THE DATASHEET OF

BC449

www.win-source.net 0086-755-83957316

BC447, BC449, BC449A

High Voltage Transistors

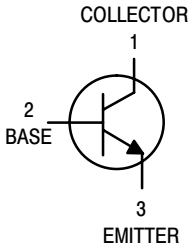
NPN Silicon

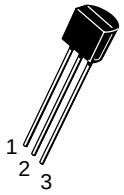
ON Semiconductor®

http://onsemi.com

Features

- Pb−Free Packages are Available*





TO−92
CASE 29
STYLE 17

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector − Emitter Voltage BC447 BC449, BC449A	V_{CEO}	 80 100	Vdc
Collector-Base Voltage BC447 BC449, BC449A	V_{CBO}	 80 100	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current − Continuous	I_C	300	mAdc
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
Moisture Sensitivity Level (MSL) Electrostatic Discharge (ESD)	MSL: 1 NA		

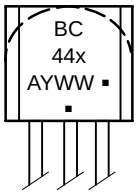
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
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.

MARKING DIAGRAM



BC44x = Device Code
x = 7 or 9
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping
BC447	TO−92	5000 Units / Box
BC447G	TO−92 (Pb−Free)	5000 Units / Box
BC449	TO−92	5000 Units / Box
BC449G	TO−92 (Pb−Free)	5000 Units / Box
BC449A	TO−92	5000 Units / Box
BC449AG	TO−92 (Pb−Free)	5000 Units / Box

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September, 2005 − Rev. 3
Publication Order Number:
BC447/D

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector−Emitter Breakdown Voltage (Note 1)		$V_{(BR)CEO}$				Vdc
(I_C = 1.0 mAdc, I_B = 0)	BC447		80	–	–	
	BC449, BC449A		100	–	–	
Collector−Base Breakdown Voltage		$V_{(BR)CBO}$				Vdc
(I_C = 100 μAdc, I_E = 0)	BC447		80	–	–	
	BC449, BC449A		100	–	–	
Emitter−Base Breakdown Voltage		$V_{(BR)EBO}$				Vdc
(I_E = 10 μAdc, I_C = 0)			5.0	–	–	
Collector Cutoff Current		I_{CBO}				nAdc
(V_{CB} = 60 Vdc, I_E = 0)	BC447		–	–	100	
(V_{CB} = 80 Vdc, I_E = 0)	BC449, BC449A		–	–	100	
ON CHARACTERISTICS (Note 1)						
DC Current Gain		h_{FE}				–
(I_C = 2.0 mAdc, V_{CE} = 5.0 Vdc)	BC447, BC449		50	–	460	
	BC449A		120	–	220	
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)	BC447, BC449		50	–	–	
	BC449A		100	–	–	
(I_C = 100 mAdc, V_{CE} = 5.0 Vdc)	BC447, BC449		50	–	–	
	BC449A		60	–	–	
Collector−Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 100 mAdc, I_B = 10 mAdc)			–	0.125	0.25	
Base−Emitter Saturation Voltage		$V_{BE(sat)}$				Vdc
(I_C = 100 mAdc, I_B = 10 mAdc)			–	0.85	–	
Base−Emitter On Voltage		$V_{BE(on)}$				Vdc
(I_C = 2.0 mAdc, V_{CE} = 5.0 Vdc)			0.55	–	0.7	
(I_C = 100 mAdc, V_{CE} = 5.0 Vdc) (Note 1)			–	0.76	1.2	
DYNAMIC CHARACTERISTICS						
Current−Gain − Bandwidth Product		f_T				MHz
(I_C = 50 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)			100	200	–	

