

# NPN Power Silicon Transistor

## 2N3055



### Features

- Available in JAN, JANTX, and JANTXV per MIL-PRF-19500/407
- TO-3 (TO-204AA) Package



### Maximum Ratings

Ratings	Symbol	Value	Units
Collector - Emitter Voltage	$V_{CEO}$	70	Vdc
Collector - Base Voltage	$V_{CBO}$	100	Vdc
Emitter - Base Voltage	$V_{EBO}$	7.0	Vdc
Base Current	$I_B$	7.0	Adc
Collector Current	$I_C$	15	Adc
Total Power Dissipation @ $T_A = 25\text{ }^\circ\text{C}$ (1)	$P_T$	6.0	W
Operating & Storage Temperature Range	$T_{op}, T_{stg}$	-65 to +200	$^\circ\text{C}$

1) Derate linearly @ 34.2 mW /  $^\circ\text{C}$  for  $T_A = 25\text{ }^\circ\text{C}$

### Thermal Characteristics

Characteristics	Symbol	Maximum	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$

### Electrical Characteristics

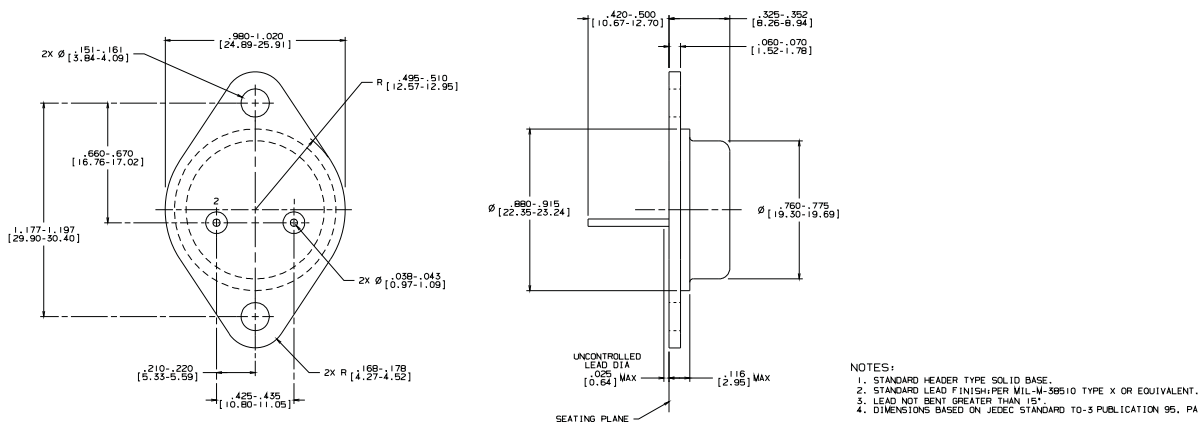
OFF Characteristics	Symbol	Minimum	Maximum	Units
Collector - Emitter Breakdown Voltage $I_C = 200\text{ mAdc}$	$V_{(BR)CEO}$	70	---	Vdc
Collector - Emitter Breakdown Voltage $I_C = 200\text{ mAdc}, R_{BE} = 100\ \Omega$	$V_{(BR)CER}$	80	---	Vdc
Collector - Emitter Breakdown Voltage $V_{BE} = -1.5\text{ Vdc}, I_C = 200\text{ mAdc}$	$V_{(BR)CEX}$	90	---	Vdc
Collector - Emitter Cutoff Current $V_{CE} = 60\text{ Vdc}$	$I_{CEO}$	---	1.0	mAdc
Collector - Emitter Cutoff Current $V_{BE} = -1.5\text{ Vdc}, V_{CE} = 100\text{ Vdc}$	$I_{CEX}$	---	1.0	mAdc
Emitter - Base Cutoff Current $V_{EB} = 7.0\text{ Vdc}$	$I_{EBO}$	---	1.0	mAdc
ON Characteristics				
Forward Current Transfer Ratio $I_C = 0.5\text{ Adc}, V_{CE} = 4.0\text{ Vdc}$ $I_C = 4.0\text{ Adc}, V_{CE} = 4.0\text{ Vdc}$ $I_C = 10.0\text{ Adc}, V_{CE} = 4.0\text{ Vdc}$	$H_{FE}$	40 20 5	--- 60 ---	---
Collector - Emitter Saturation Voltage $I_C = 4.0\text{ Adc}, I_B = 0.4\text{ Adc}$ $I_C = 10.0\text{ Adc}, I_B = 3.3\text{ Adc}$	$V_{CE(sat)}$	---	0.75 2.0	Vdc
Emitter - Base Saturation Voltage $I_C = 4.0\text{ Adc}, V_{CE} = 4.0\text{ Vdc}$	$V_{BE(sat)}$	---	1.4	Vdc



**Electrical Characteristics -con't**

DYNAMIC Characteristics	Symbol	Mimumum	Maximum	Units
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}, f = 100 \text{ kHz}$	$ h_{fe} $	8.0	40.0	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$	---	700	pF
SWITCHING Characteristics				
Turn-On Time $V_{CC} = 30 \text{ Vdc}; I_C = 4.0 \text{ Adc}; I_{B1} = 0.4 \text{ Adc}$	$t_{on}$	---	6	$\mu\text{s}$
Turn-off Time $V_{CC} = 30 \text{ Vdc}; I_C = 4.0 \text{ Adc}; I_{B1} = -I_{B2} = 0.4 \text{ Adc}$	$t_{off}$	---	12	$\mu\text{s}$
SAFE OPERATING AREA				
<b>DC Tests:</b>	$T_C = +25 \text{ }^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$			
<b>Test 1:</b>	$V_{CE} = 7.8 \text{ Vdc}, I_C = 15 \text{ Adc}$			
<b>Test 2:</b>	$V_{CE} = 70.0 \text{ Vdc}, I_C = 1.67 \text{ Adc}$			

**Outline Drawing**



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