

## NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/514

### DEVICES

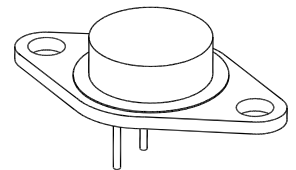
**2N6274      2N6277**

### LEVELS

**JAN  
 JANTX  
 JANTXV**

### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Condition	Symbol	2N6274	2N6277	Unit
Collector-Emitter Voltage	$V_{CEO}$	100	150	Vdc
Collector-Base Voltage	$V_{CBO}$	120	180	Vdc
Emitter-Base Voltage	$V_{EBO}$	6.0	6.0	Vdc
Base Current	$I_B$	20	20	Adc
Collector Current	$I_C$	50	50	Adc
Total Power Dissipation	$P_T$	@ $T_C = +25^\circ\text{C}$ <sup>(1)</sup> 250 @ $T_C = +100^\circ\text{C}$ <sup>(2)</sup> 143		W
Operating & Storage Temperature Range	$T_j, T_{stg}$	-65 to +200		$^\circ\text{C}$



**TO-3 (TO-204AE)**

### THERMAL CHARACTERISTICS

Parameters / Test Conditions	Symbol	Max	Unit
Thermal resistance, Junction-to-Case	$R_{\theta JC}$	0.7	$^\circ\text{C}/\text{W}$

**Note:** 1) Derate linearly 1.43 W/ $^\circ\text{C}$  between  $T_C = +25^\circ\text{C}$  and  $T_C = 200^\circ\text{C}$

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
<b>OFF CHARACTERISTICS <sup>(1)</sup></b>				
Collector-Emitter Breakdown Voltage $I_C = 50\text{mA}$	$V_{(BR)CEO}$	100		Vdc
		150		
Collector-Emitter Cutoff Current $V_{CE} = 50\text{Vdc}$	$I_{CEO}$		50	$\mu\text{Adc}$
			50	
Collector-Emitter Cutoff Current $V_{CE} = 120\text{Vdc}, V_{BE} = -1.5\text{Vdc}$	$I_{CEX}$		10	$\mu\text{Adc}$
			10	
Collector-Base Cutoff Current $V_{CB} = 120\text{Vdc}$	$I_{CBO}$		10	$\mu\text{Adc}$
			10	
Emitter-Base Cutoff Current $V_{EB} = 6.0\text{Vdc}$	$I_{EBO}$		100	$\mu\text{Adc}$

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS</b> <sup>(2)</sup>				
Forward-Current Transfer Ratio $I_C = 1.0\text{A dc}$ , $V_{CE} = 4.0\text{V dc}$ $I_C = 20\text{A dc}$ , $V_{CE} = 4.0\text{V dc}$ $I_C = 50\text{A dc}$ , $V_{CE} = 4.0\text{V dc}$	$h_{FE}$	50 30 10	120	
Collector-Emitter Saturation Voltage $I_C = 20\text{A dc}$ , $I_B = 2.0\text{A dc}$ $I_C = 50\text{A dc}$ , $I_B = 10\text{A dc}$	$V_{CE(sat)}$		1.0 3.0	Vdc
Base-Emitter Saturation Voltage $I_C = 20\text{A dc}$ , $I_B = 2.0\text{A dc}$	$V_{BE(sat)}$		1.8	Vdc

## DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Magnitude of Common Emitter Small-Signal Short-Circuit, Forward Current Transfer Ratio $I_C = 1.0\text{A dc}$ , $V_{CE} = 10\text{V dc}$ , $f = 10\text{MHz}$	$ h_{fe} $	3.0	12	
Output Capacitance $V_{CB} = 10\text{V dc}$ , $I_E = 0$ , $f = 1.0\text{MHz}$	$C_{obo}$		600	pF

## SWITCHING CHARACTERISTICS

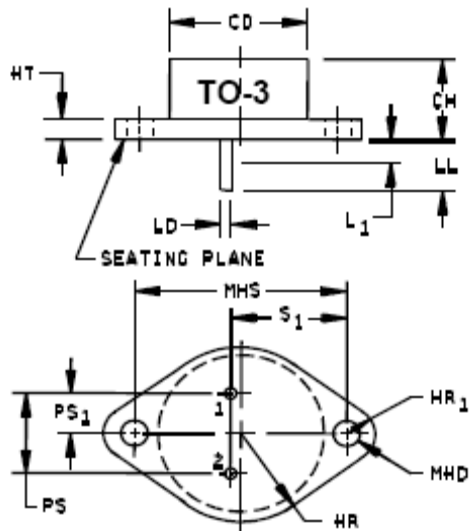
Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Turn-On Time $V_{CC} = 80\text{V dc}$ ; $I_C = 20\text{A dc}$ ; $I_B = 2.0\text{A dc}$	$t_{on}$		0.5	$\mu\text{s}$
Turn-Off Time $V_{CC} = 80\text{V dc}$ ; $I_C = 20\text{A dc}$ ; $I_{B1} = -I_{B2} = 2.0\text{A dc}$	$t_{off}$		1.05	$\mu\text{s}$

## SAFE OPERATING AREA

<b>DC Tests</b> $T_C = +25^\circ\text{C}$ , 1 Cycle, $t = 1.0\text{s}$	
<b>Test 1</b> $V_{CE} = 5.0\text{V dc}$ , $I_C = 50\text{A dc}$	All Types
<b>Test 2</b> $V_{CE} = 8.6\text{V dc}$ , $I_C = 165\text{mA dc}$	All Types
<b>Test 3</b> $V_{CE} = 80\text{V dc}$ , $I_C = 29\text{mA dc}$	2N6274
<b>Test 4</b> $V_{CE} = 120\text{V dc}$ , $I_C = 110\text{mA dc}$	2N6277

(2) Pulse Test: Pulse Width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## PACKAGE DIMENSIONS



Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.875		22.22	3
CH	.250	.328	6.35	8.33	
HR	.495	.525	12.57	13.34	
HR1	.131	.188	3.33	4.78	6
HT	.060	.135	1.52	3.43	
LD	.057	.063	1.45	1.60	5, 9
LL	.312	.500	7.92	12.70	4, 5, 9
L <sub>1</sub>		.050		1.27	5, 9
MHD	.151	.161	3.84	4.09	7
MHS	1.177	1.197	29.90	30.40	
PS	.420	.440	10.67	11.18	
PS <sub>1</sub>	.205	.225	5.21	5.72	5
S <sub>1</sub>	.655	.675	16.64	17.15	

### NOTE:

1. Dimensions are in inches.
- \* 2. Millimeters are given for general information only.
3. Body contour is optional within zone defined by CD.
4. These dimensions shall be measured at points .050 inch (1.27 mm) to .055 inch (1.40 mm) below seating plane. When gauge is not used, measurement shall be made at seating plane.
5. Both terminals.
6. At both ends.
7. Two holes.
8. Terminal 1 is the emitter, terminal 2 is base. The collector shall be electrically connected to the case.
- \* 9. LD applies between L1 and LL. Lead diameter shall not exceed twice LD within L1.
- \* 10. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi x$  symbology.
11. The seating plane of the header shall be flat within .001 inch (0.03 mm) concave to .004 inch (0.10 mm) convex inside a .930 inch (23.62 mm) diameter circle on the center of the header and flat within .001 inch (0.03 mm) concave to .006 inch (0.15 mm) convex overall.

\* **FIGURE 1.** Physical dimensions (TO-3)

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