BC487, BC487B

High Current Transistors

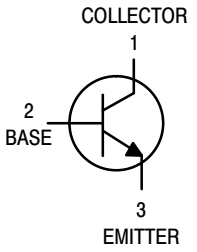
NPN Silicon

ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Packages are Available*



MAXIMUM RATINGS

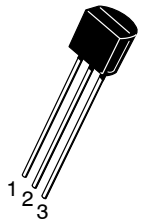
Rating	Symbol	Value	Unit
Collector − Emitter Voltage	V_{CEO}	60	Vdc
Collector − Base Voltage	V_{CBO}	60	Vdc
Emitter − Base Voltage	V_{EBO}	5.0	Vdc
Collector Current − Continuous	I_C	0.5	Adc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	625 5.0	mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.5 12	W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

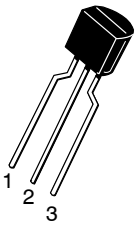
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	83.3	°C/W

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



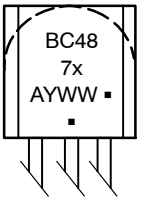
STRAIGHT LEAD
BULK PACK



BENT LEAD
TAPE & REEL
AMMO PACK

TO−92
CASE 29
STYLE 17

MARKING DIAGRAM



BC487	= Device Code
	x = nothing or B
A	= Assembly Location
Y	= Year
WW	= Work Week
▪	= Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
BC487	TO−92	5000 Units / Box
BC487G	TO−92 (Pb−Free)	5000 Units / Box
BC487B	TO−92	5000 Units / Box
BC487BG	TO−92 (Pb−Free)	5000 Units / Box
BC487BRL1	TO−92	2000/Tape & Reel

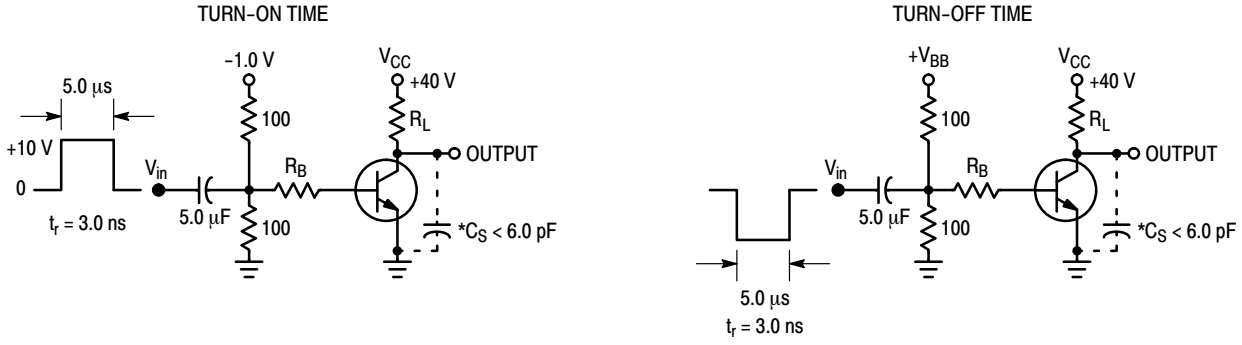
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector – Emitter Breakdown Voltage (Note 1) (I_C = 10 mAdc, I_B = 0)		$V_{(BR)CEO}$	60	–	–	Vdc
Collector – Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)		$V_{(BR)CBO}$	60	–	–	Vdc
Emitter – Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector Cutoff Current (V_{CB} = 40 Vdc, I_E = 0)		I_{CBO}	–	–	100	nAdc
ON CHARACTERISTICS*						
DC Current Gain		h_{FE}				–
(I_C = 10 mAdc, V_{CE} = 2.0 Vdc)			40	–	–	
(I_C = 100 mAdc, V_{CE} = 2.0 Vdc)	BC487		60	–	400	
	BC487B		160	260	400	
(I_C = 1.0 Adc, V_{CE} = 5.0 Vdc)*			15	–	–	
Collector – Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 500 mAdc, I_B = 50 mAdc)			–	0.2	0.5	
(I_C = 1.0 Adc, I_B = 100 mAdc)			–	0.3	–	
Base – Emitter Saturation Voltage		$V_{BE(sat)}$				Vdc
(I_C = 500 mAdc, I_B = 50 mAdc)			–	0.85	1.2	
(I_C = 1.0 Adc, I_B = 100 mAdc)[1]			–	0.9	–	
DYNAMIC CHARACTERISTICS						
Current–Gain – Bandwidth Product (I_C = 50 mAdc, V_{CE} = 2.0 Vdc, f = 100 MHz)		f_T	–	200	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)		C_{ob}	–	7.0	–	pF
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)		C_{ib}	–	50	–	pF

