

# 2N4237 - 2N4239 Series

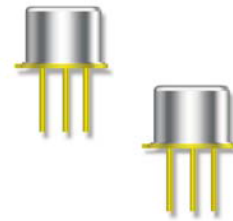


## NPN Power Silicon Transistor

Rev. V1

### Features

- Available in JAN, JANTX, and JANTXV per MIL-PRF-19500/581
- TO-39 (TO-205AD) Package



### Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Off Characteristics</b>					
Collector - Emitter Breakdown Voltage	$I_C = 100 \text{ mAdc}$ , 2N4237 2N4238 2N4239	$V_{(BR)CEO}$	Vdc	50 80 100	—
Collector - Emitter Cutoff Current	$V_{CE} = 90 \text{ Vdc}$ , $V_{CE} = 1.5 \text{ Vdc}$ $V_{CE} = 50 \text{ Vdc}$ , 2N4237 $V_{CE} = 80 \text{ Vdc}$ , 2N4238 $V_{CE} = 10 \text{ Vdc}$ , 2N4239	$I_{CEX}$	nAdc	—	100
Collector - Emitter Cutoff Current	$V_{CE} = 50 \text{ Vdc}$ , $V_{BE} = -1.5 \text{ Vdc}$ , 2N4237 $V_{CE} = 80 \text{ Vdc}$ , $V_{BE} = -1.5 \text{ Vdc}$ , 2N4238 $V_{CE} = 10 \text{ Vdc}$ , $V_{BE} = -1.5 \text{ Vdc}$ , 2N4239	$I_{CBO}$	nAdc	—	100
Emitter - Base Cutoff Current	$V_{BE} = 6 \text{ Vdc}$	$I_{EBO}$	mAdc	—	0.5
<b>On Characteristics</b>					
Forward Current Transfer Ratio	$I_C = 250 \text{ mAdc}$ , $V_{CE} = 1.0 \text{ Vdc}$ $I_C = 500 \text{ mAdc}$ , $V_{CE} = 1.0 \text{ Vdc}$	$H_{FE}$	-	30 30	150
Collector - Emitter Saturation Voltage	$I_C = 1.0 \text{ Adc}$ , $I_B = 100 \text{ mAdc}$ $I_C = 500 \text{ mAdc}$ , $I_B = 50 \text{ mAdc}$	$V_{CE(SAT)}$	Vdc	—	0.3 0.6
Base - Emitter Saturation Voltage	$I_C = 500 \text{ mAdc}$ , $I_B = 50 \text{ mAdc}$ $I_C = 1 \text{ Adc}$ , $I_B = 100 \text{ mAdc}$	$V_{BE(SAT)}$	Vdc	—	1.0 1.5
<b>Dynamic Characteristics</b>					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 100 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f = 10 \text{ mHz}$	$ h_{FE} $	-	3	—
Output Capacitance	$V_{CB} = 10 \text{ Vdc}$ , $I_E = 0$ , $100 \text{ kHz}$	$C_{OBO}$	pF	—	100
<b>Safe Operating Area</b>					
DC Tests:	$T_C = +25^\circ\text{C}$ , 1 Cycle, $t \geq 0.5 \text{ s}$				
Test 1:	$V_{CE} = 6 \text{ Vdc}$ , $I_C = 1 \text{ Adc}$				
Test 2:	$V_{CE} = 12 \text{ Vdc}$ , $I_C = 500 \text{ mAdc}$				
Test 3:	$V_{CE} = 30 \text{ Vdc}$ , $I_C = 166 \text{ mAdc}$ , 2N4237				
	$V_{CE} = 30 \text{ Vdc}$ , $I_C = 100 \text{ mAdc}$ , 2N4238				
	$V_{CE} = 30 \text{ Vdc}$ , $I_C = 71 \text{ mAdc}$ , 2N4239				

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### Absolute Maximum Ratings

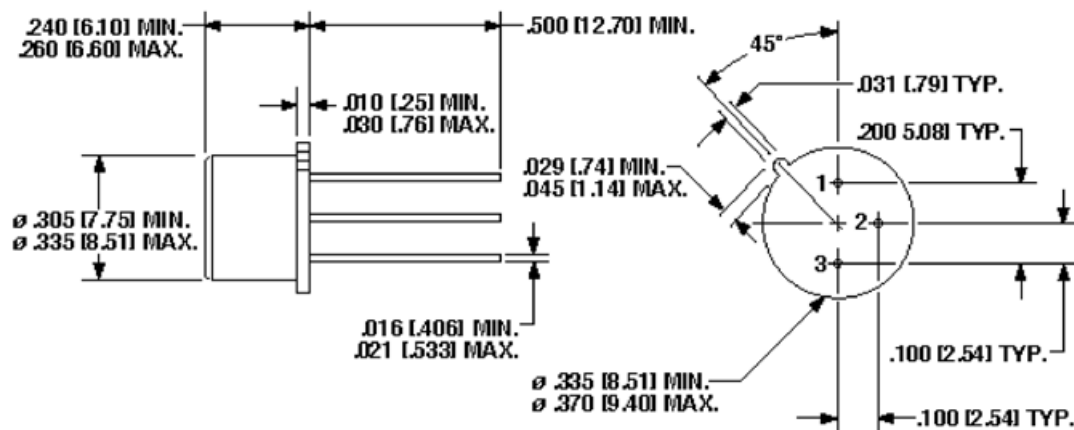
Ratings	Symbol	Value
Collector - Emitter Voltage 2N4237 2N4238 2N4239	$V_{CEO}$	40 Vdc 60 Vdc 80 Vdc
Collector - Base Voltage 2N4237 2N4238 2N4239	$V_{CBO}$	50 Vdc 80 Vdc 100 Vdc
Emitter - Base Voltage	$V_{EBO}$	6.0 Vdc
Collector Current	$I_C$	1.0 Adc
Base Current	$I_B$	0.5 Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}^2$ @ $T_C = 25^\circ\text{C}^3$	$P_T$	1.0 W 6.0 W
Operating & Storage Temperature Range	$T_{OP}, T_{STG}$	$-65^\circ\text{C}$ to $+200^\circ\text{C}$

- Derate linearly @ 5.7 mW/°C for  $T_A > +25^\circ\text{C}$ .
- Derate linearly @ 34 mW/°C for  $T_C > +75^\circ\text{C}$ .

### Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	29°C/W

### Outline Drawing



Dimensions are in inches [mm].

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