BC447, BC449, BC449A

High Voltage Transistors

NPN Silicon

ON Semiconductor®

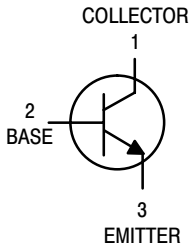
http://onsemi.com

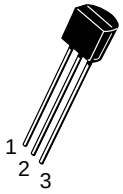
MAXIMUM RATINGS

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

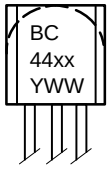
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	83.3	°C/W





CASE 29
TO-92
STYLE 17

MARKING DIAGRAM



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

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%

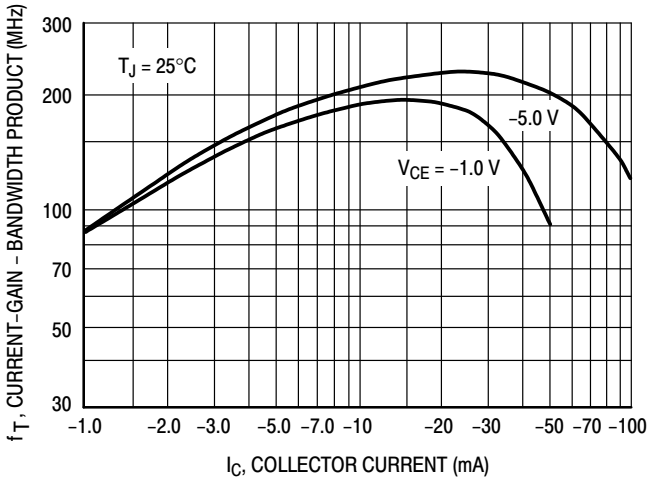


Figure 1. Current-Gain — Bandwidth Product

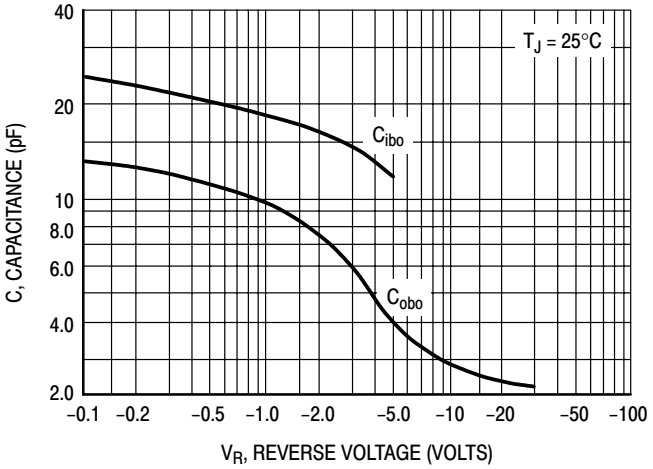


Figure 2. Capacitance

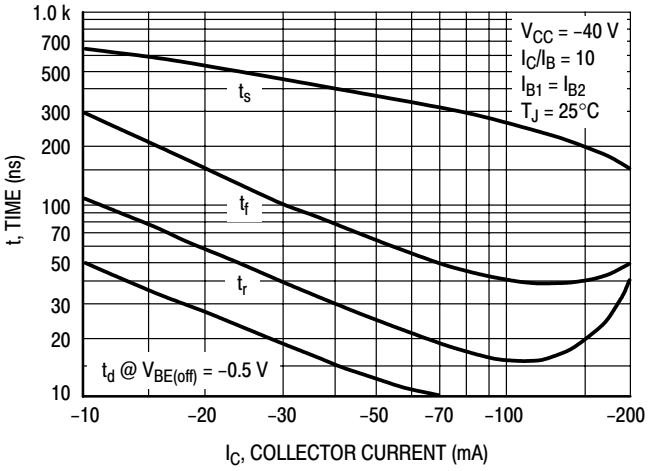


Figure 3. Switching Times

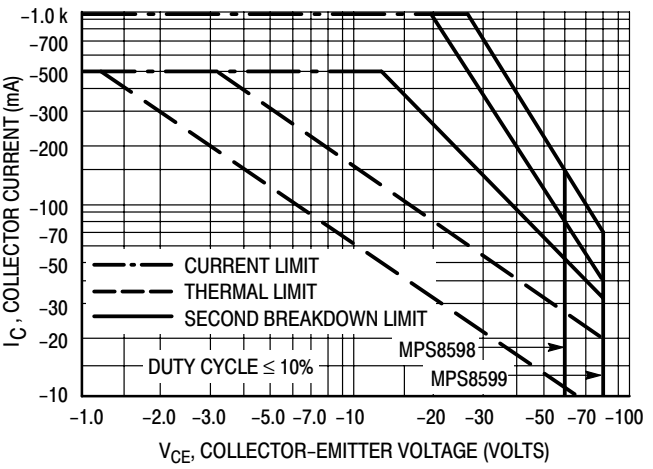


Figure 4. Active-Region Safe Operating Area

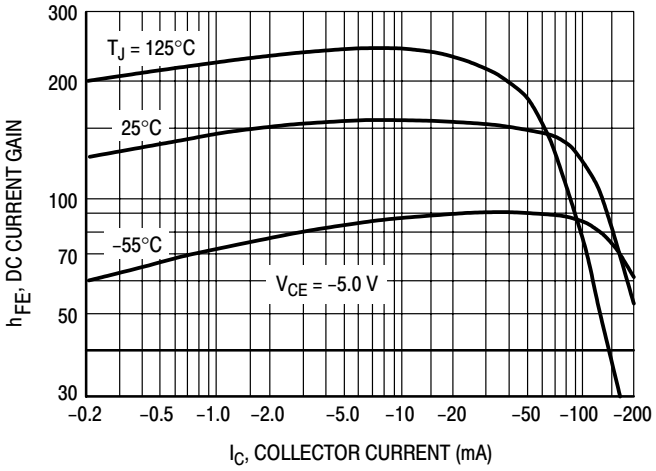


Figure 5. DC Current Gain

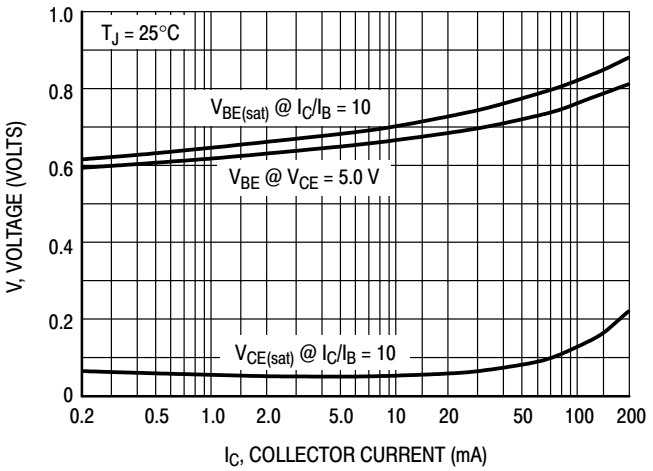


Figure 6. “ON” Voltages

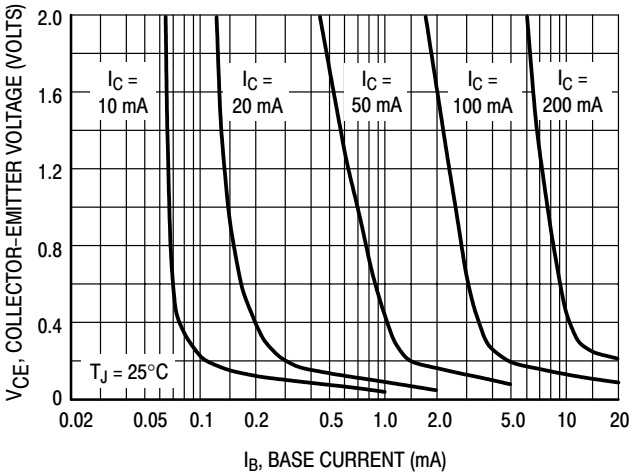