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



*Total Shunt Capacitance of Test Jig and Connectors
For PNP Test Circuits, Reverse All Voltage Polarities

Figure 1. Switching Time Test Circuits

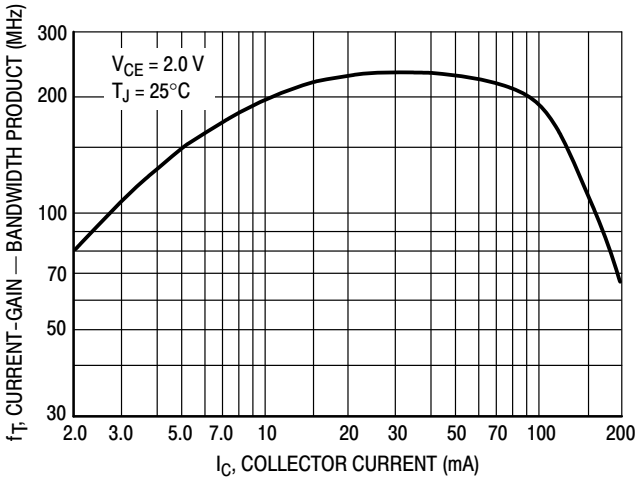


Figure 2. Current−Gain − Bandwidth Product

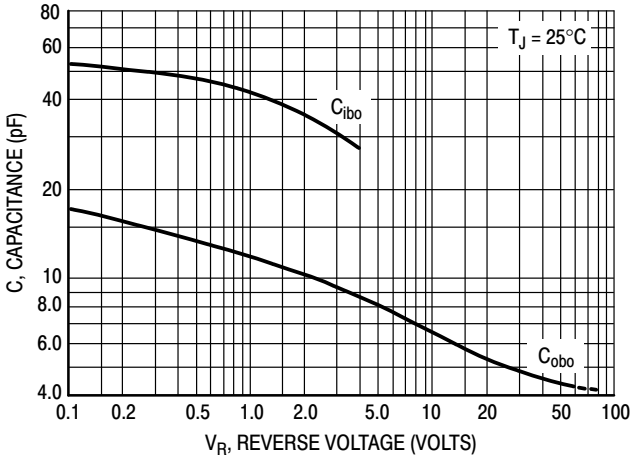


Figure 3. Capacitance

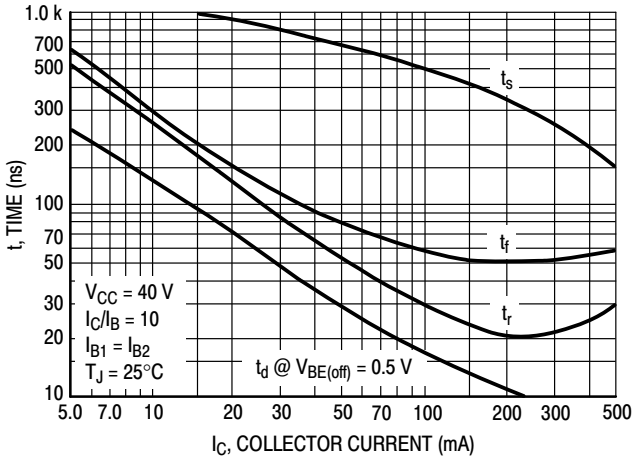


Figure 4. Switching Time

