PZT3906T1 Datasheet

www.digi-electronics.com

https://www.DiGi-Electronics.com
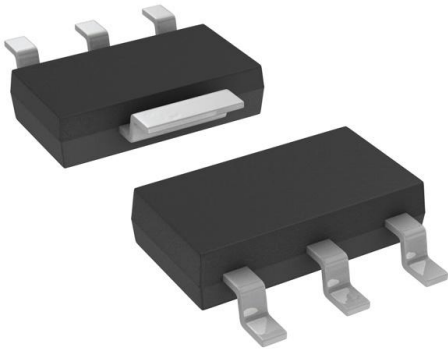
DiGi Electronics Part Number	PZT3906T1-DG
Manufacturer	onsemi
Manufacturer Product Number	PZT3906T1
Description	TRANS PNP 40V 0.2A SOT223
Detailed Description	Bipolar (BJT) Transistor PNP 40 V 200 mA 250MHz 1.5 W Surface Mount SOT-223 (TO-261)

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
PZT3906T1	onsemi
Series:	Product Status:
-	Obsolete
Transistor Type:	Current - Collector (Ic) (Max):
PNP	200 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
40 V	400mV @ 5mA, 50mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
-	100 @ 10mA, 1V
Power - Max:	Frequency - Transition:
1.5 W	250MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-261-4, TO-261AA	SOT-223 (TO-261)
Base Product Number:	
PZT390	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
RoHS non-compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0075	

General Purpose Transistor

PNP Silicon

PZT3906T1G

Features

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

ON Semiconductor®

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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°C	P_D	1.5 12	W mW/°C
Thermal Resistance Junction−to−Ambient (Note 1)	$R_{\theta JA}$	83.3	°C/W
Thermal Resistance Junction−to−Lead #4	$R_{\theta JA}$	35	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°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.
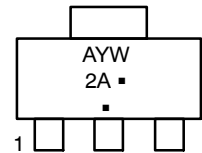1. FR−4 with 1 oz and 713 mm^2 of copper area.

COLLECTOR
2, 4

1
BASE

3
EMITTER

**MARKING
DIAGRAM**

SOT−223
CASE 318E

AYW
2A ▪

1

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.

Publication Order Number:
PZT3906T1/D

PZT3906T1G

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

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

SWITCHING CHARACTERISTICS

			Min	Max	
Delay Time	(V_{CC} = −3.0 Vdc, V_{BE} = 0.5 Vdc, I_C = −10 mAdc, I_{B1} = −1.0 mAdc)	t_d	−	35	ns
Rise Time		t_r	−	35	
Storage Time	(V_{CC} = −3.0 Vdc, I_C = −10 mAdc, I_{B1} = I_{B2} = −1.0 mAdc)	t_s	−	225	
Fall Time		t_f	−	75	

2. Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
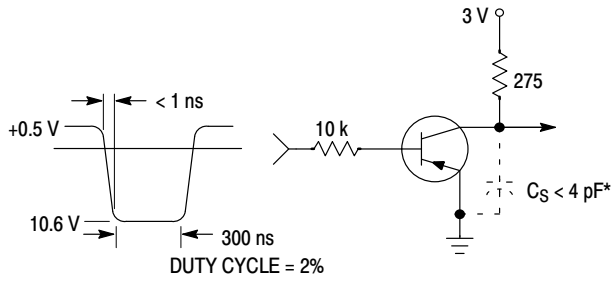
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* Total shunt capacitance of test jig and connectors

**Figure 1. Delay and Rise Time
Equivalent Test Circuit**
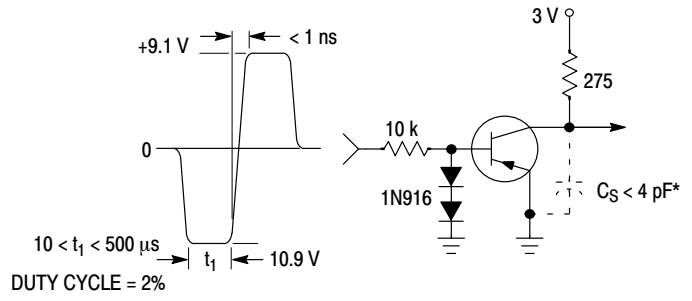
**Figure 2. Storage and Fall Time
Equivalent Test Circuit**

