

## NPN SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/423

### Devices

2N5581

2N5582

### Qualified Level

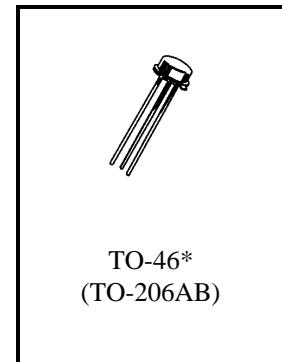
JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

Ratings	Symbol	Value	Unit	
Collector-Emitter Voltage	$V_{CEO}$	50	Vdc	
Collector-Base Voltage	$V_{CBO}$	75	Vdc	
Emitter-Base Voltage	$V_{EBO}$	6.0	Vdc	
Collector Current	$I_C$	800	mAdc	
Total Power Dissipation	$P_T$	@ $T_A = 25^{\circ}\text{C}$ <sup>(1)</sup>	0.5	W
		@ $T_C = 25^{\circ}\text{C}$ <sup>(2)</sup>	2.0	W
Operating & Storage Junction Temperature Range	$T_{op}, T_{stg}$	-55 to +200	$^{\circ}\text{C}$	

1) Derate linearly 2.86 mW/ $^{\circ}\text{C}$  for  $T_A > 25^{\circ}\text{C}$

2) Derate linearly 11.43 mW/ $^{\circ}\text{C}$  for  $T_C > 25^{\circ}\text{C}$



\*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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#### OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 10 \text{ mAdc}$	$V_{(BR)CEO}$	50		Vdc
Collector-Base Cutoff Current $V_{CB} = 60 \text{ Vdc}$ $V_{CB} = 75 \text{ Vdc}$	$I_{CBO}$		10 10	$\eta\text{Adc}$ $\mu\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 4.0\text{Vdc}$ $V_{EB} = 6.0\text{Vdc}$	$I_{EBO}$		10 10	$\eta\text{Adc}$ $\mu\text{Adc}$

**2N5581, 2N5582 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS <sup>(3)</sup></b>				
Forward-Current Transfer Ratio I <sub>C</sub> = 0.1 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 10 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 150 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 500 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub>	2N5581	h <sub>FE</sub>	30 35 40 40 20	120
I <sub>C</sub> = 0.1 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 10 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 150 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub> I <sub>C</sub> = 500 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub>	2N5582	h <sub>FE</sub>	50 75 100 100 30	300
Collector-Emitter Saturation Voltage I <sub>C</sub> = 150 mA <sub>dc</sub> , I <sub>B</sub> = 15 mA <sub>dc</sub> I <sub>C</sub> = 500 mA <sub>dc</sub> , I <sub>B</sub> = 50 mA <sub>dc</sub>	V <sub>CE(sat)</sub>		0.3 1.0	V <sub>dc</sub>
Base-Emitter Voltage I <sub>C</sub> = 150 mA <sub>dc</sub> , I <sub>B</sub> = 15 mA <sub>dc</sub> I <sub>C</sub> = 500 mA <sub>dc</sub> , I <sub>B</sub> = 50 mA <sub>dc</sub>	V <sub>BE(sat)</sub>	0.6	1.2 2.0	V <sub>dc</sub>

**DYNAMIC CHARACTERISTICS**

Forward Current Transfer Ratio I <sub>C</sub> = 1.0 mA <sub>dc</sub> , V <sub>CE</sub> = 10 V <sub>dc</sub>	2N5581 2N5582	h <sub>fe</sub>	30 50	
Forward Current Transfer Ratio I <sub>C</sub> = 50 mA <sub>dc</sub> , V <sub>CE</sub> = 20 V <sub>dc</sub> , f = 100 MHz		h <sub>fe</sub>	2.5	
Output Capacitance V <sub>CB</sub> = 10 V <sub>dc</sub> , I <sub>E</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz		C <sub>obo</sub>	8.0	pF
Input Capacitance V <sub>EB</sub> = 0.5 V <sub>dc</sub> , I <sub>C</sub> = 0, 100 kHz ≤ f ≤ 1.0 MHz		C <sub>ibo</sub>	25	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 30 V <sub>dc</sub> ; I <sub>C</sub> = 150 mA <sub>dc</sub> ; I <sub>B1</sub> = 15 mA <sub>dc</sub>	t <sub>on</sub>	35	ηs
Turn-Off Time V <sub>CC</sub> = 30 V <sub>dc</sub> ; I <sub>C</sub> = 150 mA <sub>dc</sub> ; I <sub>B1</sub> = I <sub>B2</sub> = 15 mA <sub>dc</sub>	t <sub>off</sub>	300	ηs

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.