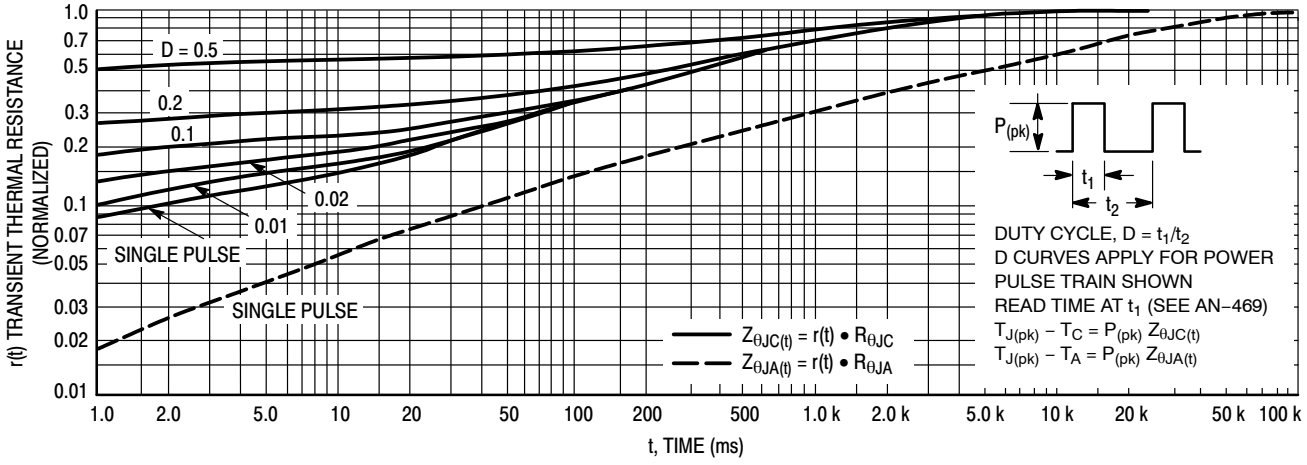


Figure 5. Thermal Response

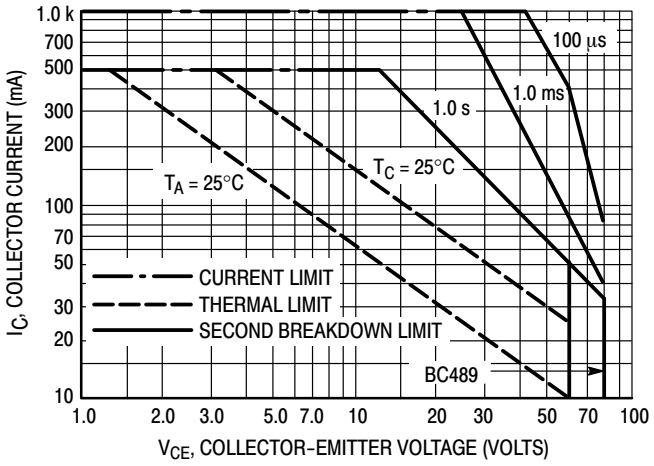


Figure 6. Active Region − Safe Operating Area

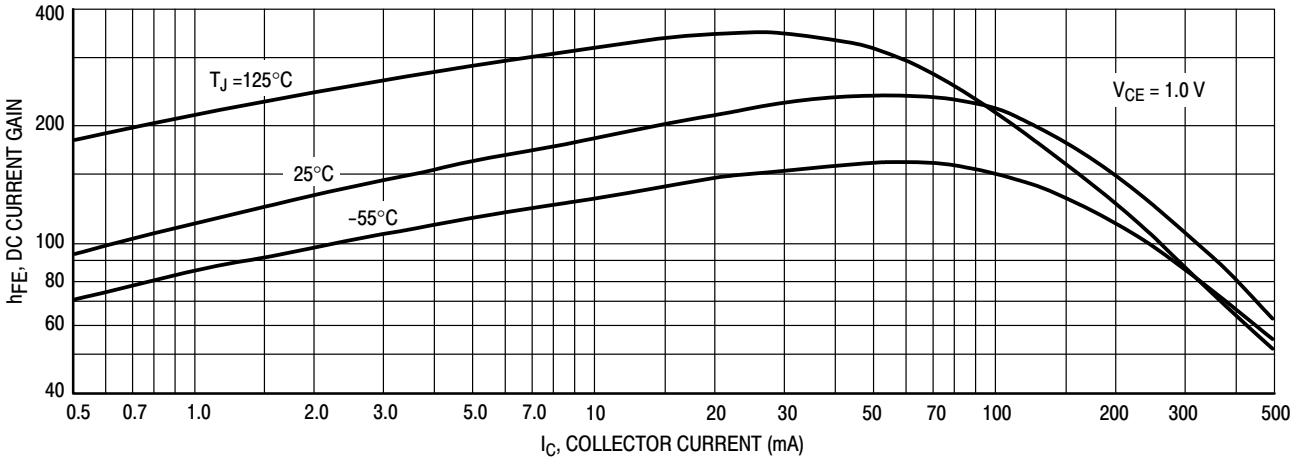


Figure 7. DC Current Gain

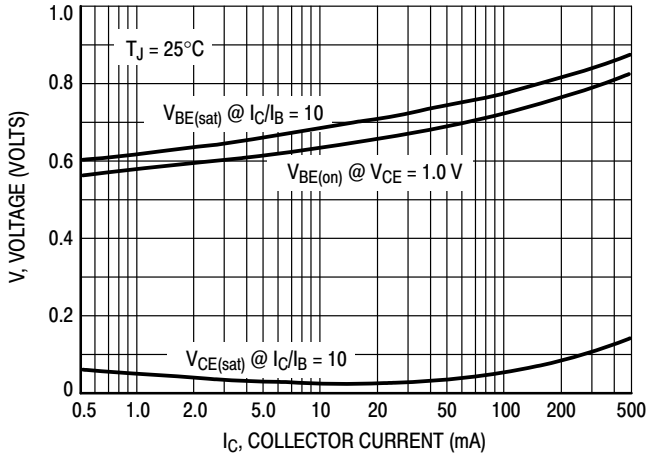


Figure 8. "On" Voltages

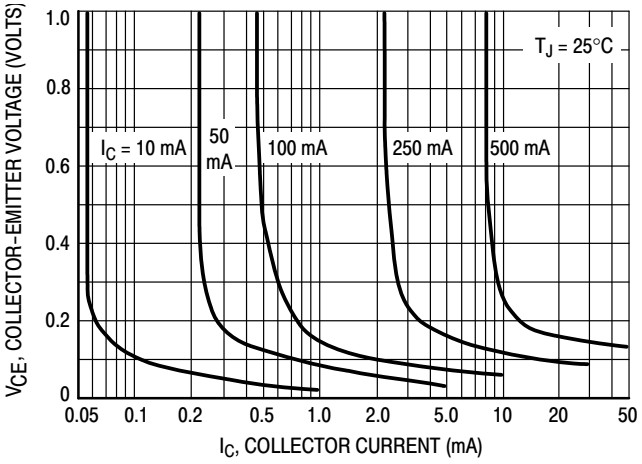


Figure 9. Collector Saturation Region

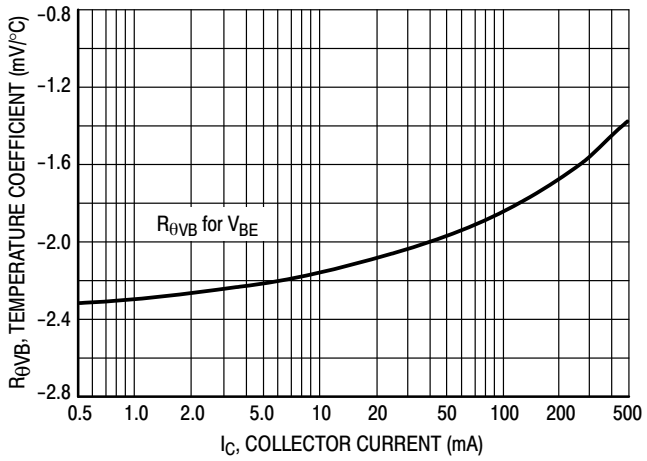


Figure 10. Base−Emitter Temperature Coefficient

