

BC447, BC449, BC449A

High Voltage Transistors

NPN Silicon



ON Semiconductor®

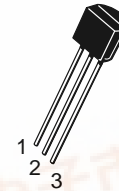
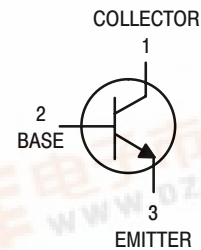
<http://onsemi.com>

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	mA dc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	625 5.0	mW mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.5 12	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$
Moisture Sensitivity Level (MSL) Electrostatic Discharge (ESD)		MSL: 1 NA	

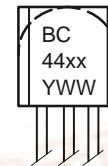
THERMAL CHARACTERISTICS

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



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

BC447, BC449, BC449A

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector - Emitter Breakdown Voltage (Note 1) ($I_C = 1.0 \text{ mAdc}$, $I_B = 0$)	BC447 BC449, BC449A	$V_{(BR)CEO}$	80 100	- -	- -	Vdc
Collector - Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	BC447 BC449, BC449A	$V_{(BR)CBO}$	80 100	- -	- -	Vdc
Emitter - Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}$, $I_C = 0$)		$V_{(BR)EBO}$	5.0	-	-	Vdc
Collector Cutoff Current ($V_{CB} = 60 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 80 \text{ Vdc}$, $I_E = 0$)	BC447 BC449, BC449A	I_{CBO}	- -	- -	100 100	nAdc

ON CHARACTERISTICS (Note 1)

DC Current Gain ($I_C = 2.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 100 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	BC447, BC449 BC449A BC447, BC449 BC449A BC447, BC449 BC449A	h_{FE}	50 120 50 100 50 60	- - - - - -	460 220 - - - -	-
Collector - Emitter Saturation Voltage ($I_C = 100 \text{ mAdc}$, $I_B = 10 \text{ mAdc}$)		$V_{CE(sat)}$	-	0.125	0.25	Vdc
Base - Emitter Saturation Voltage ($I_C = 100 \text{ mAdc}$, $I_B = 10 \text{ mAdc}$)		$V_{BE(sat)}$	-	0.85	-	Vdc
Base - Emitter On Voltage ($I_C = 2.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$) ($I_C = 100 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$) (Note 1)		$V_{BE(on)}$	0.55 -	- 0.76	0.7 1.2	Vdc

DYNAMIC CHARACTERISTICS

Current - Gain - Bandwidth Product ($I_C = 50 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	100	200	-	MHz
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1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle 2%

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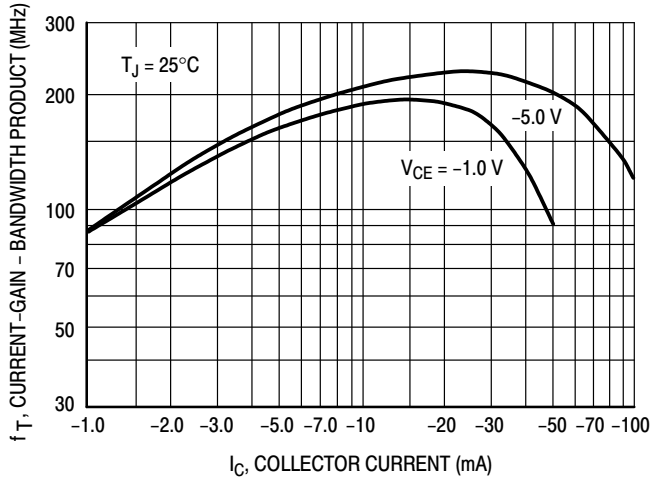