Figure 7. Collector Saturation Region

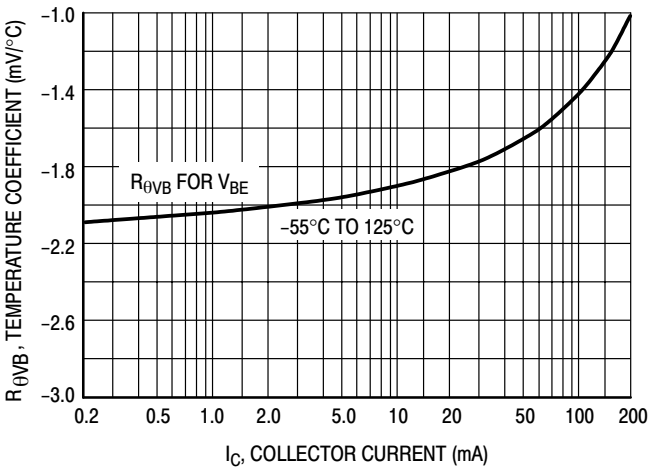


Figure 8. Base-Emitter Temperature Coefficient

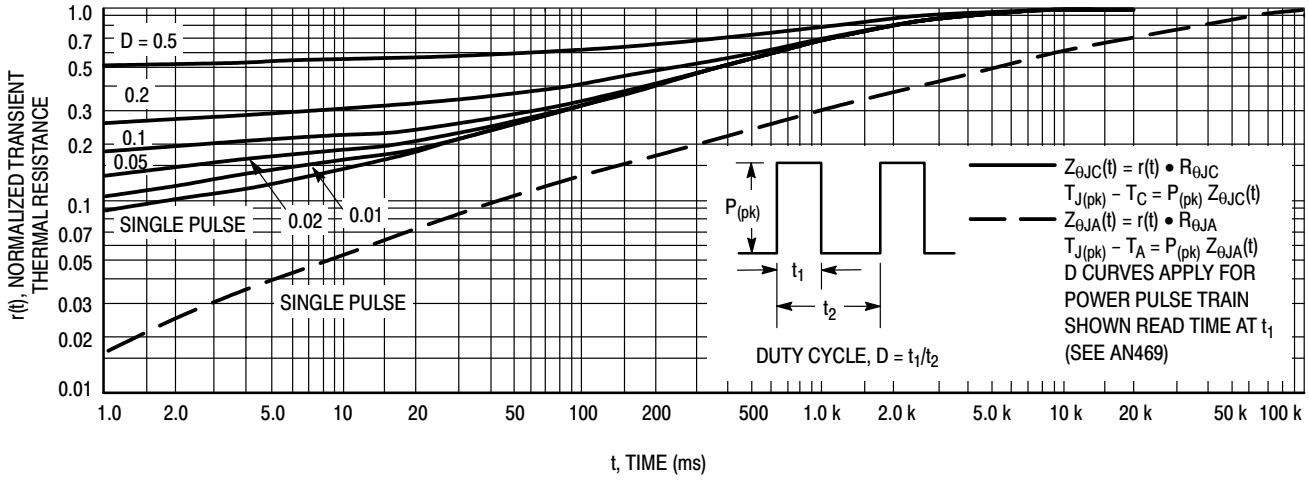
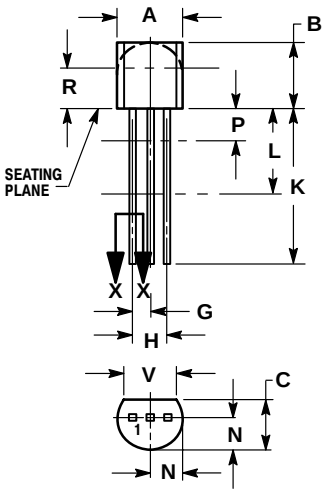
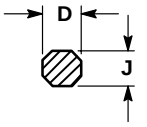


Figure 9. Thermal Response

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

PUBLICATION ORDERING INFORMATION

Literature Fulfillment:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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