

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/526
- TO-66 (TO-213AA) Package
- Ideal for High Speed Switching and Linear Amplifier Applications



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

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	$I_C = 200 \text{ mA dc}$	$V_{(BR)CEO}$	V dc	75	—
Collector - Emitter Cutoff Current	$V_{CE} = 50 \text{ V dc}$	I_{CEO}	mA dc	—	5
Collector - Emitter Cutoff Current	$V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ V dc}$	I_{CEX1}	$\mu\text{A dc}$	—	10
Collector - Base Cutoff Current	$V_{CB} = 120 \text{ V dc}$	I_{CBO}	$\mu\text{A dc}$	—	10
Emitter - Base Cutoff Current	$V_{EB} = 7 \text{ V dc}$	I_{EBO}	mA dc	—	10
Forward Current Transfer Ratio	$I_C = 0.5 \text{ A dc}, V_{CE} = 5 \text{ V dc}$ $I_C = 4.0 \text{ A dc}, V_{CE} = 5 \text{ V dc}$ $I_C = 4.0 \text{ A dc}, V_{CE} = 2 \text{ V dc}$	h_{FE}	-	30 20 12	— 80 100
Collector - Emitter Saturation Voltage	$I_C = 4.0 \text{ A dc}, I_B = 0.4 \text{ A dc}$	$V_{CE(SAT)}$	V dc	—	1.2
Base - Emitter Saturation Voltage	$I_C = 4.0 \text{ A dc}, I_B = 0.4 \text{ A dc}$	$V_{BE(SAT)}$	V dc	—	2.0
Base - Emitter Voltage	$I_C = 4.0 \text{ A dc}, I_B = 2.0 \text{ A dc}$	V_{BE}	V dc	—	1.8
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 500 \text{ mA dc}, V_{CE} = 10 \text{ Vdc}, f = 10 \text{ mHz}$	$ h_{fe} $	-	4	20
Output Capacitance	$V_{CB} = 10 \text{ Vdc}, I_E = 0, 0.1 \text{ MHz} \leq f \leq 1 \text{ MHz}$	C_{obo}	pF	—	175
Switching Characteristics					
Turn-On Time	$V_{CC} = 30 \text{ V dc}; I_C = 4.0 \text{ A dc}; I_B = 0.4 \text{ A dc}$	t_{on}	μs	—	0.25
Turn-Off Time	$V_{CC} = 30 \text{ Vdc}; I_C = 4.0 \text{ A dc}; I_B = -I_B = 0.4 \text{ A dc}$	t_{off}	μs	—	2.5

NPN Power Silicon Transistor

Rev. V4

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Cutoff Current	$T_A = +150^\circ\text{C}$ $V_{CE} = 100 \text{ Vdc}; V_{BE} = 1.5 \text{ V dc}$	I_{CEX2}	$\mu\text{A dc}$	—	750
Forward - Current Transfer Ratio	$V_{CE} = 5.0 \text{ V dc}; I_C = 0.5 \text{ A dc}$	h_{FE4}		10	

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

Ratings	Symbol	Value
Collector - Emitter Voltage	V_{CEO}	75 V dc
Collector - Base Voltage	V_{CBO}	120 V dc
Emitter - Base Voltage	V_{EBO}	7 V dc
Base Current	I_B	5 V dc
Collector Current	I_C	7 A dc
Total Power Dissipation @ $T_C = 25^\circ\text{C}^1$	P_T	35 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to $+200^\circ\text{C}$

1. Derate linearly @ 200 mW / $^\circ\text{C}$ for $T_C > 25^\circ\text{C}$.

Thermal Characteristics

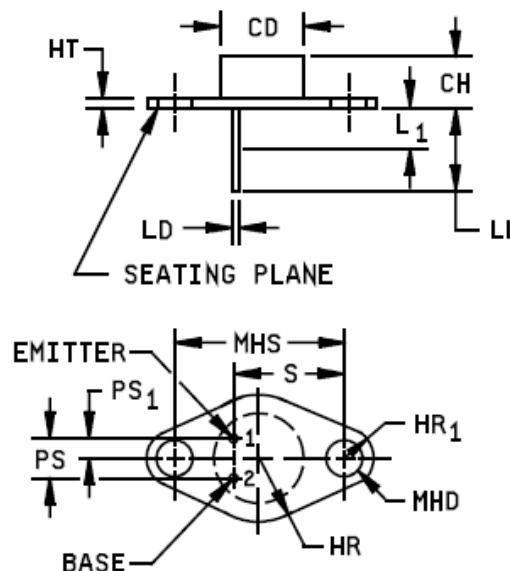
Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	5°C/W