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle 2%

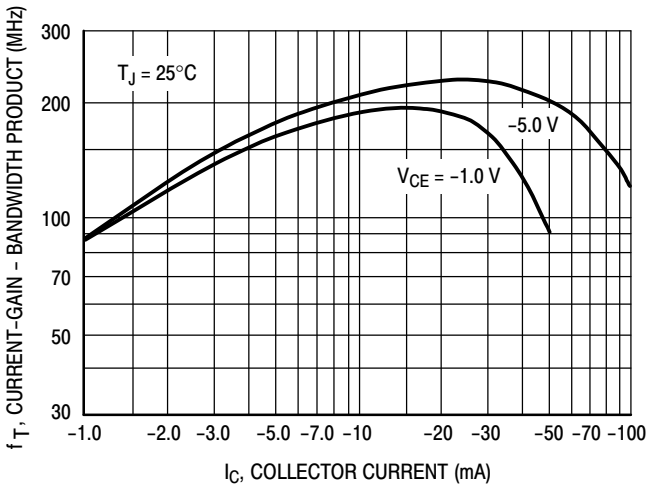


Figure 1. Current−Gain — Bandwidth Product

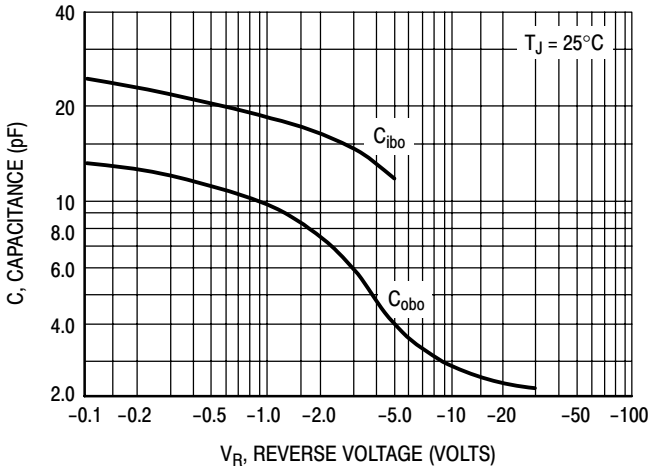


Figure 2. Capacitance

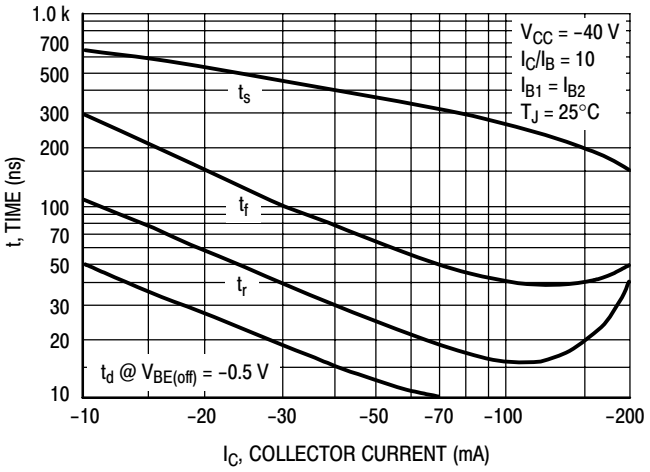


Figure 3. Switching Times

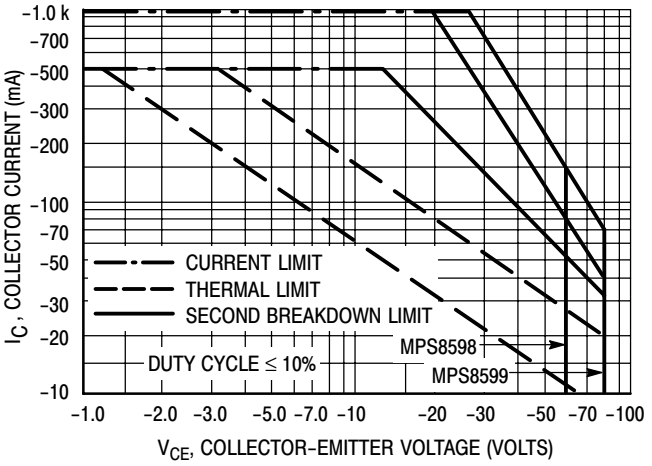


Figure 4. Active−Region Safe Operating Area

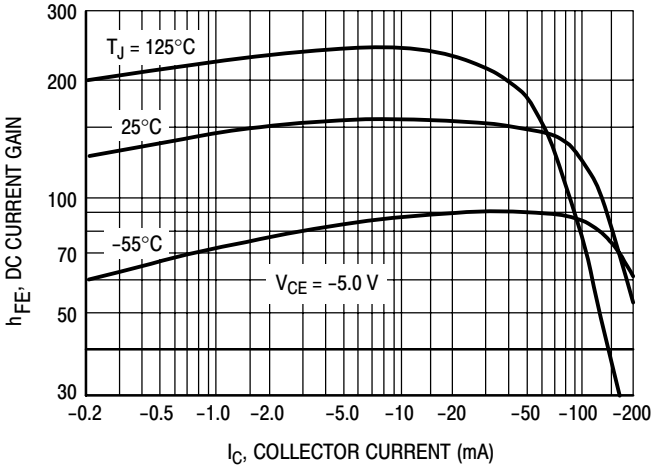


Figure 5. DC Current Gain

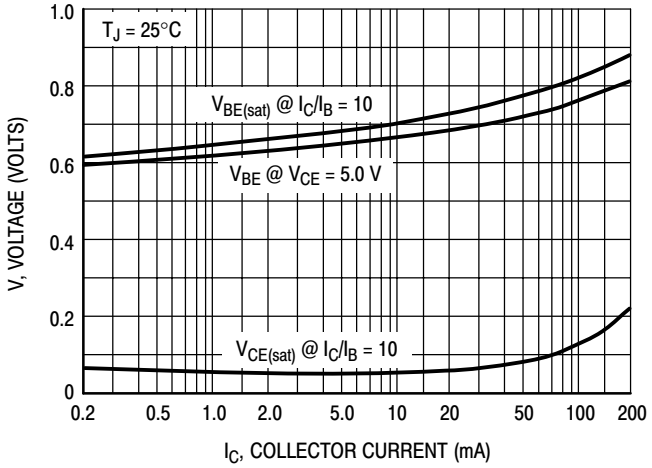


Figure 6. “ON” Voltages

