

## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/526

### Devices

2N3879

### Qualified Level

JANTX  
JANTXV

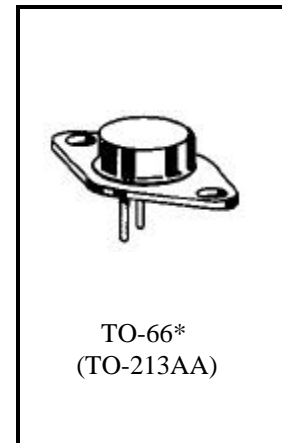
### MAXIMUM RATINGS

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 @ $T_C = 25^{\circ}C$ <sup>(1)</sup>	$P_T$	35	W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	$^{\circ}C$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	5.0	$^{\circ}C/W$

1) Derate linearly 200 mW/ $^{\circ}C$  for  $T_C > 25^{\circ}C$



\*See Appendix A for Package Outline

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

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

Collector-Emitter Breakdown Voltage $I_C = 200$ mAdc	$V_{(BR)CEO}$	75		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 50$ Vdc	$I_{CEO}$		5.0	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 100$ Vdc, $V_{BE} = 1.5$ Vdc	$I_{CEX}$		4.0	mAdc
Collector-Base Cutoff Current $V_{CB} = 120$ Vdc	$I_{CBO}$		25	mAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0$ 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 $I_C = 0.5 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 4.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 4.0 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$	$h_{FE}$	40 20 12	80 100	
Collector-Emitter Saturation Voltage $I_C = 4.0 \text{ Adc}, I_B = 0.4 \text{ Adc}$	$V_{CE(sat)}$		1.2	Vdc
Base-Emitter Saturation Voltage $I_C = 4.0 \text{ Adc}, I_B = 0.4 \text{ Adc}$	$V_{BE(sat)}$		2.0	Vdc
Base-Emitter Voltage $I_C = 4.0 \text{ Adc}, V_{CE} = 2.0 \text{ Vdc}$	$V_{BE(on)}$		1.8	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 10 \text{ MHz}$	$ h_{fe} $	4.0	20	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 0.1 \text{ MHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$		175	pF

**SWITCHING CHARACTERISTICS**

Turn-On Time $V_{CC} = 30 \text{ Vdc}; I_C = 4.0 \text{ Adc}; I_B = 0.4 \text{ Adc}$	$t_{on}$		0.44	$\mu\text{s}$
Turn-Off Time $V_{CC} = 30 \text{ Vdc}; I_C = 4.0 \text{ Adc}; I_B = -I_B = 0.4 \text{ Adc}$	$t_{off}$		1.2	$\mu\text{s}$

**SAFE OPERATING AREA**

<b>DC Tests</b> $T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$ <b>Test 1</b> $V_{CE} = 5.0 \text{ Vdc}, I_C = 7.0 \text{ Adc}$ <b>Test 2</b> $V_{CE} = 28 \text{ Vdc}, I_C = 1.25 \text{ Adc}$ <b>Test 3</b> $V_{CE} = 40 \text{ Vdc}, I_C = 500 \text{ mAdc}$ <b>Test 4</b> $V_{CE} = 75 \text{ Vdc}, I_C = 100 \text{ mAdc}$
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(2) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .