

NPN MEDIUM POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/ 581

Devices

2N4237 2N4238 2N4239

Qualified Level

JANTX
JANTXV

MAXIMUM RATINGS ($T_A = 25^{\circ}\text{C}$ Unless Otherwise noted)

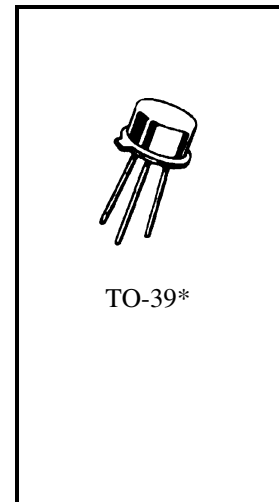
Ratings	Symbol	2N4237	2N4238	2N4239	Units
Collector-Emitter Voltage	V_{CEO}	40	60	80	Vdc
Collector-Base Voltage	V_{CBO}	50	80	100	Vdc
Emitter-Base Voltage	V_{EBO}	6.0			Vdc
Collector Current	I_C	1.0			Adc
Base Current	I_B	0.5			Adc
Total Power Dissipation	P_T	@ $T_A = +25^{\circ}\text{C}^{(1)}$			W
		@ $T_C = +25^{\circ}\text{C}^{(2)}$			W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200			$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	29	$^{\circ}\text{C}/\text{W}$

1) Derate linearly 5.7 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$

2) Derate linearly 34 mW/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$



*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	2N4237 2N4238 2N4239	$V_{(BR)CEO}$	50 80 100	Vdc	
Emitter-Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$			0.5		mAdc
Collector-Emitter Cutoff Current $V_{CE} = 90 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$					
$V_{CE} = 50 \text{ Vdc}$	2N4237	I_{CEX}	100	nAdc	
$V_{CE} = 80 \text{ Vdc}$	2N4238		100		
$V_{CE} = 10 \text{ Vdc}$	2N4239		100		
Collector-Base Cutoff Current $V_{CE} = 50 \text{ Vdc}$	2N4237	I_{CBO}	100	nAdc	
$V_{CE} = 80 \text{ Vdc}$	2N4238		100		
$V_{CE} = 10 \text{ Vdc}$	2N4239		100		

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS ⁽³⁾

Forward Current Transfer Ratio I _C = 250 mA _{dc} , V _{CE} = 1.0 V _{dc} I _C = 500 mA _{dc} , V _{CE} = 1.0 V _{dc}	h _{FE}	30 30	150	
Collector-Emitter Saturation Voltage I _C = 500 A _{dc} , I _B = 50 A _{dc} I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc}	V _{CE(sat)}		0.3 0.6	V _{dc}
Base-Emitter Saturation Voltage I _C = 500 A _{dc} , I _B = 50 A _{dc} I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc}	V _{BE(sat)}		1.0 1.5	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}	3.0		
Output Capacitance V _{CB} = 10 V _{dc} , I _E = 0, f = 100 kHz	C _{obo}		100	pF

SAFE OPERATING AREA

<p>DC Tests T_C = +25⁰C, 1 Cycle, t ≥ 0.5 s</p> <p>Test 1 V_{CE} = 6.0 V_{dc}, I_C = 1.0 A_{dc}</p> <p>Test 2 V_{CE} = 12 V_{dc}, I_C = 500 mA_{dc}</p> <p>Test 3 V_{CE} = 30 V_{dc}, I_C = 166 mA_{dc} 2N4237 V_{CE} = 50 V_{dc}, I_C = 100 mA_{dc} 2N4238 V_{CE} = 70 V_{dc}, I_C = 71 mA_{dc} 2N4239</p>
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