2N6274, 2N6277

NPN High Power Silicon Transistor

Rev. V3

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/514
- TO-3 (TO-204AA) Package
- Designed for Use in Hi-Reliability Power Amplifier and Switching Circuit Applications

Electrical Characteristics (T_C = +25°C unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	I_C = 50 mA dc, 2N6274 I_C = 50 mA dc, 2N6277	$V_{(BR)CEO}$	V dc	100 150	—
Collector - Base Cutoff Current	V_{CB} = 120 V dc, 2N6274 V_{CB} = 180 V dc, 2N6277	I_{CBO}	µA dc	—	10 10
Emitter - Base Cutoff Current	V_{EB} = 6.0 V dc	I_{EBO}	µA dc	—	100
Collector - Emitter Cutoff Current	V_{CE} = 120 V dc, V_{BE} = -1.5 V dc, 2N6274 V_{CE} = 180 V dc, V_{BE} = -1.5 V dc, 2N6277	I_{CEX1}	µA dc	—	10 10
Collector - Emitter Cutoff Current	V_{CE} = 50 V dc, 2N6274 V_{CE} = 75 V dc, 2N6277	I_{CEO}	µA dc	—	50 50
Forward Current Transfer Ratio	V_{CE} = 4.0 V dc; I_C = 1.0 A dc V_{CE} = 4.0 V dc; I_C = 20 A dc V_{CE} = 4.0 V dc ; I_C = 50 A dc	h_{FE}	-	50 30 10	120
Collector - Emitter Saturation Voltage	I I_C = 20 A dc; I_B = 2.0 A dc I_C = 50 A dc; I_B = 10 A dc	$V_{CE(sat)1}$ $V_{CE(sat)2}$	V dc	—	1.0 3.0
Emitter - Base Saturation Voltage	I_C = 20 A dc: I_B = 2.0 A dc	$V_{BE(sat)}$	V dc	—	1.8
Collector - Emitter Cutoff Current	T_A = +150°C V_{CE} = 120 V dc, V_{BE} = -1.5 V dc, 2N6274 V_{CE} = 180 V dc, V_{BE} = -1.5 V dc, 2N6277	I_{CEX2}	mA dc	—	10 10
Forward Current Transfer Ratio	T_A = -55°C V_{CE} = 4.0 V dc; I_C = 20 A dc	h_{FE4}	-	10	
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	V_{CE}= 10 V dc; I_C = 1.0 A dc; f = 10 MHz	$\lvert h_{fe} \rvert$		3.0	12
Output Capacitance	V_{CB} = 10 V dc; I_E = 0; f = 1.0 MHz	C_{obo}	pF	—	600

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Absolute Maximum Ratings (T_C = +25°C unless otherwise specified)

Ratings	Symbol	Value
Collector - Emitter Voltage 2N6274 2N6277	V_{CEO}	 100 V dc 150 V dc
Collector - Base Voltage 2N6274 2N6277	V_{CBO}	 120 V dc 180 V dc
Emitter - Base Voltage	V_{EBO}	6 V dc
Base Current	I_B	20 A dc
Collector Current	I_C	50 A dc
Total Power Dissipation @ T_C = +25°C (1) @ T_C = +100°C(1)	P_T	 250 W 143 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to +200°C

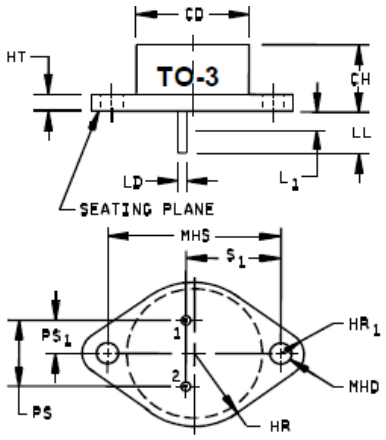
(1) Derate linearly @ 1.43 W / °C between T_C = +25 °C and T_C = +200 °C

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.7°C/W

Switching Characteristics	Symbol	Max. Value
V_{CC} = 80 V dc; I_C = 20 A dc; I_{B1} = 2.0 A dc	t_{on}	0.5 µs
V_{CC} = 80 V dc; I_C = 20 A dc; I_{B1} = I_{B2} = 2.0 A dc	t_{off}	1.05 µs

Safe Operating Area		
DC Tests:	T_C = +25 °C; 1 cycle; t = 1.0 s	
Test 1:	V_{CE} = 5 V dc; I_C = 50 A dc	
Test 2:	V_{CE} = 86 V dc; I_C = 165 mA dc	
Test 3:	V_{CE} = 8 V dc; I_C = 29 A dc,	2N6274
Test 4:	V_{CE} = 120 V dc; I_C = 110 mA dc	2N6277



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	
HR_1	.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_1		.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_1	.205	.225	5.21	5.72	5
S_1	.655	.675	16.64	17.15	

NOTES:
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 L_1 and LL. Lead diameter shall not exceed twice LD within L_1.
10. In accordance with ASME Y14.5M, diameters are equivalent to ϕx 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).