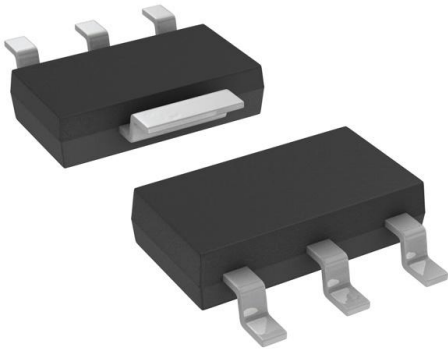


PZT3906T1 Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	PZT3906T1-DG
Manufacturer	onsemi
Manufacturer Product Number	PZT3906T1
Description	TRANS PNP 40V 0.2A SOT223
Detailed Description	Bipolar (BJT) Transistor PNP 40 V 200 mA 250MHz 1 .5 W Surface Mount SOT-223 (TO-261)



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

PZT3906T1

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

40 V

Current - Collector Cutoff (Max):

-

Power - Max:

1.5 W

Operating Temperature:

-55°C ~ 150°C (TJ)

Package / Case:

TO-261-4, TO-261AA

Base Product Number:

PZT390

Manufacturer:

onsemi

Product Status:

Obsolete

Current - Collector (Ic) (Max):

200 mA

Vce Saturation (Max) @ Ib, Ic:

400mV @ 5mA, 50mA

DC Current Gain (hFE) (Min) @ Ic, Vce:

100 @ 10mA, 1V

Frequency - Transition:

250MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-223 (TO-261)

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

General Purpose Transistor

PNP Silicon

PZT3906T1G

Features

- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	-40	Vdc
Collector – Base Voltage	V_{CBO}	-40	Vdc
Emitter – Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current – Continuous	I_C	-200	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) $T_A = 25^\circ\text{C}$	P_D	1.5 12	W mW/ $^\circ\text{C}$
Thermal Resistance Junction-to-Ambient (Note 1)	$R_{\theta JA}$	83.3	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Lead #4	$R_{\theta JA}$	35	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

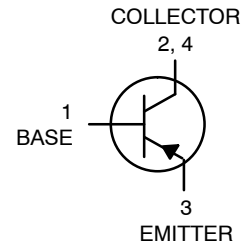
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-4 with 1 oz and 713 mm² of copper area.



ON Semiconductor[®]

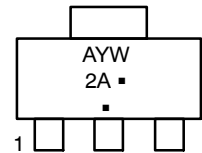
www.onsemi.com



MARKING DIAGRAM



SOT-223
CASE 318E



2A = Specific Device Code
A = Assembly Location
Y = Year
W = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping [†]
PZT3906T1G	SOT-223 (Pb-Free)	1000 / 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.