Safe Operating Area

DC Tests:	$T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$
Test 1:	$V_{CE} = 5 \text{ Vdc}, I_C = 7 \text{ Adc}$
Test 2:	$V_{CE} = 28 \text{ Vdc}, I_C = 1.25 \text{ Adc}$
Test 3:	$V_{CE} = 40 \text{ Vdc}, I_C = 500 \text{ Adc}$
Test 4:	$V_{CE} = 75 \text{ Vdc}, I_C = 100 \text{ Adc}$

Outline Drawing (TO-66)

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.470	.500	11.94	12.70	3,10
CH	.250	.340	6.35	8.64	
HR		.350		8.89	
HT	.050	.075	1.27	1.91	
HR ₁	.115	.145	2.92	3.68	8
LD	.028	.034	0.71	0.86	3,7,10
LL	.360	.500	9.14	12.70	3,9
L ₁		.050		1.27	9
MHD	.142	.152	3.61	3.86	7,10
MHS	.958	.962	24.33	24.43	
PS	.190	.210	4.83	5.33	4
PS ₁	.093	.107	2.36	2.72	4
S	.570	.590	14.48	14.99	



NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Body contour is optional within zone defined by CD and PS₁.
4. These dimensions should be measured at points .050 inch (1.27 mm) .055 inch (1.40 mm) below seating plane. When gauge is not used measurement will be made at the seating plane.
5. Both terminals.
6. At both ends.
7. Two holes.
8. The collector is 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 ϕ x symbology.

FIGURE 1. Physical dimensions (TO-66).

