BC447, BC449, BC449A

High Voltage Transistors

PNP Silicon

**ON Semiconductor™**

http://onsemi.com

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	 Watts 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	

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

COLLECTOR
1

2
BASE

3
EMITTER
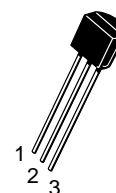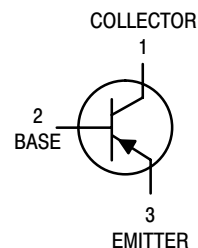
CASE 29
TO–92
STYLE 17

MARKING DIAGRAM

BC
44xx
YWW

BC44xx = Specific Device Code
xx = 7, 9 or 9A
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
BC447	TO–92	5000 Units/Box
BC449	TO–92	5000 Units/Box
BC449A	TO–92	5000 Units/Box

November, 2001 – Rev. 1

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

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle 2%
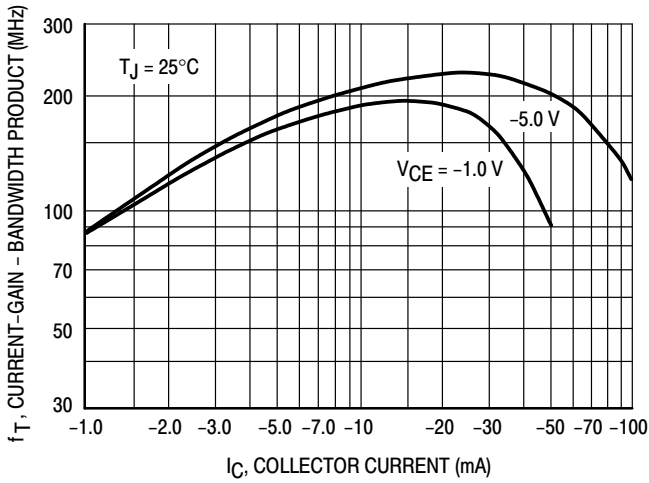
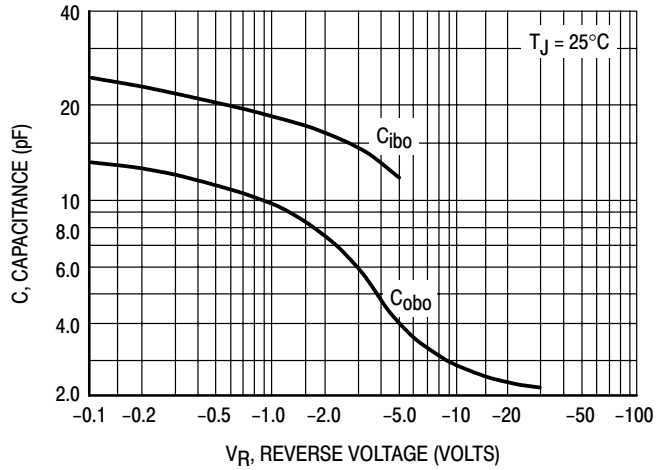**Figure 1. Current–Gain — Bandwidth Product**
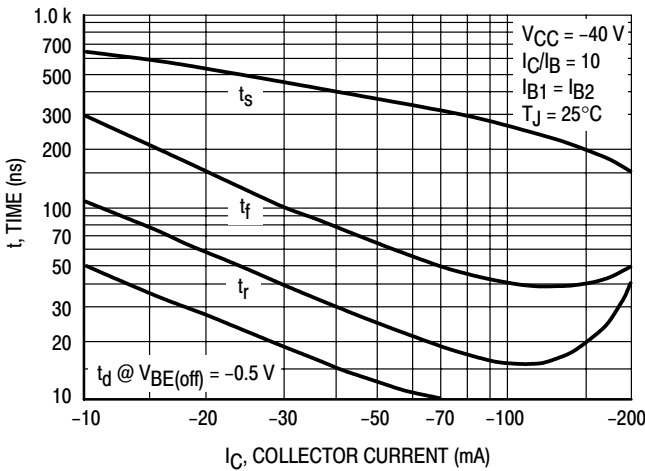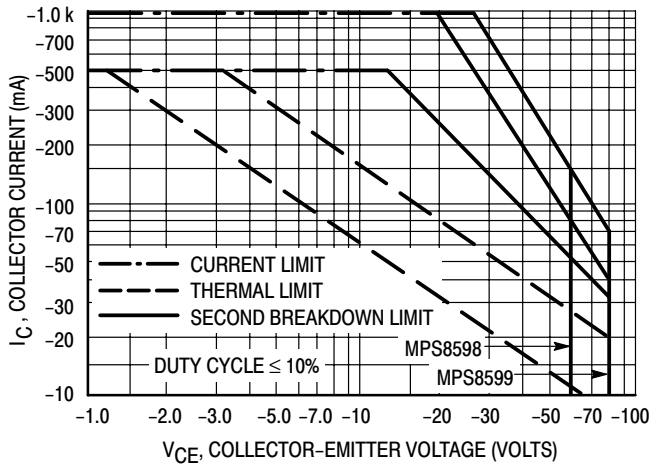
Figure 2. Capacitance

