

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/370
- TO-3 Package
- Designed for High Voltage, High Power Switching and Amplifier Applications



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

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	I _C = 3 A dc I _C = 1.5 A dc, R _{BE} = 100 Ω V _{EB} = 1.5 V dc, I _C = 1.5 A dc	V _{(BR)CEO} V _{(BR)CER} V _{(BR)CEX}	V dc	140 150 160	—
Collector - Emitter Cutoff Current	V _{EB} = 1.5 V dc, V _{CE} = 125 V dc	I _{CEX}	mA dc	—	0.01
Collector - Base Cutoff Current	V _{CB} = 140 V dc	I _{CB01}	mA dc	—	0.1
Emitter - Base Cutoff Current	V _{EB} = 7.0 V dc	I _{EBO}	mA dc	—	1
Forward Current Transfer Ratio	V _{CE} = 4.0 V dc, I _C = 3 A dc	h _{FE1}	-	20	70
Collector - Emitter Saturation Voltage	I _C = 3 A dc, I _B = 300 mA dc	V _{CE(SAT)}	V dc	—	1.0
Emitter - Base Voltage (non-saturated)	I _C = 3 A dc, V _{CE} = 4.0 V dc	V _{BE}	V dc	—	1.7
Small-Signal Short-Circuit Forward-Current Transfer Ratio	V _{CE} = 4 V dc, I _C = 3 A dc, f = 100 kHz	h _{fe}	—	1	—
Collector - Emitter Cutoff Current	T _A = +150°C V _{CB} = 140 V dc	I _{CB02}	mA dc	—	1.0
Forward Current Transfer Ratio	T _A = -55°C V _{CE} = 4 V dc, I _C = 3 A dc	h _{FE2}	-	15	—

Absolute Maximum Ratings ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Ratings	Symbol	Value
Collector - Emitter Voltage	V_{CEO}	140 V dc
Collector - Emitter Voltage	V_{CER}	150 V dc
Collector - Base Voltage	V_{CBO}	160 V dc
Emitter - Base Voltage	V_{EBO}	7.0 V dc
Base Current	I_B	7.0 A dc
Collector Current	I_C	10 A dc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ ¹	P_T	6.0 W
Total Power Dissipation @ $T_C = +25^\circ\text{C}$ ²	P_T	117 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to +200°C

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case ³	$R_{\theta JC}$	1.5°C/W

1. Derate linearly 34.2 mW/°C above $T_A = +25^\circ\text{C}$.
2. See figure 2 of MIL-PRF-19500/370 for temperature-power derating curves.
3. See figure 3 of MIL-PRF-19500/370 for transient thermal impedance graph.

Safe Operating Area

DC Tests: $T_C = +25^\circ\text{C}$, 1 Cycle, $t = 1.0$ s

Test 1: $I_C = 10$ A dc, $V_{CE} = 11.7$ V dc

Test 2: $I_C = 1.5$ A dc, $V_{CE} = 78$ V dc

Test 3: $I_C = 0.5$ A dc, $V_{CE} = 125$ V dc

Outline Drawing (TO-3)

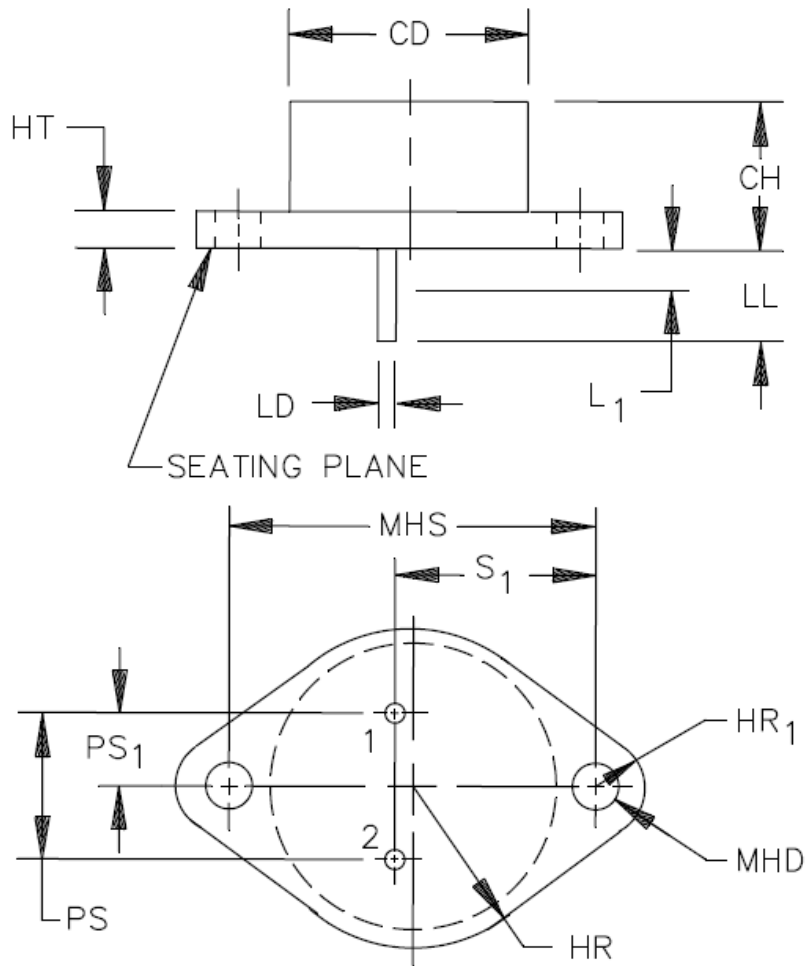


FIGURE 1. Physical dimensions (TO-204AA, formerly TO-3).

Outline Drawing (TO-3)

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.875		22.23	3
CH	.250	.450	6.35	11.43	
HR	.495	.525	12.57	13.34	
HR ₁	.131	.188	3.33	4.78	4
HT	.060	.135	1.52	3.43	
L ₁		.050		1.27	5, 6
LD	.038	.043	0.97	1.09	5, 6
LL	.312	.500	7.92	12.70	5
MHD	.151	.161	3.84	4.09	4
MHS	1.177	1.197	29.90	30.40	
PS	.420	.440	10.67	11.18	7
PS ₁	.205	.225	5.21	5.72	7
S ₁	.655	.675	16.64	17.15	7

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Terminal 1 is the emitter; terminal 2 is the base; and the collector shall be electrically connected to the case.
3. Body contour is optional within zone defined by dimension CD.
4. Applies to both ends.
5. Applies to both terminals.
6. Dimension LD applies between L₁ and LL. Lead diameter shall not exceed twice dimension LD within dimension L₁. Diameter is uncontrolled in dimension L₁.
7. These dimensions shall be measured at points .050 inch (1.27 mm) to .055 inch (1.4 mm) below the seating plane. When gauge is not used, measurement will be made at the seating plane.
8. 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.
9. In accordance with ASME Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 1. Physical dimensions ((TO-204AA, formerly TO-3) - Continued.

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