

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/369

Devices

2N3441

Qualified Level

JANTX

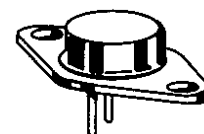
MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	140	Vdc
Collector-Base Voltage	V_{CBO}	160	Vdc
Collector-Emitter Voltage	V_{CER}	150	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	Vdc
Base Current	I_B	2.0	Adc
Collector Current	I_C	3.0	Adc
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$ ⁽¹⁾	P_T	3.0	W
@ $T_C = +25^{\circ}\text{C}$ ⁽²⁾		25	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7.0	$^{\circ}\text{C/W}$
Junction-to-Ambient	$R_{\theta JA}$	58.5	$^{\circ}\text{C/W}$

- 1) Derate linearly @ 17.1 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$
- 2) Derate linearly @ 143 mW/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$



TO-66* (TO-213AA)

*See Appendix A for Package Outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Voltage $I_C = 100 \text{ mAdc}$	$V_{(BR)CEO}$	140		Vdc
Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}, R_{BE} = 100 \Omega$	$V_{(BR)CER}$	150		Vdc
Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}, V_{BE} = -1.5 \text{ Vdc}$	$V_{(BR)CEX}$	160		Vdc
Collector-Base Cutoff Current $V_{CB} = 140 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$	I_{CEX}		1.0	mAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0 \text{ Vdc}$	I_{EBO}		1.0	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio I _C = 50 mAdc, V _{CE} = 4.0 Vdc I _C = 0.5 Adc, V _{CE} = 4.0 Vdc I _C = 1.0 Adc, V _{CE} = 4.0 Vdc	h _{FE}	50 25 10	100	
Collector-Emitter Saturation Voltage I _C = 0.5 Adc, I _B = 50 mAdc	V _{CE(sat)}		1.0	Vdc
Base-Emitter Voltage I _C = 0.5 Adc, V _{CE} = 4.0 Vdc	V _{BE(on)}		1.7	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 0.5 Adc, V _{CE} = 4.0 Vdc, f = 100 kHz	h _{fe}	4.0	40	
Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 0.5 Adc, V _{CE} = 4.0 Vdc	h _{fe}	15	100	
Output Capacitance V _{CB} = 10 Vdc, I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C _{obo}		300	pF

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 30 Vdc; I _C = 0.5 Adc; I _B = 50 mAdc	t _{on}		8.0	μs
Turn-Off Time V _{CC} = 30 Vdc; I _C = 0.5 Adc; I _B = -I _B = 50 mAdc	t _{off}		15	μs

SAFE OPERATING AREA**DC Tests**T_C = +25°C, 1 Cycle, t = 1.0 s**Test 1**V_{CE} = 8.33 Vdc, I_C = 3.0 Adc**Test 2**V_{CE} = 30 Vdc, I_C = 833 mAdc**Test 3**V_{CE} = 140 Vdc, I_C = 178.5 mAdc

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