

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/402

Devices

2N3739

Qualified Level

**JANTX
JANTXV**

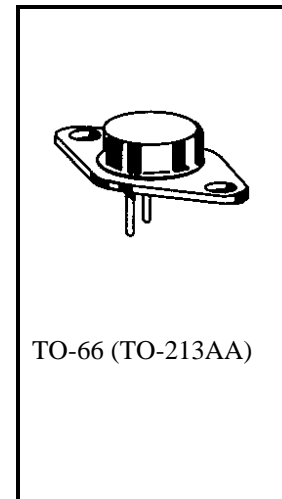
MAXIMUM RATINGS

Ratings	Symbol	Value	Unit	
Collector-Emitter Voltage	V_{CEO}	300	Vdc	
Collector-Base Voltage	V_{CBO}	325	Vdc	
Emitter-Base Voltage	V_{EBO}	6.0	Vdc	
Base Current	I_B	0.5	Adc	
Collector Current	I_C	1.0	Adc	
Total Power Dissipation	P_T	@ $T_C = 25^{\circ}C$	20	W
		@ $T_C = 100^{\circ}C$	10	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200	$^{\circ}C$	

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7.5	$^{\circ}C/W$

- 1) Derate linearly 0.114 W/ $^{\circ}C$ for $T_C \geq 25^{\circ}C$
- 2) Derate linearly 0.100 mW/ $^{\circ}C$ for $T_C \geq 100^{\circ}C$



*See Appendix A for Package Outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 5.0$ mAdc	$V_{(BR)CEO}$	300		Vdc
Emitter-Base Cutoff Current $V_{EB} = 6.0$ Vdc	I_{EBO}		0.1	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 325$ Vdc, $V_{BE} = 1.5$ Vdc	I_{CEX}		0.5	mAdc
Collector-Base Cutoff Current $V_{CB} = 325$ Vdc	I_{CBO}		0.1	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio I _C = 10 mA _{dc} , V _{CE} = 10 V _{dc} I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc} I _C = 100 mA _{dc} , V _{CE} = 10 V _{dc} I _C = 250 mA _{dc} , V _{CE} = 10 V _{dc} I _C = 500 mA _{dc} , V _{CE} = 10 V _{dc}	h _{FE}	30 30 40 25 10	200	
Collector-Emitter Saturation Voltage I _C = 100 mA _{dc} , I _B = 10 mA _{dc} I _C = 250 mA _{dc} , I _B = 25 mA _{dc}	V _{CE(sat)}		0.75 2.5	V _{dc}
Base-Emitter Voltage I _C = 100 mA _{dc} , V _{CE} = 10 V _{dc}	V _{BE}		1.0	V _{dc}

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio I _C = 100 mA _{dc} , V _{CE} = 10 V _{dc} , f = 10 MHz	h _{FE}	1.0	6.0	
Forward Current Transfer Ratio I _C = 100 mA _{dc} , V _{CE} = 20 V _{dc}	h _{fe}	35	300	
Output Capacitance V _{CB} = 100 V _{dc} , I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C _{obo}		20	pF

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 150 V _{dc} ; I _C = 500 mA _{dc} , I _B = 50 mA _{dc}	t _{on}		1.5	μs
Turn-Off Time V _{CC} = 150 V _{dc} ; I _C = 500 mA _{dc} , I _{B1} = I _{B2} = 50 mA _{dc}	t _{off}		3.5	μs

SAFE OPERATING AREA

DC Tests T _C = 25 ⁰ C; t = 1.0 s; 1 cycle
Test 1 V _{CE} = 80 V _{dc} , I _C = 250 mA _{dc}
Test 2 V _{CE} = 290 V _{dc} , I _C = 6.0 mA _{dc}

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



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