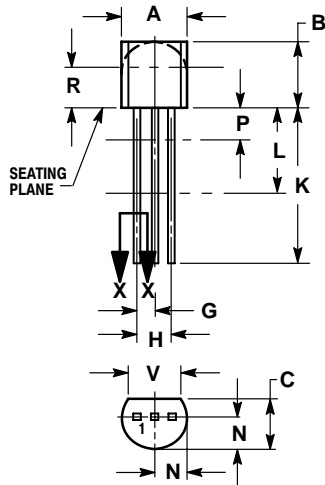


Figure 5. Temperature Coefficients

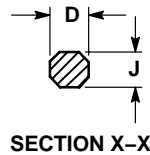
# BC640, BC640-16

## PACKAGE DIMENSIONS

TO-92 (TO-226)  
CASE 29-11  
ISSUE AM



STRAIGHT LEAD  
BULK PACK

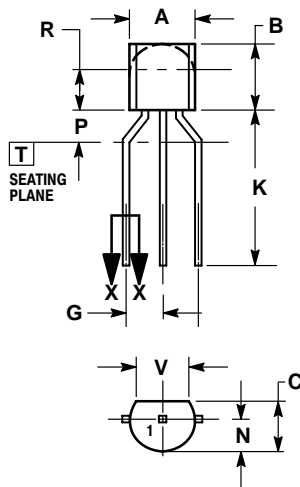


SECTION X-X

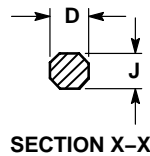
### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---



BENT LEAD  
TAPE & REEL  
AMMO PACK



SECTION X-X


### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---

### STYLE 14:

1. PIN 1. EMITTER
2. COLLECTOR
3. BASE

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