

# 2N6249-2N6251

## NPN SILICON HIGH POWER TRANSISTORS

### FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

### MAXIMUM RATINGS

Ratings	Symbol	2N6249	2N6250	2N6251	Unit
Collector-Emitter Voltage	$V_{CE0}$	200	275	350	Vdc
Collector-Base Voltage	$V_{CBO}$	300	375	450	Vdc
Emitter-Base Voltage	$V_{EBO}$	6.0			Vdc
Collector Current	$I_C$	10			Adc
Base Current	$I_B$	5.0			Adc
Total Power Dissipation $T_A = 25^\circ\text{C}^{(1)}$ $T_C = 100^\circ\text{C}^{(2)}$	$P_T$	6.0 175			W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200			$^\circ\text{C}$
Maximum Thermal Resistance Junction to Case	$R_{\theta JC}$	1.0			$^\circ\text{C}/\text{W}$

Note 1: Derate linearly @ 34.2mW/ $^\circ\text{C}$  for  $T_A > 25^\circ\text{C}$

Note 2: Derate linearly @ 1.0mW/ $^\circ\text{C}$  for  $T_C > 25^\circ\text{C}$

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

Characteristics		Symbol	Min.	Max.	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Voltage $I_C = 20\text{mA}$	2N6249 2N6250 2N6251	$V_{(BR)CEO}$	200 275 350		Vdc
Collector-Base Breakdown Voltage $I_C = 200\text{mA}$	2N6249 2N6250 2N6251	$V_{(BR)CB}$	225 300 375		Vdc
Emitter-Base Cutoff Current $V_{EB} = 6.0\text{Vdc}$		$I_{EBO}$		100	$\mu\text{A}$
Collector-Emitter Cutoff Current $V_{CE} = 150\text{V}$ $V_{CE} = 225\text{V}$ $V_{CE} = 300\text{V}$	2N6249 2N6250 2N6251	$I_{CEO}$		1.0	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 225\text{V}, V_{BE} = -1.5\text{Vdc}$ $V_{CE} = 300\text{V}, V_{BE} = -1.5\text{Vdc}$ $V_{CE} = 375\text{V}, V_{BE} = -1.5\text{Vdc}$	2N6249 2N6250 2N6251	$I_{CEX}$		100 100 100	$\mu\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 300\text{V}$ $V_{CE} = 375\text{V}$ $V_{CE} = 450\text{V}$	2N6249 2N6250 2N6251	$I_{CBO}$		0.5	mAdc

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Characteristics		Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS</b>					
<b>Forward Current Transfer Ratio</b> $I_C = 10\text{Adc}, V_{CE} = 3.0\text{Vdc}$	2N6249 2N6250 2N6251	$h_{FE}$	10 8 6	50 50 50	
<b>Collector-Emitter Saturation Voltage</b> $I_C = 10\text{Adc}, I_B = 1.0\text{Adc}$ $I_C = 10\text{Adc}, I_B = 1.25\text{Adc}$ $I_C = 10\text{Adc}, I_B = 1.67\text{Adc}$	2N6249 2N6250 2N6251	$V_{CE(sat)}$		1.5	Vdc
<b>Base-Emitter Saturation Voltage</b> $I_C = 10\text{Adc}, I_B = 1.0\text{Adc}$ $I_C = 10\text{Adc}, I_B = 1.25\text{Adc}$ $I_C = 10\text{Adc}, I_B = 1.67\text{Adc}$	2N6249 2N6250 2N6251	$V_{BE(SAT)}$		2.25	Vdc
<b>DYNAMIC CHARACTERISTICS</b>					
<b>Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio</b> $I_C = 1.0\text{Adc}, V_{CE} = 10.0\text{Vdc}, f = 1\text{MHz}$		$ h_{FE} $	2.5	15	
<b>Output Capacitance</b> $V_{CB} = 10\text{Vdc}, I_C = 0, 100\text{kHz} \leq f \leq 1.0\text{MHz}$		$C_{obo}$		500	pF
<b>SWITCHING CHARACTERISTICS</b>					
<b>Turn-On Time</b> $I_B = 1.0\text{Adc}$ $I_B = 1.25\text{Adc}$ $I_B = 1.67\text{Adc}$	2N6249 2N6250 2N6251	$t_{on}$		2.0	$\mu\text{s}$
<b>Turn-Off Time</b> $I_B = 1.0\text{Adc}$ $I_B = 1.25\text{Adc}$ $I_B = 1.67\text{Adc}$	2N6249 2N6250 2N6251	$t_{off}$		4.5	$\mu\text{s}$
<b>SAFE OPERATING AREA</b>					
<p><b>Dc Tests</b> <math>T_C = 25^\circ\text{C}, 1\text{ cycle}, t = 1.0\text{s}</math></p> <p><b>Test 1</b> <math>V_{CE} = 17.5\text{Vdc}, I_C = 10.0\text{Adc}</math></p> <p><b>Test 2</b> <math>V_{CE} = 30\text{Vdc}, I_C = 5.8\text{Adc}</math></p> <p><b>Test 3</b> <math>V_{CE} = 100\text{Vdc}, I_C = 0.3\text{Adc}</math></p> <p><b>Test 4</b> <math>V_{CE} = 200\text{Vdc}, I_C = 0.13\text{Adc}</math> (2N6249)</p> <p><b>Test 5</b> <math>V_{CE} = 275\text{Vdc}, I_C = 0.09\text{Adc}</math> (2N6250)</p> <p><b>Test 6</b> <math>V_{CE} = 350\text{Vdc}, I_C = 0.065\text{Adc}</math> (2N6251)</p>					

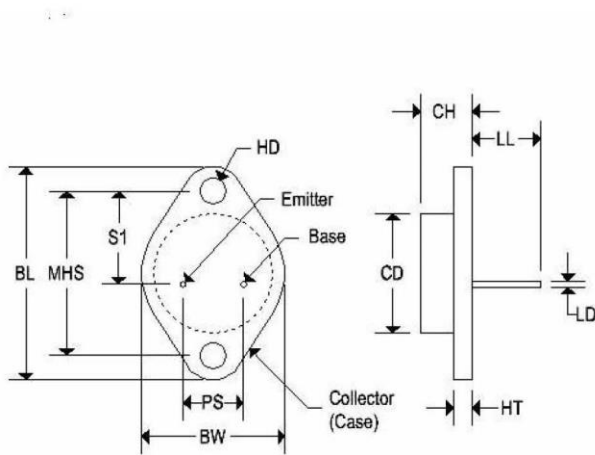
Note 3: Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

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## MECHANICAL CHARACTERISTICS

Case	TO-3
Marking	Alpha-numeric
Polarity	See below



	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.875	-	22.220
CH	0.250	0.380	6.860	9.650
HT	0.060	0.135	1.520	3.430
BW	-	1.050	-	26.670
HD	0.131	0.188	3.330	4.780
LD	0.038	0.043	0.970	1.090
LL	0.312	0.500	7.920	12.700
BL	1.550 REF		39.370 REF	
MHS	1.177	1.197	29.900	30.400
PS	0.420	0.440	10.670	11.180
S1	0.655	0.675	16.640	17.150