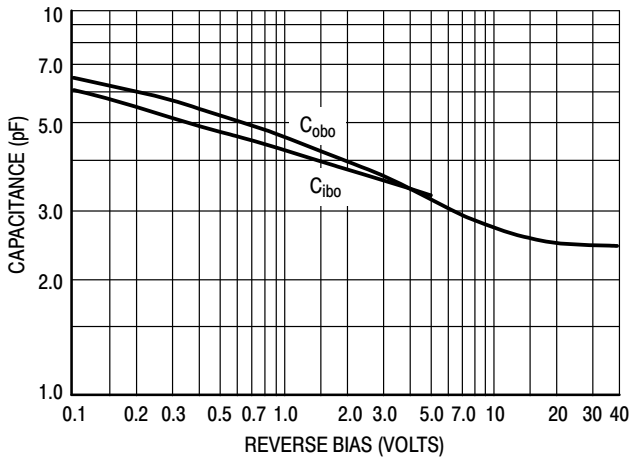## TYPICAL TRANSIENT CHARACTERISTICS

$T_J = 25°C$
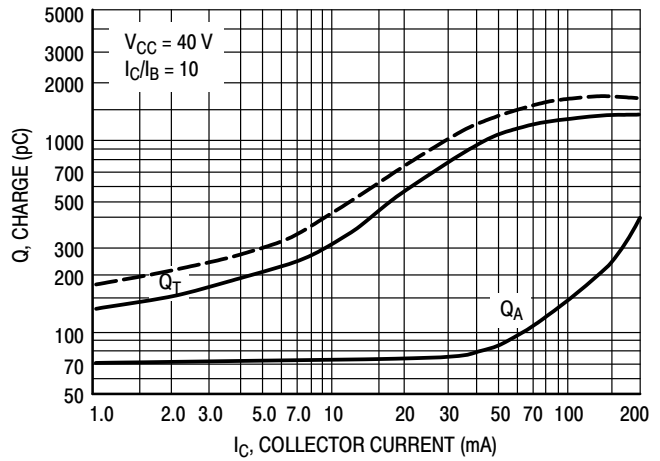$T_J = 125°C$
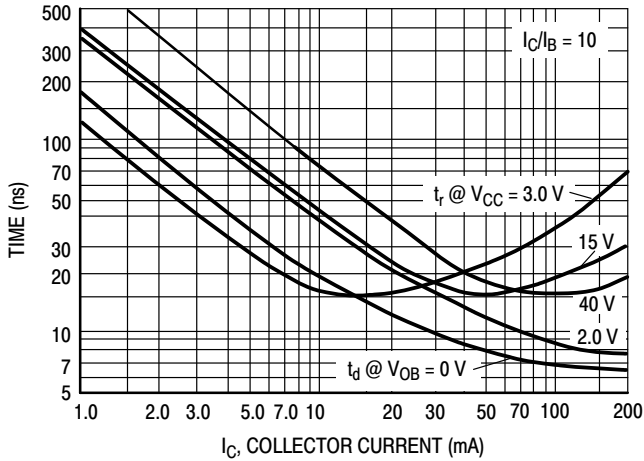