PZT3906T1G**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS (Note 2)					
Collector – Emitter Breakdown Voltage (Note 2) ($I_C = -1.0\text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	-40	-	Vdc	
Collector – Base Breakdown Voltage ($I_C = -10\ \mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CBO}$	-40	-		
Emitter – Base Breakdown Voltage ($I_E = -10\ \mu\text{Adc}$, $I_C = 0$)	$V_{(BR)EBO}$	-5.0	-		
Base Cutoff Current ($V_{CE} = -30\text{ Vdc}$, $V_{EB} = -3.0\text{ Vdc}$)	I_{BL}	-	-50	nAdc	
Collector Cutoff Current ($V_{CE} = -30\text{ Vdc}$, $V_{EB} = -3.0\text{ Vdc}$)	I_{CEX}	-	-50		
ON CHARACTERISTICS (Note 2)					
DC Current Gain ($I_C = -0.1\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$) ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$) ($I_C = -10\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$) ($I_C = -50\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$) ($I_C = -100\text{ mAdc}$, $V_{CE} = -1.0\text{ Vdc}$)	H_{FE}	60 80 100 60 30	- - 300 - -	-	
Collector – Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -1.0\text{ mAdc}$) ($I_C = -50\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$)	$V_{CE(sat)}$	- -	-0.25 -0.4	Vdc	
Base – Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -1.0\text{ mAdc}$) ($I_C = -50\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$)	$V_{BE(sat)}$	-0.65 -	-0.85 -0.95		
SMALL-SIGNAL CHARACTERISTICS					
Current – Gain – Bandwidth Product ($I_C = -10\text{ mAdc}$, $V_{CE} = -20\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	250	-	MHz	
Output Capacitance ($V_{CB} = -5.0\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	-	4.5	pF	
Input Capacitance ($V_{EB} = -0.5\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	-	10		
Input Impedance ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{ie}	2.0	12	k Ω	
Voltage Feedback Ratio ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{re}	0.1	10	$\times 10^{-4}$	
Small – Signal Current Gain ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{fe}	100	400	-	
Output Admittance ($I_C = -1.0\text{ mAdc}$, $V_{CE} = -10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{oe}	3.0	60	μmhos	
Noise Figure ($I_C = -100\ \mu\text{Adc}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 1.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$)	NF	-	4.0	dB	
SWITCHING CHARACTERISTICS					
Delay Time	$(V_{CC} = -3.0\text{ Vdc}$, $V_{BE} = 0.5\text{ Vdc}$, $I_C = -10\text{ mAdc}$, $I_{B1} = -1.0\text{ mAdc}$)	t_d	-	35	ns
Rise Time		t_r	-	35	
Storage Time		t_s	-	225	
Fall Time		t_f	-	75	

2. Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

PZT3906T1G

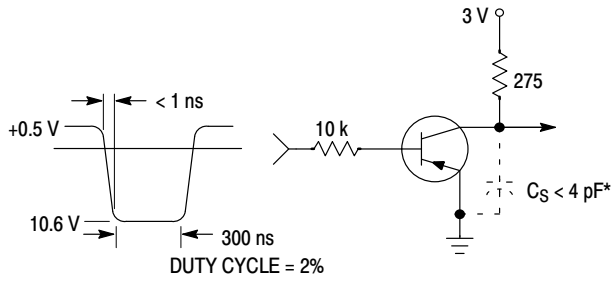


Figure 1. Delay and Rise Time Equivalent Test Circuit

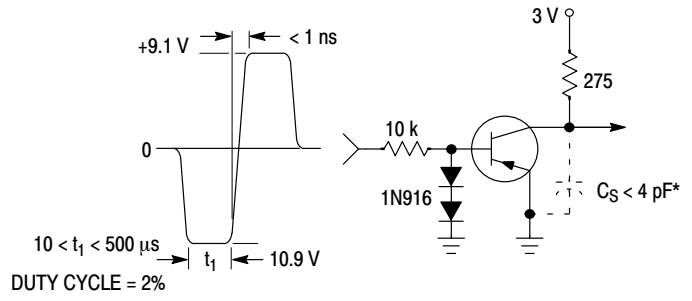


Figure 2. Storage and Fall Time Equivalent Test Circuit

* Total shunt capacitance of test jig and connectors

PZT3906T1G

TYPICAL TRANSIENT CHARACTERISTICS

— $T_J = 25^\circ\text{C}$
 - - - $T_J = 125^\circ\text{C}$

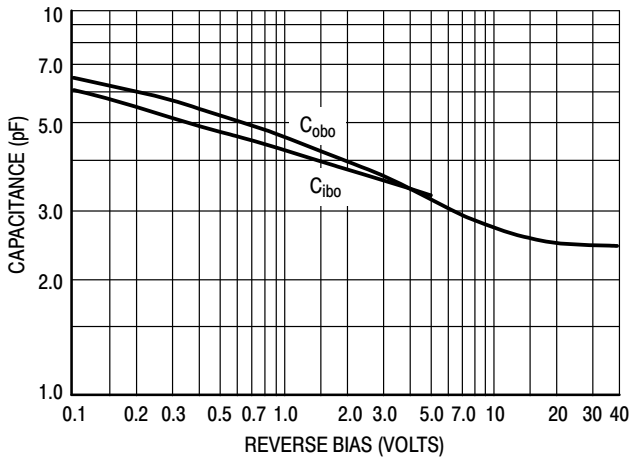


Figure 3. Capacitance

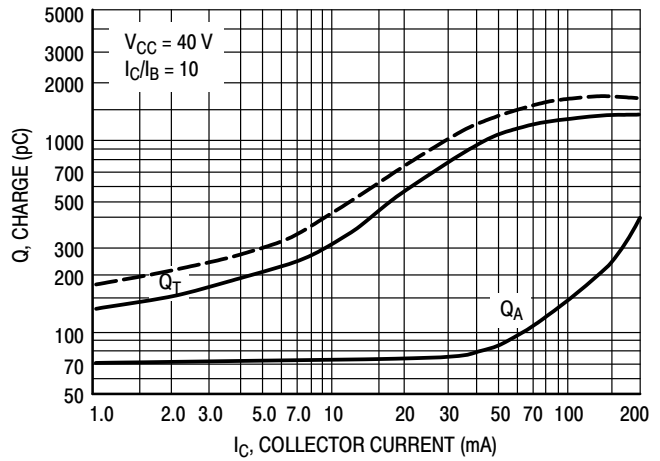


Figure 4. Charge Data

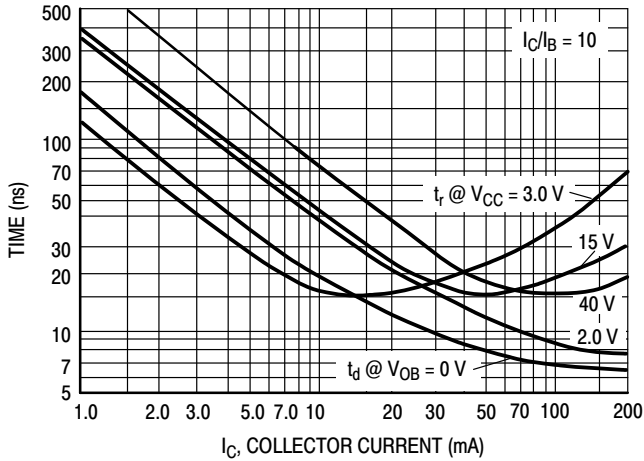


Figure 5. Turn-On Time

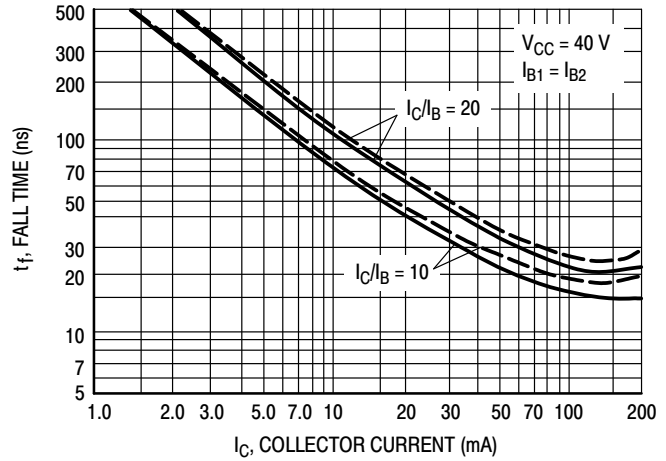


Figure 6. Fall Time

TYPICAL AUDIO SMALL-SIGNAL CHARACTERISTICS NOISE FIGURE VARIATIONS

($V_{CE} = -5.0\text{ Vdc}$, $T_A = 25^\circ\text{C}$, Bandwidth = 1.0 Hz)

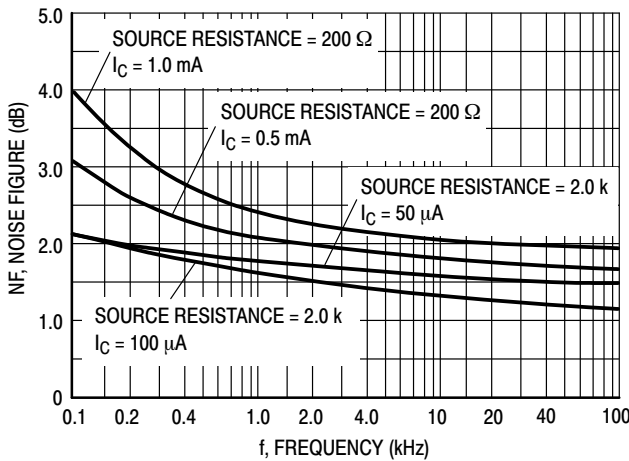


Figure 7.

