

## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/526

### Devices

**2N3879**

### Qualified Level

**JANTX  
JANTXV**

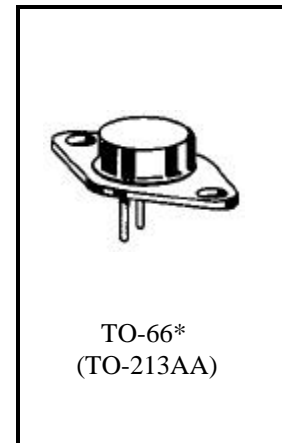
### MAXIMUM RATINGS

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 @ $T_C = 25^{\circ}\text{C}$ <sup>(1)</sup>	$P_T$	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  $T_C > 25^{\circ}\text{C}$



\*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
<b>ON CHARACTERISTICS <sup>(2)</sup></b>				
Forward-Current Transfer Ratio I <sub>C</sub> = 0.5 Adc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 4.0 Adc, V <sub>CE</sub> = 5.0 Vdc I <sub>C</sub> = 4.0 Adc, V <sub>CE</sub> = 2.0 Vdc	h <sub>FE</sub>	40 20 12	80 100	
Collector-Emitter Saturation Voltage I <sub>C</sub> = 4.0 Adc, I <sub>B</sub> = 0.4 Adc	V <sub>CE(sat)</sub>		1.2	Vdc
Base-Emitter Saturation Voltage I <sub>C</sub> = 4.0 Adc, I <sub>B</sub> = 0.4 Adc	V <sub>BE(sat)</sub>		2.0	Vdc
Base-Emitter Voltage I <sub>C</sub> = 4.0 Adc, V <sub>CE</sub> = 2.0 Vdc	V <sub>BE(on)</sub>		1.8	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I <sub>C</sub> = 500 mAdc, V <sub>CE</sub> = 10 Vdc, f = 10 MHz	h <sub>fe</sub>	4.0	20	
Output Capacitance V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C <sub>obo</sub>		175	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 4.0 Adc; I <sub>B</sub> = 0.4 Adc	t <sub>on</sub>		0.44	μs
Turn-Off Time V <sub>CC</sub> = 30 Vdc; I <sub>C</sub> = 4.0 Adc; I <sub>B</sub> = -I <sub>B</sub> = 0.4 Adc	t <sub>off</sub>		1.2	μs

**SAFE OPERATING AREA**

<b>DC Tests</b> T <sub>C</sub> = +25°C, 1 Cycle, t = 1.0 s <b>Test 1</b> V <sub>CE</sub> = 5.0 Vdc, I <sub>C</sub> = 7.0 Adc <b>Test 2</b> V <sub>CE</sub> = 28 Vdc, I <sub>C</sub> = 1.25 Adc <b>Test 3</b> V <sub>CE</sub> = 40 Vdc, I <sub>C</sub> = 500 mAdc <b>Test 4</b> V <sub>CE</sub> = 75 Vdc, I <sub>C</sub> = 100 mAdc
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(2) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.