Figure 3. Capacitance
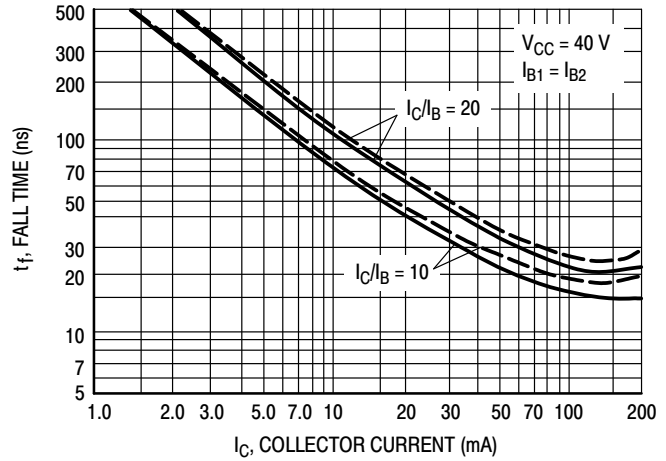

Figure 4. Charge Data

Figure 5. Turn−On Time

Figure 6. Fall Time

TYPICAL AUDIO SMALL−SIGNAL CHARACTERISTICS
NOISE FIGURE VARIATIONS

($V_{CE} = −5.0$ Vdc, $T_A = 25°C$, Bandwidth = 1.0 Hz)
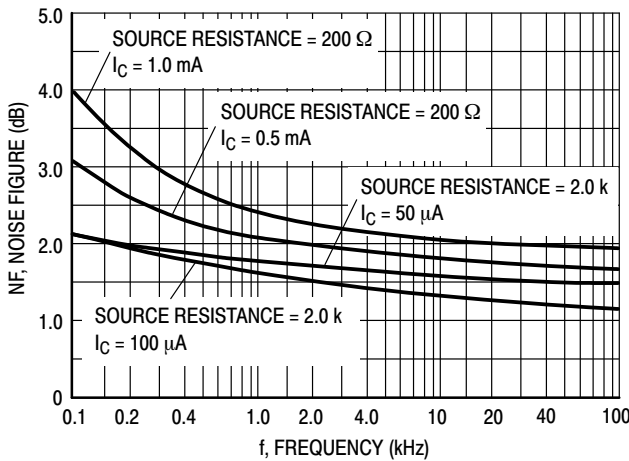
Figure 7.
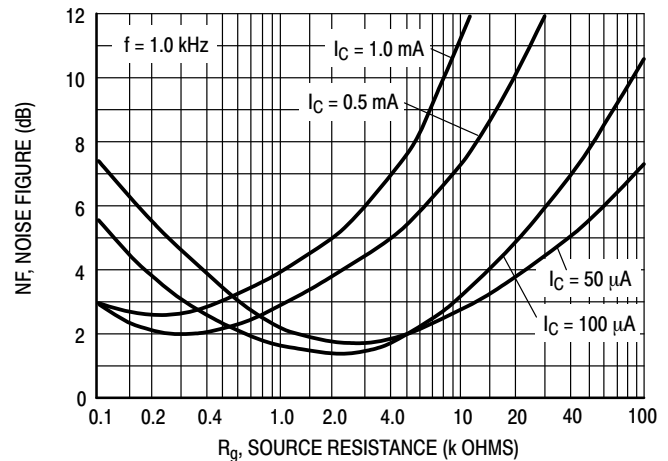
Figure 8.