Maximum Safe Operating Graph

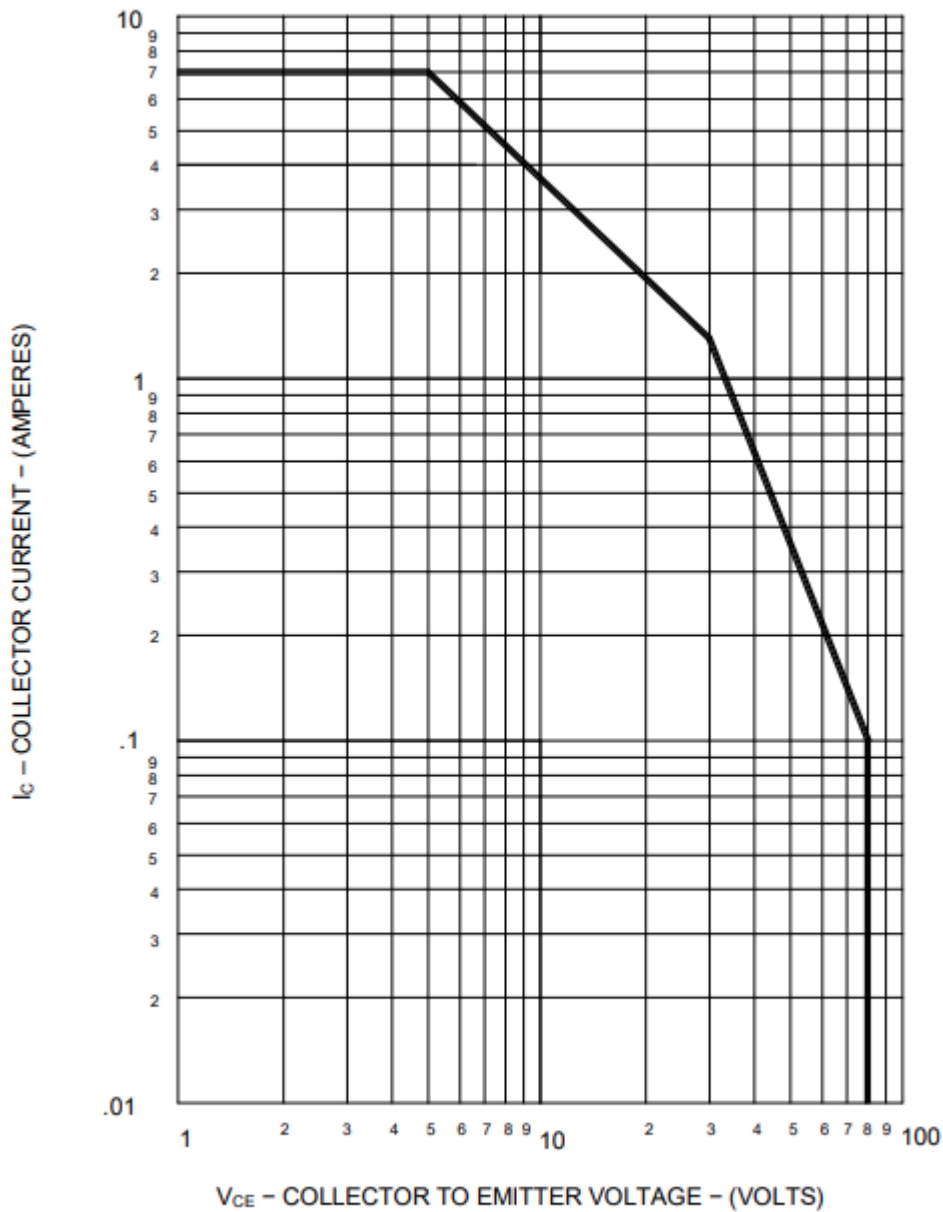


FIGURE 3. Maximum safe operating graph (continuous dc).

Maximum Safe Operating Graph

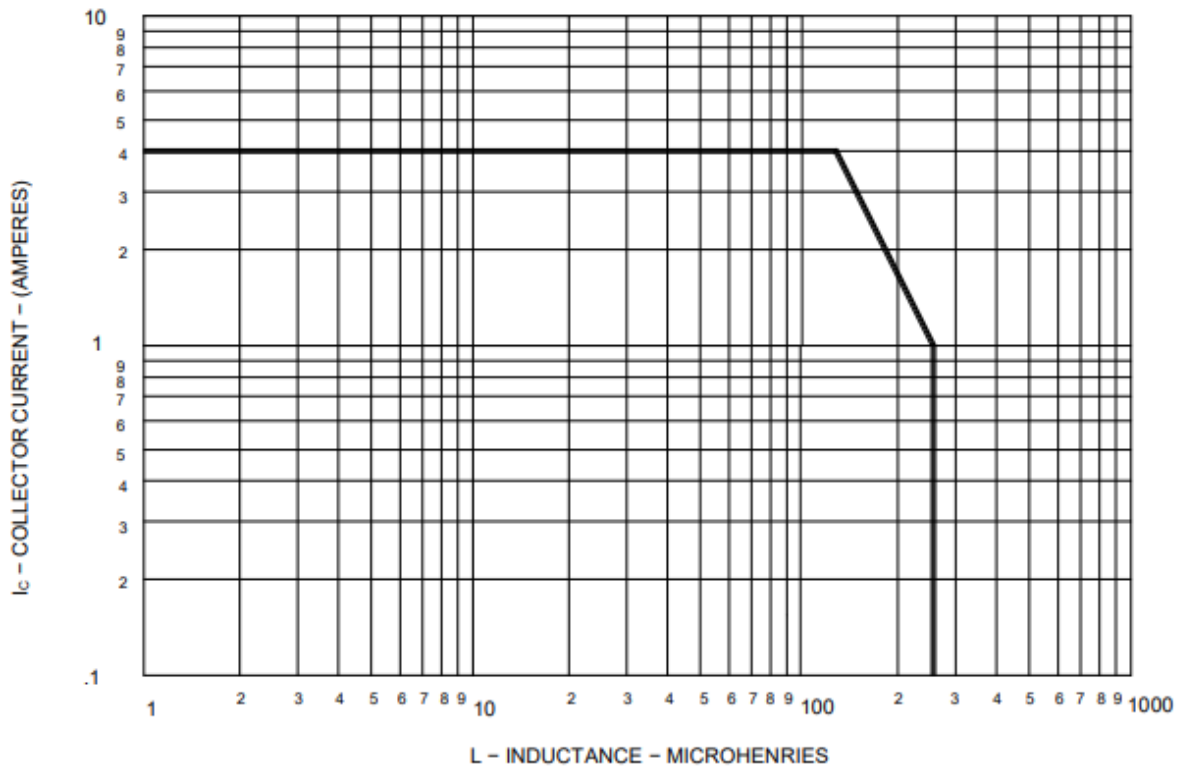


FIGURE 4. Safe operating area for switching between saturation and cutoff (unclamped load).

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