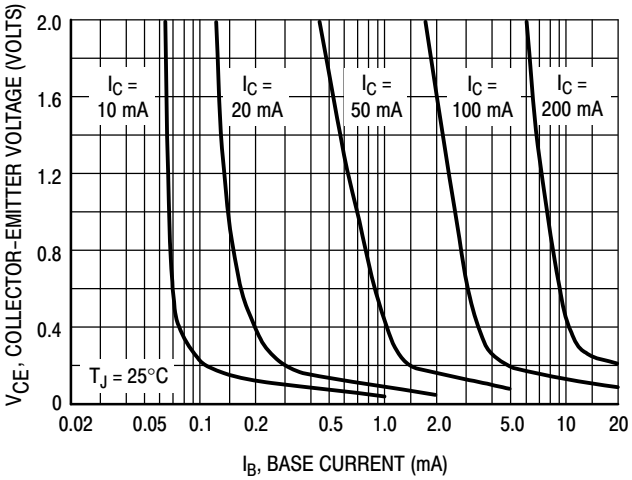


Figure 7. Collector Saturation Region

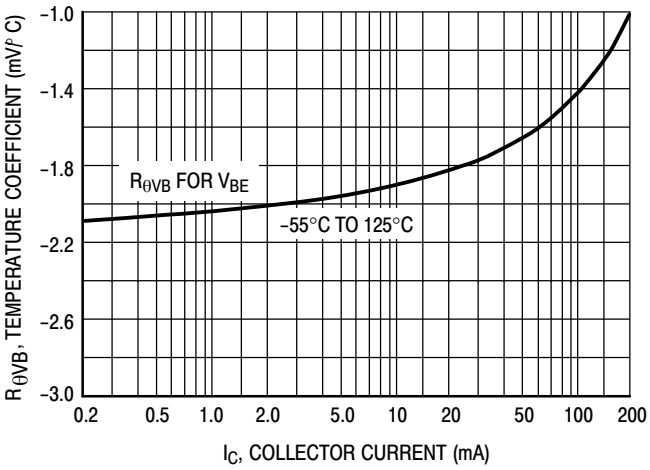


Figure 8. Base−Emitter Temperature Coefficient

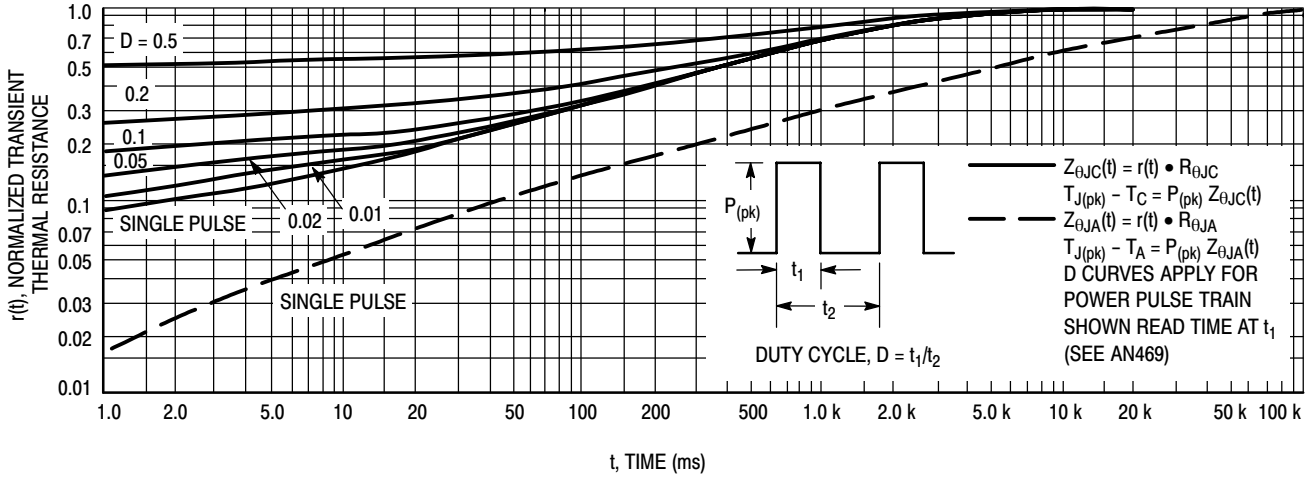
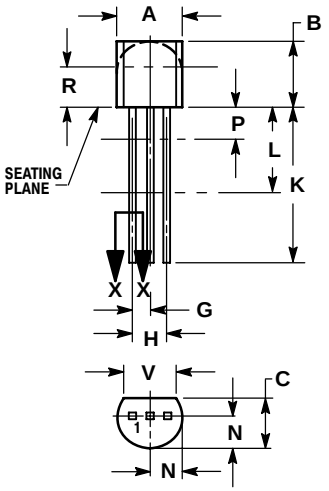
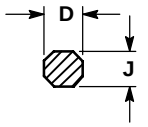


Figure 9. Thermal Response

PACKAGE DIMENSIONS

TO−92
(TO−226)
CASE 29−11
ISSUE AL





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

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