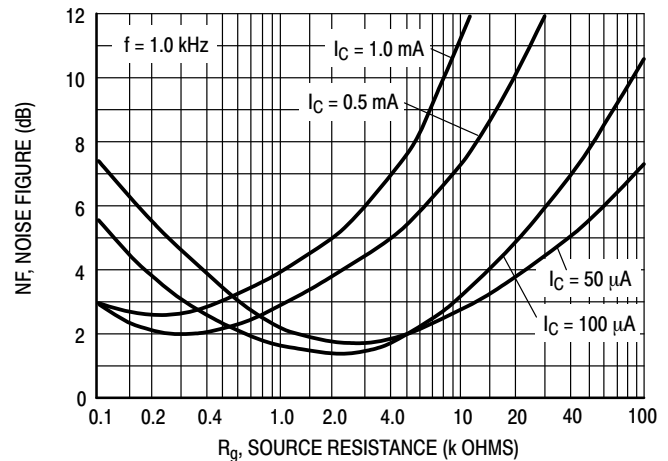


Figure 8.

PZT3906T1G

h PARAMETERS

($V_{CE} = -10$ Vdc, $f = 1.0$ kHz, $T_A = 25^\circ\text{C}$)

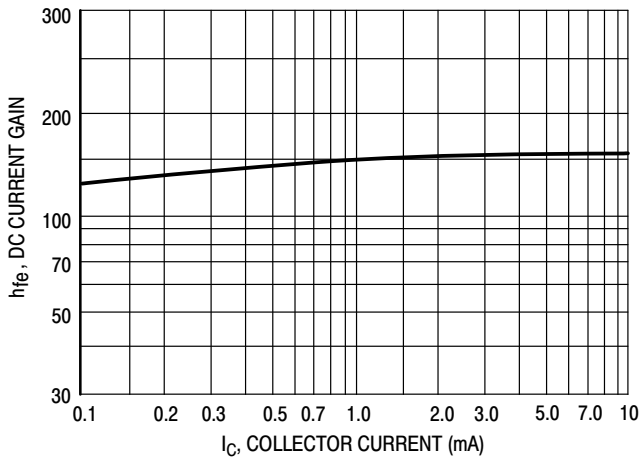


Figure 9. Current Gain

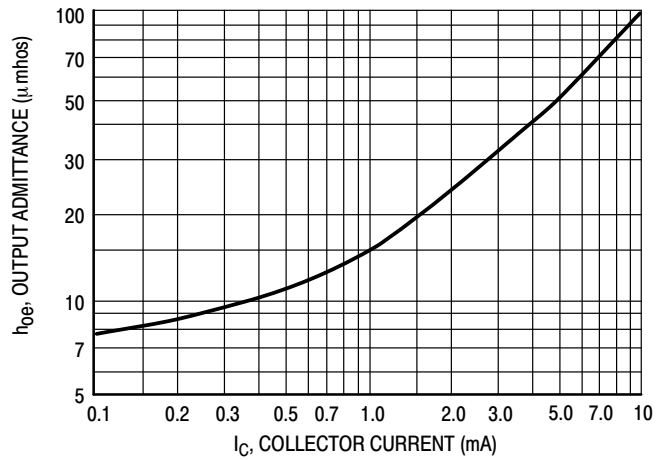


Figure 10. Output Admittance

