

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/407
- TO-3 (TO-204AA) Package
- Designed for General Purpose Switching and Amplifier Applications



Electrical Characteristics ($T_A = +25^\circ\text{C}$ unless otherwise noted)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
Collector - Emitter Breakdown Voltage	$I_C = 200 \text{ mA dc}$ $I_C = 200 \text{ mA dc}, R_{BE} = 100 \Omega$ $V_{BE} = -1.5 \text{ V dc}, I_C = 200 \text{ mA dc}$	$V_{(BR)CEO}$ $V_{(BR)CER}$ $V_{(BR)CEX}$	V dc	70 80 90	—
Collector - Emitter Cutoff Current	$V_{CE} = 60 \text{ V dc}$ $V_{BE} = -1.5 \text{ V dc}, V_{CE} = 100 \text{ V dc}$	I_{CEO} I_{CEX1}	mA dc	—	1 1
Emitter - Base Cutoff Current	$V_{EB} = 7.0 \text{ V dc}$	I_{EBO}	mA dc	—	1
On Characteristics					
Forward Current Transfer Ratio	$I_C = 0.5 \text{ A dc}, V_{CE} = 4.0 \text{ V dc}$ $I_C = 4.0 \text{ A dc}, V_{CE} = 4.0 \text{ V dc}$ $I_C = 10.0 \text{ A dc}, V_{CE} = 4.0 \text{ V dc}$	h_{FE}	-	40 20 5	— 60 —
Collector - Emitter Saturation Voltage	$I_C = 4.0 \text{ A dc}, I_B = 0.4 \text{ A dc}$ $I_C = 10.0 \text{ A dc}, I_B = 3.3 \text{ A dc}$	$V_{CE(SAT)}$	V dc	—	0.75 2.0
Emitter - Base Saturation Voltage	$I_C = 4.0 \text{ A dc}, V_{CE} = 4.0 \text{ V dc}$	$V_{BE(SAT)}$	V dc	—	1.4
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 1 \text{ A dc}, V_{CE} = 4.0 \text{ V dc}, f = 100 \text{ kHz}$	$ h_{fe} $		8	40
Output Capacitance	$V_{CB} = 10 \text{ V dc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	C_{obo}	pF	—	700
Switching Characteristics					
Turn-On Time	$V_{CC} = 30 \text{ V dc}; I_C = 4.0 \text{ A dc}; I_{B1} = 0.4 \text{ A dc}$	t_{on}	μs	—	6
Turn-Off Time	$I_C = 4.0 \text{ A dc}; I_{B1} = -I_{B2} = 0.4 \text{ A dc}$	t_{off}	μs	—	12
Safe Operating Area					
DC Tests:	$T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$				
Test 1:	$V_{CE} = 7.8 \text{ V dc}, I_C = 15 \text{ A dc}$				
Test 2:	$V_{CE} = 70.0 \text{ V dc}, I_C = 1.67 \text{ A dc}$				

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Parameter	Test Conditions	Symbol	Units	Min.	Max.
Base Emitter Voltage (unsaturated)	$V_{CE} = 4 \text{ V dc}, I_C = 4 \text{ A dc}$	V_{BE}	V dc		1.4
Collector - Emitter Cutoff Current	$T_A = +150^\circ\text{C}$ $V_{CE} = 100 \text{ Vdc}$ $V_{BE} = -1.5 \text{ V dc}$	I_{CEX2}	mA dc	—	10
Forward - Current Transfer Ratio	$T_A = -55^\circ\text{C}$ $V_{CE} = 4 \text{ V dc}, I_C = 4 \text{ A dc}$	h_{FE4}		15	
Collector—Emitter Saturated Voltage	$I_C = 10 \text{ A dc}, I_B = 3.3 \text{ A dc}$	$V_{CE(sat)2}$	V dc		2

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

Ratings	Symbol	Value
Collector - Emitter Voltage	V_{CEO}	70 V dc
Collector - Base Voltage	V_{CBO}	100 V dc
Emitter - Base Voltage	V_{EBO}	7 V dc
Base Current	I_B	7 V dc
Collector Current	I_C	15 A dc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ ^{1,2}	P_T	6 W
Total Power Dissipation @ $T_C = +25^\circ\text{C}$ ³	P_T	117 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to $+200^\circ\text{C}$

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case ⁴	$R_{\theta JC}$	1.5°C/W

- T_A = room ambient as defined in the general requirements of 4.5 of MIL-STD-750
- Derate linearly @ $34.2 \text{ mW} / ^\circ\text{C}$ for $T_A = 25^\circ\text{C}$
- See figure 2 of MIL-PRF-19500/407 for temperature-power derating curves.
- See figure 3 for transient thermal impedance graph.

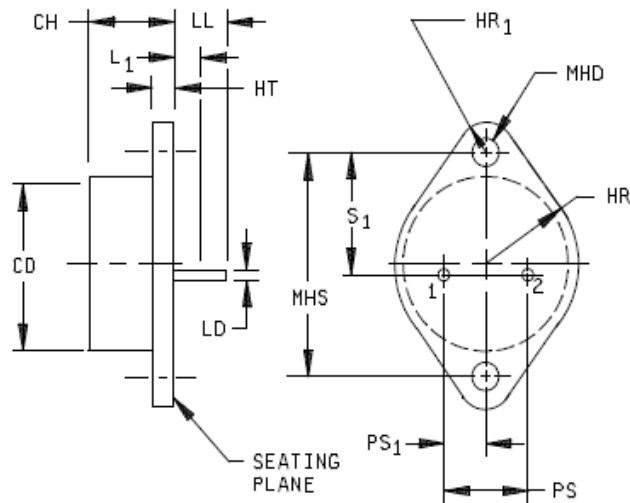
2N3055

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Outline Drawing (TO-3)

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.875		22.22	
CH	.270	.380	6.86	9.65	
HT	.060	.135	1.52	3.43	
HR	.495	.525	12.57	13.3	
HR ₁	.131	.188	3.33	4.78	
LD	.038	.043	0.97	1.09	3
LL	.312	.500	7.92	12.70	
L ₁		.050		1.27	
MHD	.151	.165	3.84	4.19	
MHS	1.177	1.197	29.90	30.40	
PS	.420	.440	10.67	11.18	4
PS ₁	.205	.225	5.21	5.72	4
s ₁	.655	.675	16.64	17.15	



NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Terminal 1, emitter, terminal 2, base, case, collector.
3. LD applies between L₁ and LL. Diameter is uncontrolled in L₁.
4. These dimensions should be measured at points .050 to .055 inch (1.27-1.40 mm) below seating plane. When gauge is not used, measurement will be made at the seating plane.
5. The seating plane of the header shall be flat within .004 inch (0.10 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 .006 inch (0.15 mm) concave to .006 inch (0.15 mm) convex overall.
6. Collector shall be electrically connected to the case.
7. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

FIGURE 1. Physical dimensions of transistor types 2N3055 (similar to TO-204AA).

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