Figure 3. Switching Times

Figure 4. Active–Region Safe Operating Area

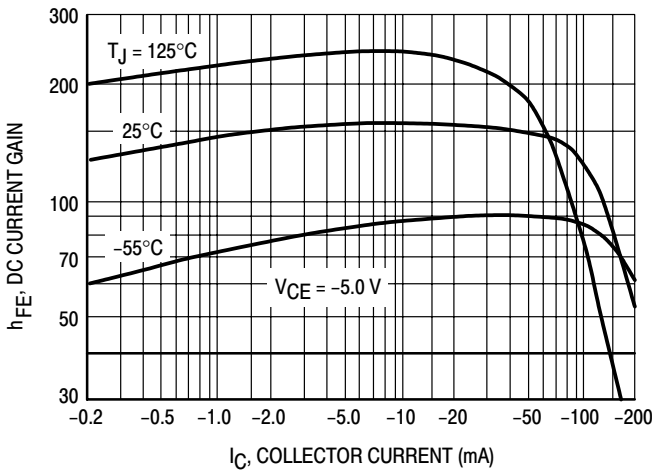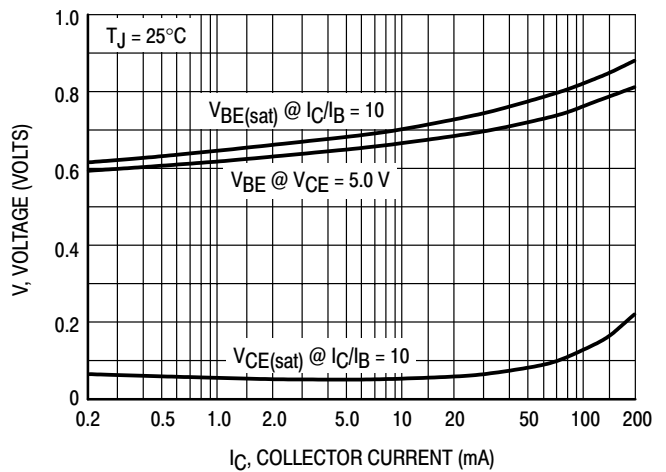**Figure 5. DC Current Gain**
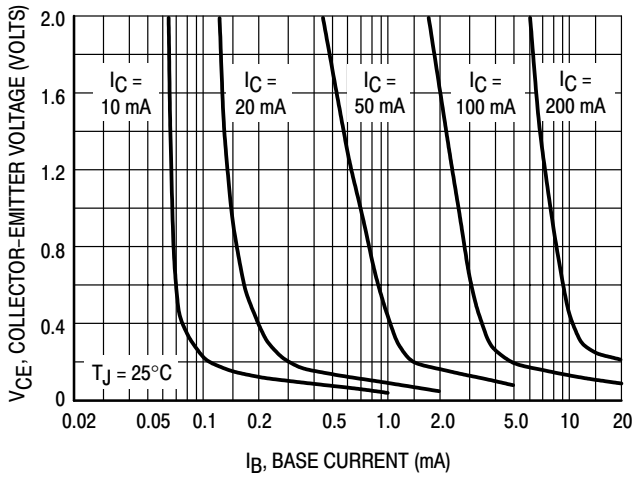
Figure 6. "ON" Voltages