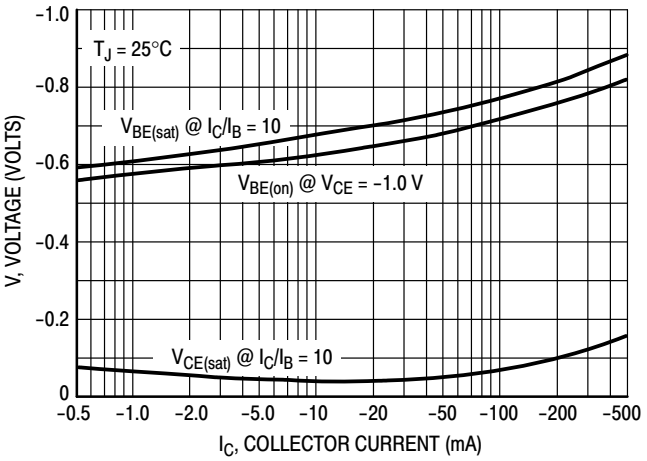


Figure 11. “On” Voltages

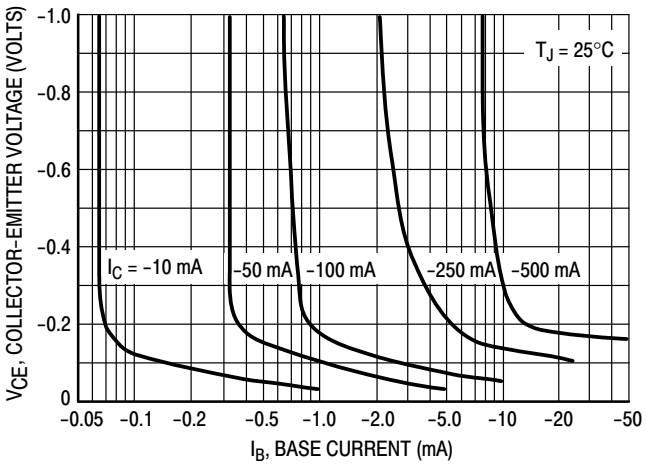


Figure 12. Collector Saturation Region

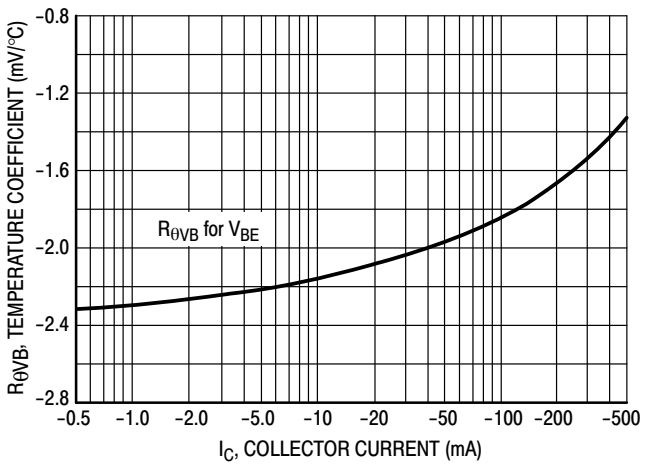
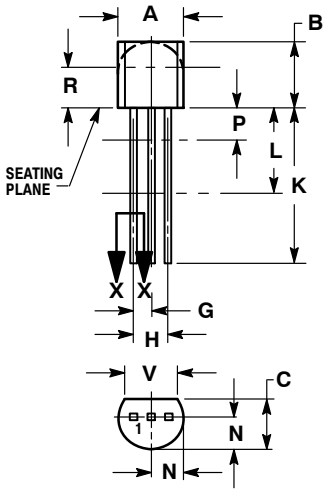


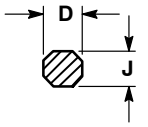
Figure 13. Base−Emitter Temperature Coefficient

PACKAGE DIMENSIONS

TO−92
(TO−226)
CASE 29−11
ISSUE AM



STRAIGHT LEAD
BULK PACK

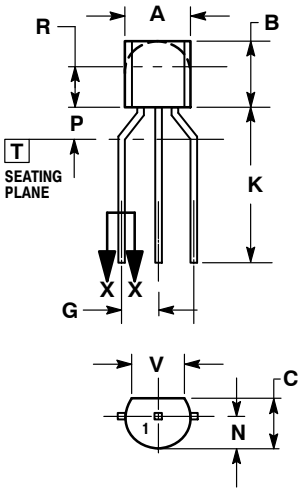


SECTION X−X

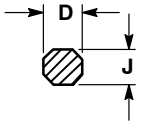
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	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	---

STYLE 17:
PIN 1. COLLECTOR
2. BASE
3. EMITTER



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.

	MILLIMETERS	
DIM	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	---

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