

PNP SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/323

Devices

2N3250A

2N3251A

Qualified Level

JAN
JANTX
JANTXV

MAXIMUM RATINGS

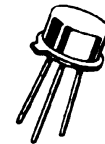
Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	60	Vdc
Collector-Base Voltage	V_{CBO}	60	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	200	mAdc
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ ⁽¹⁾ @ $T_C = +25^{\circ}\text{C}$ ⁽²⁾	P_T	0.36	W
		1.2	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +175	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$ ⁽¹⁾⁽²⁾	417	$^{\circ}\text{C}/\text{W}$

1) Derate linearly 2.4 W/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$

2) Derate linearly 8.0 W/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$



TO-39*
(TO-205AD)

*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 $I_C = 10 \text{ mAdc}$	$V_{(BR)CEO}$	60		Vdc
Collector-Emitter Cutoff Voltage $V_{BE} = 3.0 \text{ Vdc}, V_{CE} = 40 \text{ Vdc}$	I_{CEX}		20	ηAdc
Collector-Base Cutoff Current $V_{CB} = 60 \text{ Vdc}$ $V_{CB} = 40 \text{ Vdc}$	I_{CBO}		10	μAdc
			20	ηAdc
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$	I_{EBO}		10	μAdc
Collector-Emitter Cutoff Voltage $V_{BE} = 3.0 \text{ Vdc}, V_{CE} = 40 \text{ Vdc}$	I_{CEX}		50	ηAdc

2N3250A, 2N3251A JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit	
DC CHARACTERISTICS ⁽³⁾						
Forward-Current Transfer Ratio $I_C = 0.1 \text{ mA dc}, V_{CE} = 1.0 \text{ V dc}$	2N3250A 2N3251A	h_{FE}	40 80			
$I_C = 1.0 \text{ mA dc}, V_{CE} = 1.0 \text{ V dc}$	2N3250A 2N3251A		45 90			
$I_C = 10 \text{ mA dc}, V_{CE} = 1.0 \text{ V dc}$	2N3250A 2N3251A		50 100	150 300		
$I_C = 50 \text{ mA dc}, V_{CE} = 1.0 \text{ V dc}$	2N3250A 2N3251A		15 30			
Collector-Emitter Saturation Voltage $I_C = 10 \text{ mA dc}, I_B = 1.0 \text{ mA dc}$			$V_{CE(sat)}$		0.25	Vdc
$I_C = 50 \text{ mA dc}, I_B = 5.0 \text{ mA dc}$					0.50	
Base-Emitter Voltage $I_C = 10 \text{ mA dc}, I_B = 1.0 \text{ mA dc}$		$V_{BE(sat)}$	0.60	0.90	Vdc	
$I_C = 50 \text{ mA dc}, I_B = 5.0 \text{ mA dc}$				1.20		

DYNAMIC CHARACTERISTICS

Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ mA dc}, V_{CE} = 10 \text{ V dc}, f = 1.0 \text{ kHz}$	2N3250A 2N3251A	h_{fe}	50 100	200 400	
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ mA dc}, V_{CE} = 20 \text{ V dc}, f = 100 \text{ MHz}$	2N3250A 2N3251A	$ h_{fe} $	2.5 3.0	9.0 9.0	
Output Capacitance $V_{CB} = 10 \text{ V dc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		C_{obo}		6.0	pF
Input Capacitance $V_{EB} = 1.0 \text{ V dc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$		C_{ibo}		8.0	pF

SWITCHING CHARACTERISTICS

Turn-On Time $V_{CC} = 3.0 \text{ V dc}; I_C = 10 \text{ mA dc}; I_{B1} = 1.0 \text{ mA dc}$		t_{on}		70	ns
Turn-Off Time $V_{CC} = 3.0 \text{ V dc}; I_C = 10 \text{ mA dc}; I_{B1} = I_{B2} = 1.0 \text{ mA dc}$	2N3250A 2N3251A	t_{off}		250 300	ns

(3) Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.