

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/526

Devices

2N3879

Qualified Level

JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	75	Vdc
Collector-Base Voltage	V_{CBO}	120	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	Vdc
Base Current	I_B	5.0	Adc
Collector Current	I_C	7.0	Adc
Total Power Dissipation @ $T_C = 25^{\circ}\text{C}$ ⁽¹⁾	P_T	35	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	$R_{\theta JC}$	5.0	$^{\circ}\text{C}/\text{W}$

1) Derate linearly 200 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 Breakdown Voltage $I_C = 200 \text{ mAdc}$	$V_{(BR)CEO}$	75		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 50 \text{ Vdc}$	I_{CEO}		5.0	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	I_{CEX}		4.0	mAdc
Collector-Base Cutoff Current $V_{CB} = 120 \text{ Vdc}$	I_{CBO}		25	mAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0 \text{ Vdc}$	I_{EBO}		10	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽²⁾				
Forward-Current Transfer Ratio I _C = 0.5 Adc, V _{CE} = 5.0 Vdc I _C = 4.0 Adc, V _{CE} = 5.0 Vdc I _C = 4.0 Adc, V _{CE} = 2.0 Vdc	h _{FE}	40 20 12	80 100	
Collector-Emitter Saturation Voltage I _C = 4.0 Adc, I _B = 0.4 Adc	V _{CE(sat)}		1.2	Vdc
Base-Emitter Saturation Voltage I _C = 4.0 Adc, I _B = 0.4 Adc	V _{BE(sat)}		2.0	Vdc
Base-Emitter Voltage I _C = 4.0 Adc, V _{CE} = 2.0 Vdc	V _{BE(on)}		1.8	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I _C = 500 mAdc, V _{CE} = 10 Vdc, f = 10 MHz	h _{fe}	4.0	20	
Output Capacitance V _{CB} = 10 Vdc, I _E = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C _{obo}		175	pF

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 30 Vdc; I _C = 4.0 Adc; I _B = 0.4 Adc	t _{on}		0.44	μs
Turn-Off Time V _{CC} = 30 Vdc; I _C = 4.0 Adc; I _B = -I _B = 0.4 Adc	t _{off}		1.2	μs

SAFE OPERATING AREA

DC Tests T _C = +25°C, 1 Cycle, t = 1.0 s Test 1 V _{CE} = 5.0 Vdc, I _C = 7.0 Adc Test 2 V _{CE} = 28 Vdc, I _C = 1.25 Adc Test 3 V _{CE} = 40 Vdc, I _C = 500 mAdc Test 4 V _{CE} = 75 Vdc, I _C = 100 mAdc

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

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