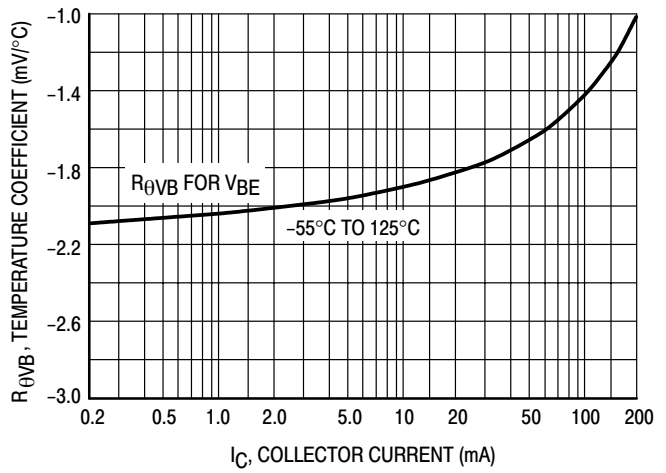**Figure 7. Collector Saturation Region**

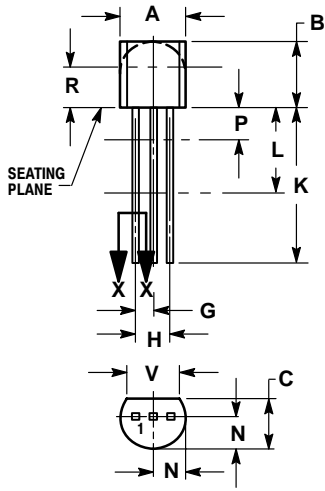**Figure 8. Base–Emitter Temperature Coefficient**
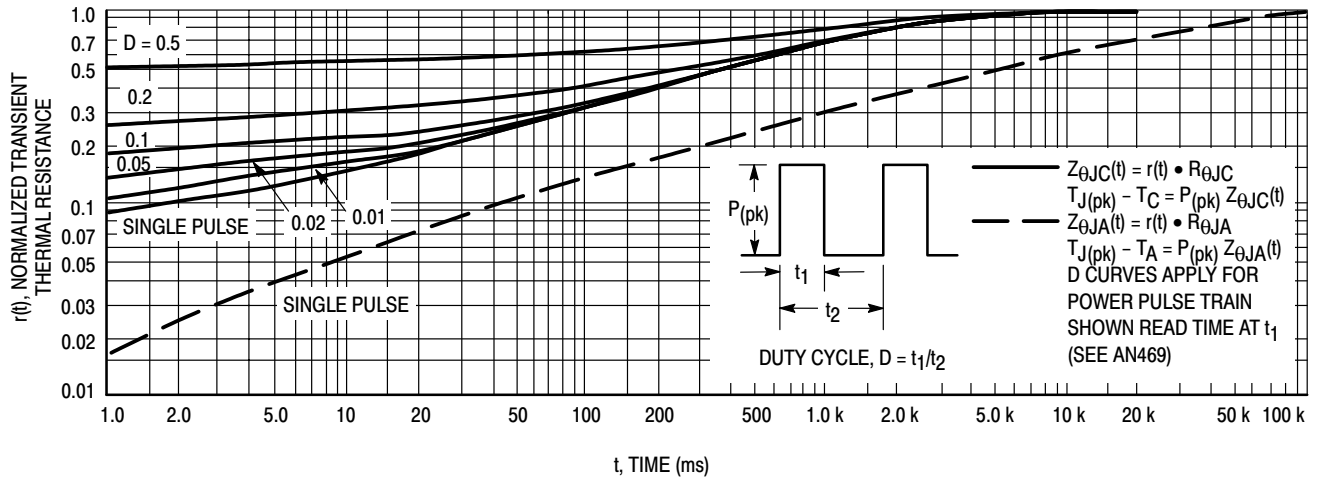
Figure 9. Thermal Response

PACKAGE DIMENSIONS

TO–92
(TO–226)
CASE 29–11
ISSUE AL

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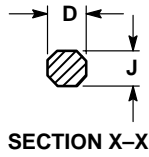
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

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	---

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

<u>Notes</u>

<u>Notes</u>

BC447, BC449, BC449A