

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/526

Devices

2N3879

Qualified Level

**JANTX
JANTXV**

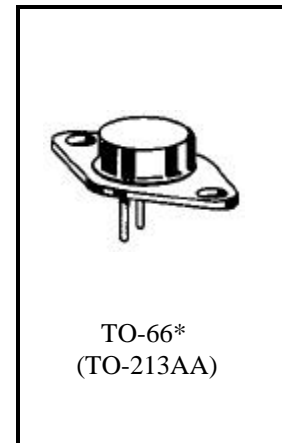
MAXIMUM RATINGS

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 @ $T_C = 25^{\circ}C$ ⁽¹⁾	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
ON CHARACTERISTICS ⁽²⁾				
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	μs
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	μs

SAFE OPERATING AREA

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