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h PARAMETERS

$(V_{CE} = -10 \text{ Vdc}, f = 1.0 \text{ kHz}, T_A = 25°C)$
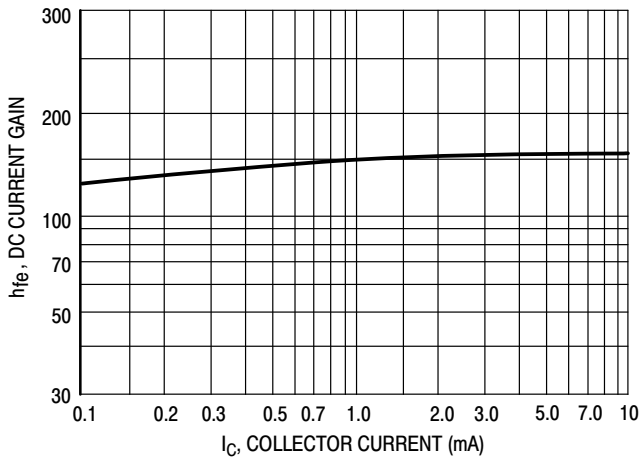
Figure 9. Current Gain
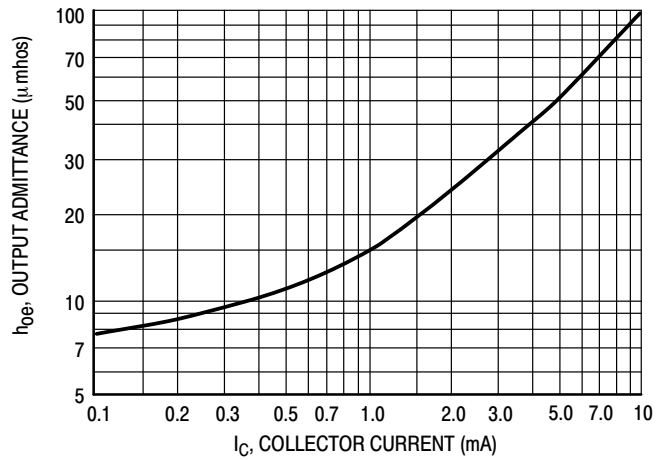
Figure 10. Output Admittance
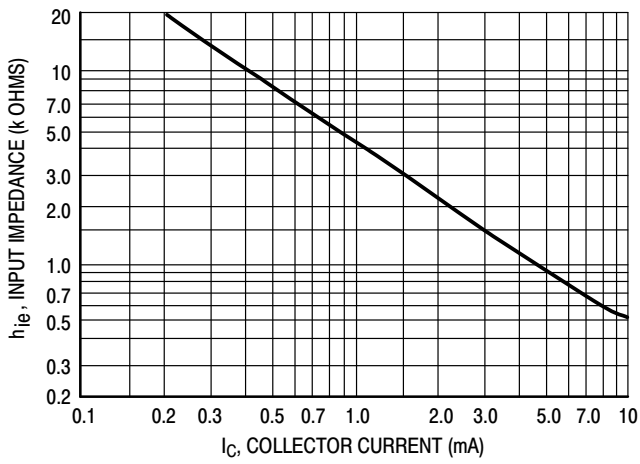
Figure 11. Input Impedance
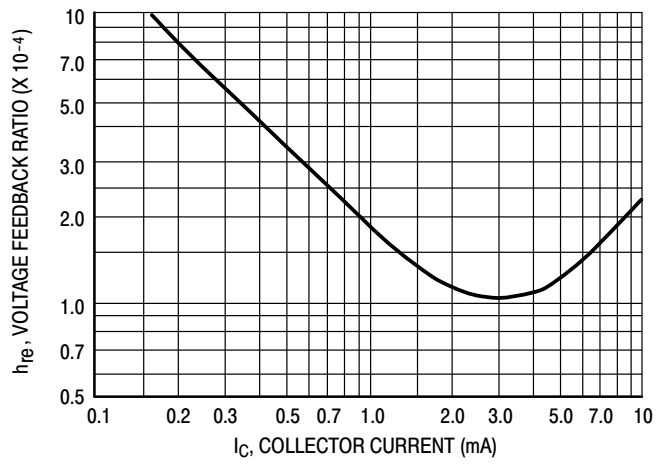
Figure 12. Voltage Feedback Ratio

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TYPICAL STATIC CHARACTERISTICS
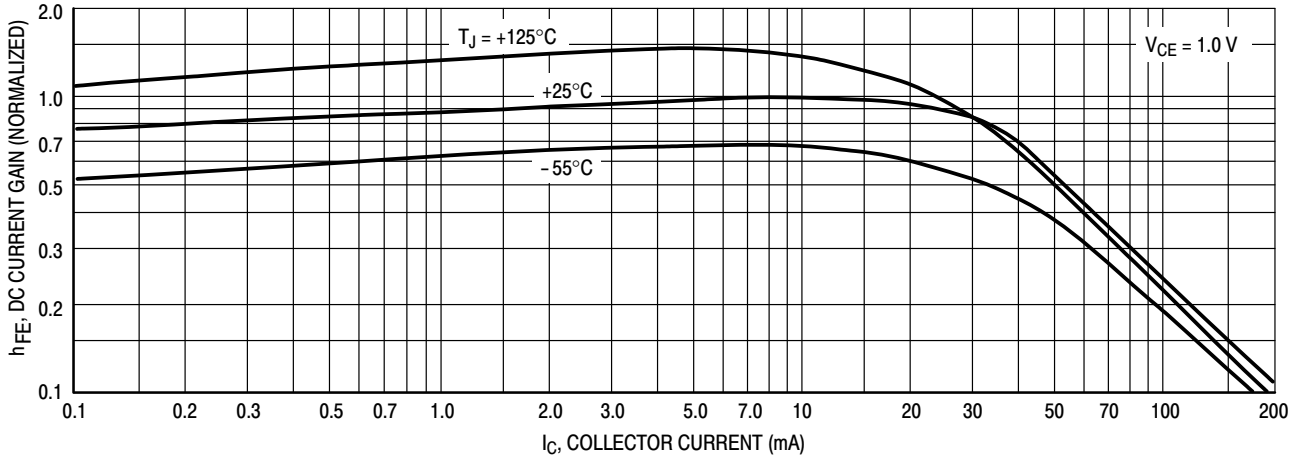
Figure 13. DC Current Gain
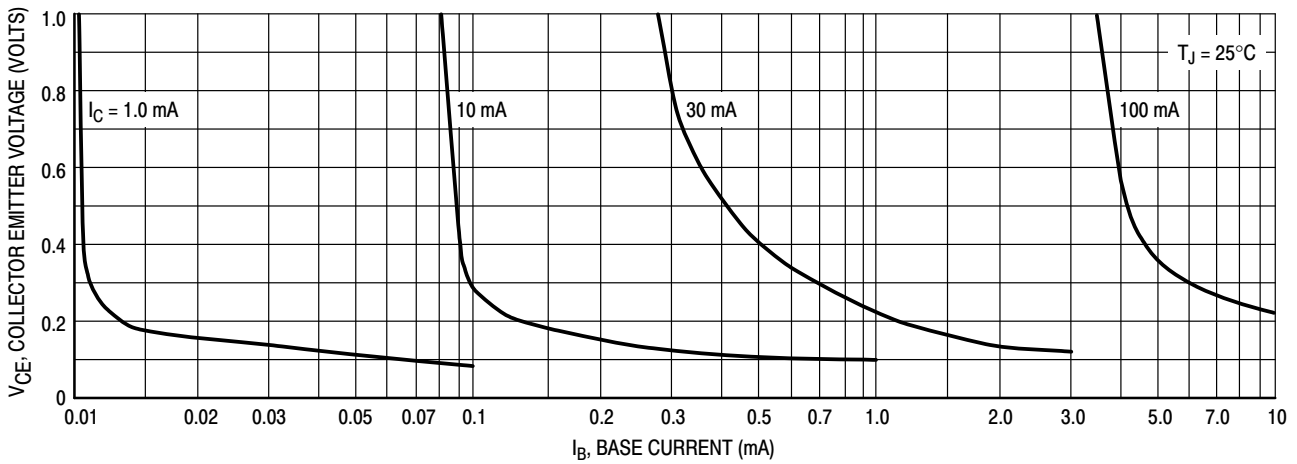
Figure 14. Collector Saturation Region
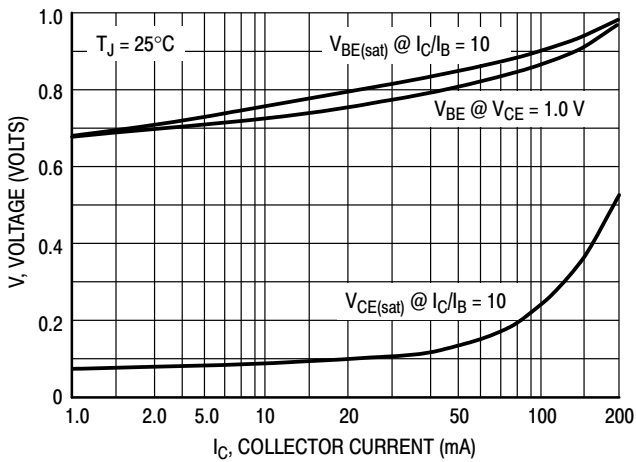
Figure 15. "ON" Voltages
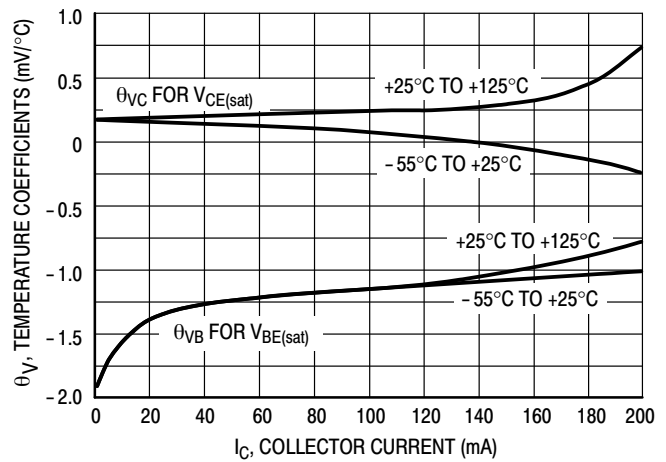
Figure 16. Temperature Coefficients

ADDITIONAL INFORMATION

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