Figure 1. Current-Gain — Bandwidth Product

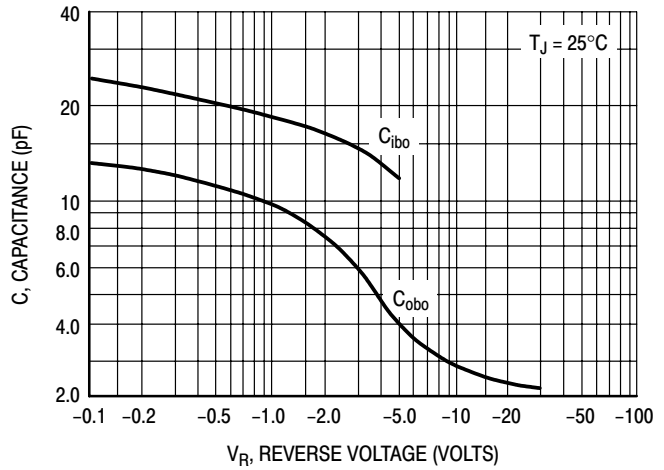


Figure 2. Capacitance

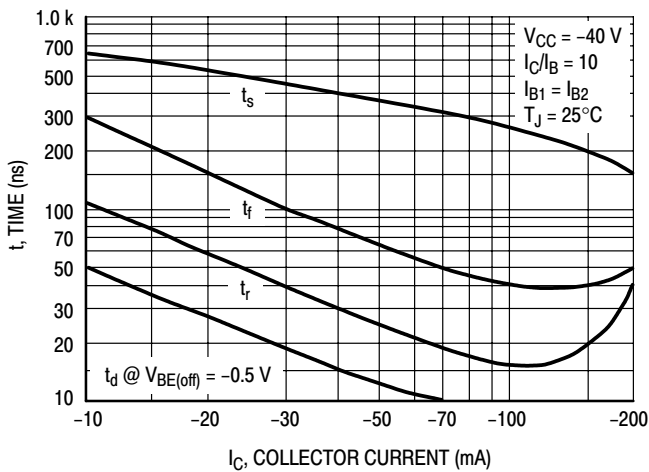


Figure 3. Switching Times

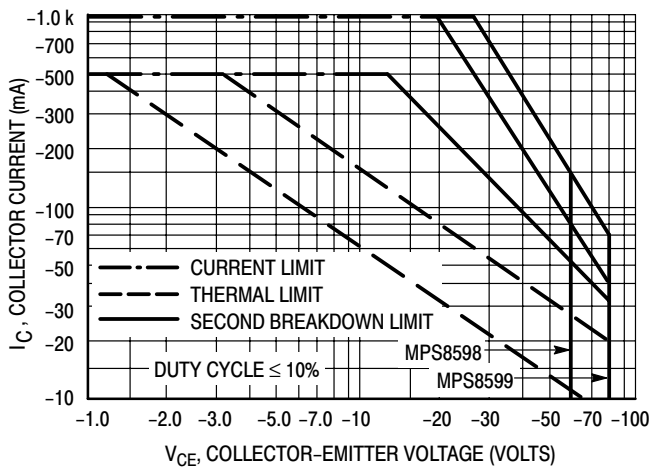


Figure 4. Active-Region Safe Operating Area

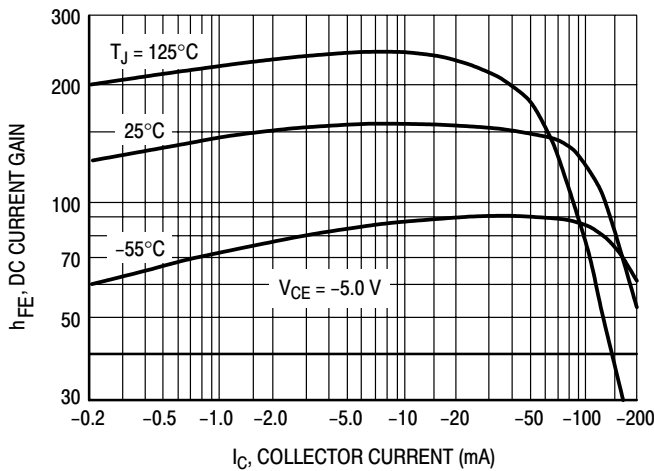


Figure 5. DC Current Gain

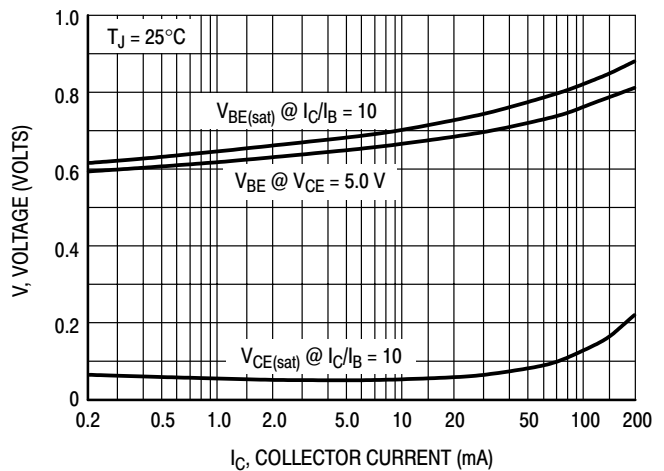


Figure 6. "ON" Voltages

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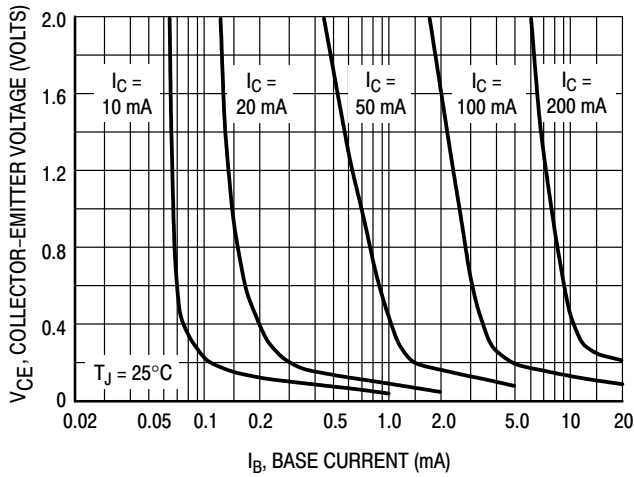