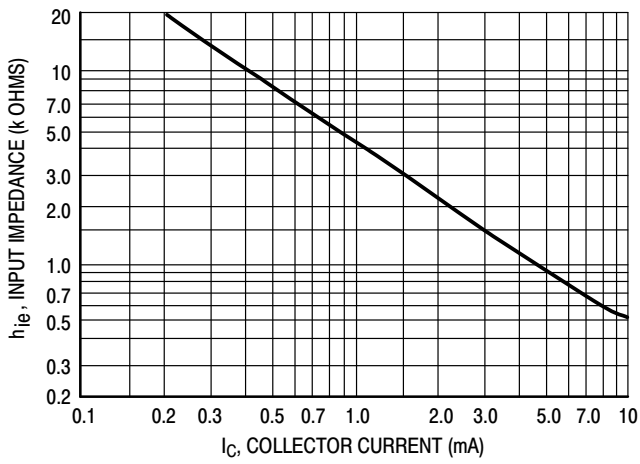


Figure 11. Input Impedance

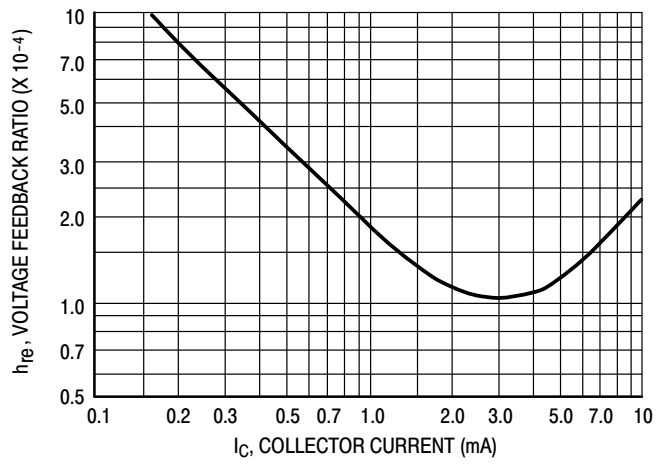


Figure 12. Voltage Feedback Ratio

PZT3906T1G

TYPICAL STATIC CHARACTERISTICS

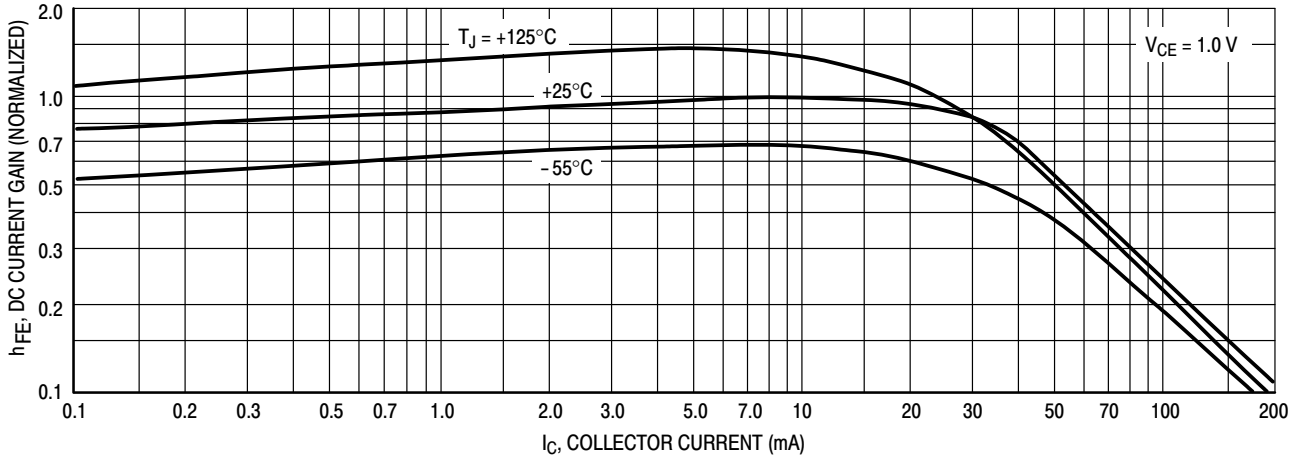


Figure 13. DC Current Gain