Figure 7. Collector Saturation Region

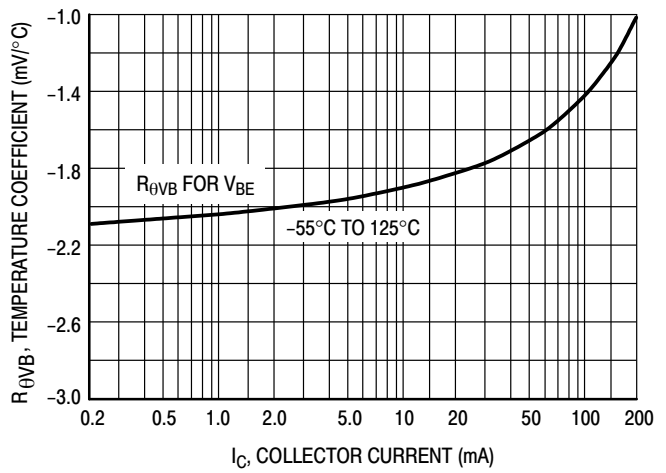


Figure 8. Base-Emitter Temperature Coefficient

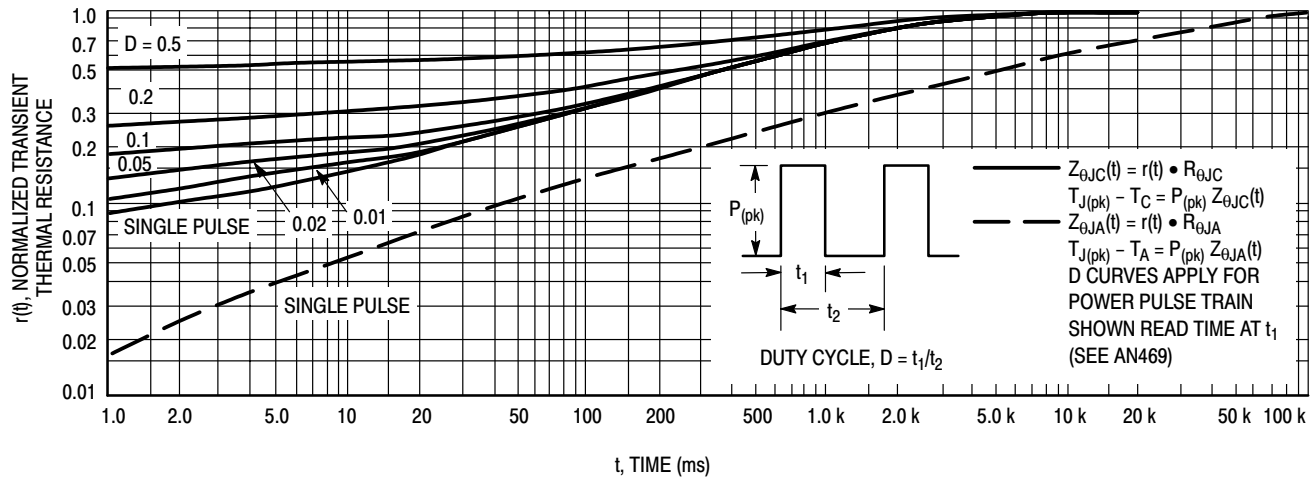
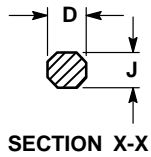
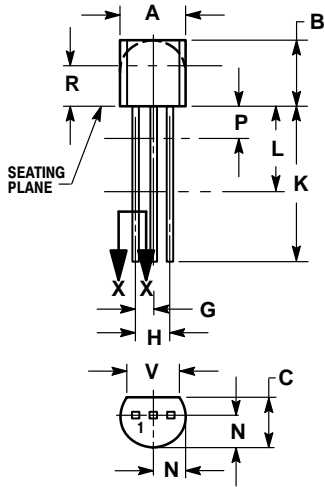


Figure 9. Thermal Response

BC447, BC449, BC449A

PACKAGE DIMENSIONS

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



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:

1. COLLECTOR
2. BASE
3. EMITTER

BC447, BC449, BC449A

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