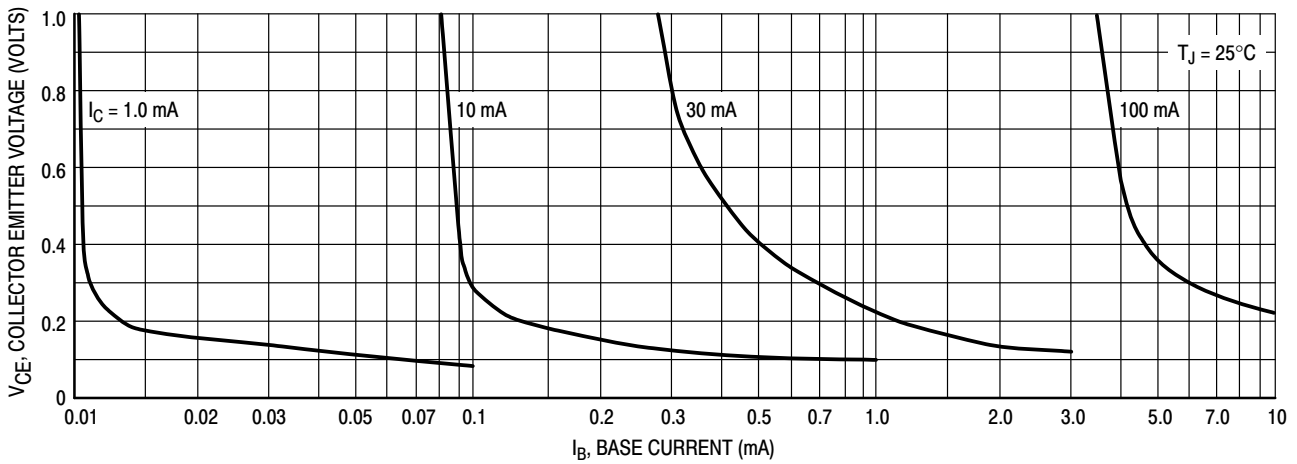


Figure 14. Collector Saturation Region

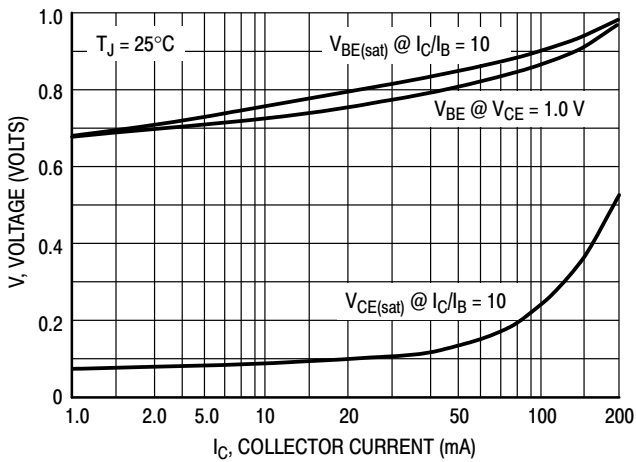


Figure 15. "ON" Voltages

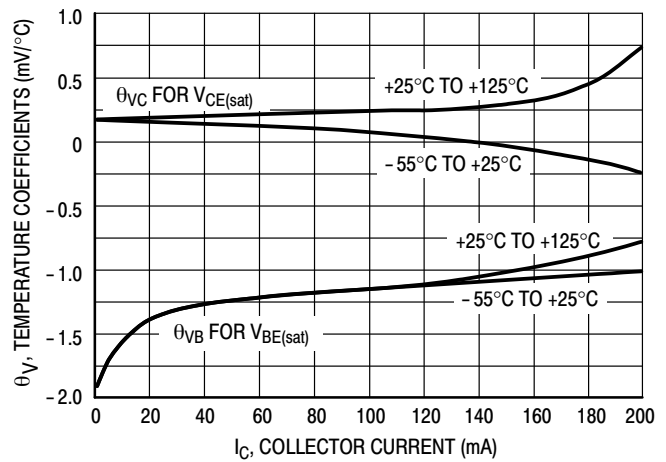


Figure 16. Temperature Coefficients

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