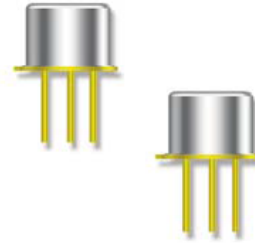


## NPN Power Silicon Transistor

Rev. V1

### Features

- Available in commercial, JAN, JANTX, JANTXV, JANS and JANSR 100K rads (Si) per MIL-PRF-19500/544
- TO-5 Package: 2N5152L, 2N5154L
- TO-39 (TO-205AD) Package: 2N5152, 2N5154



### Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Off Characteristics</b>					
Collector - Emitter Breakdown Voltage	$I_C = 100 \text{ mAdc}, I_B = 0$	$V_{(BR)CEO}$	Vdc	80	—
Emitter - Base Cutoff Current	$V_{EB} = 4.0 \text{ Vdc}, I_C = 0$	$I_{EBO}$	$\mu\text{Adc}$	—	1.0
	$V_{EB} = 5.5 \text{ Vdc}, I_C = 0$		mAdc	—	1.0
Collector - Emitter Cutoff Current	$V_{CE} = 60 \text{ Vdc}, V_{BE} = 0$	$I_{CES}$	$\mu\text{Adc}$	—	1.0
	$V_{CE} = 100 \text{ Vdc}, V_{BE} = 0$		mAdc	—	1.0
Collector - Emitter Cutoff Current	$V_{CE} = 40 \text{ Vdc}, I_B = 0$	$I_{CEO}$	$\mu\text{Adc}$	—	50
<b>On Characteristics</b>					
Forward Current Transfer Ratio	$I_C = 50 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5152	$H_{FE}$	-	20	—
	2N5154			50	—
	$I_C = 2.5 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5152			30	90
2N5154	70	200			
	$I_C = 5.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5152			20	—
	2N5154			40	—
Collector - Emitter Saturation Voltage	$I_C = 2.5 \text{ Adc}, I_B = 250 \text{ mAdc}$ $I_C = 5.0 \text{ Adc}, I_B = 500 \text{ mAdc}$	$V_{CE(SAT)}$	Vdc	—	0.75 1.50
Emitter - Base Voltage Non-Saturation	$I_C = 2.5 \text{ Adc}, V_{CE} = 5 \text{ Vdc}$	$V_{BE(ON)}$	Vdc	—	1.45
Emitter - Base Saturation Voltage	$I_C = 2.5 \text{ Adc}, I_B = 250 \text{ mAdc}$ $I_C = 5.0 \text{ Adc}, I_B = 500 \text{ mAdc}$	$V_{BE(SAT)}$	Vdc	—	1.45 2.20
<b>Dynamic Characteristics</b>					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 500 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 10 \text{ mHz}$ 2N5152 2N5154	$ H_{FE} $	-	6 7	—
Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 100 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 10 \text{ mHz}$ 2N5152 2N5154	$H_{FE}$	-	20 50	—
Output Capacitance	$V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 1 \text{ MHz}$	$C_{OBO}$	pF	—	250

(Continued next page)

## NPN Power Silicon Transistor

Rev. V1

### Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Switching Characteristics</b>					
Turn-On Time	$I_C = 5.0 \text{ Adc}; I_{B1} = 500 \text{ mAdc}$	$T_{ON}$	$\mu\text{s}$	—	0.5
Turn-Off Time	$R_L = 6 \Omega$	$T_{OFF}$	$\mu\text{s}$	—	1.5
Storage Time	$I_{B2} = -500 \text{ mAdc}$	$T_S$	$\mu\text{s}$	—	1.4
Fall Time	$V_{BE(OFF)} = 3.7 \text{ Vdc}$	$T_f$	$\mu\text{s}$	—	0.5
<b>Safe Operating Area</b>					
DC Tests:	$T_C = +25^\circ\text{C}$ , 1 Cycle, $t = 1.0 \text{ s}$				
Test 1:	$V_{CE} = 5.0 \text{ Vdc}$ , $I_C = 2.0 \text{ Adc}$				
Test 2:	$V_{CE} = 32 \text{ Vdc}$ , $I_C = 310 \text{ mAdc}$				
Test 3:	$V_{CE} = 80 \text{ Vdc}$ , $I_C = 12.5 \text{ mAdc}$				

### Absolute Maximum Ratings

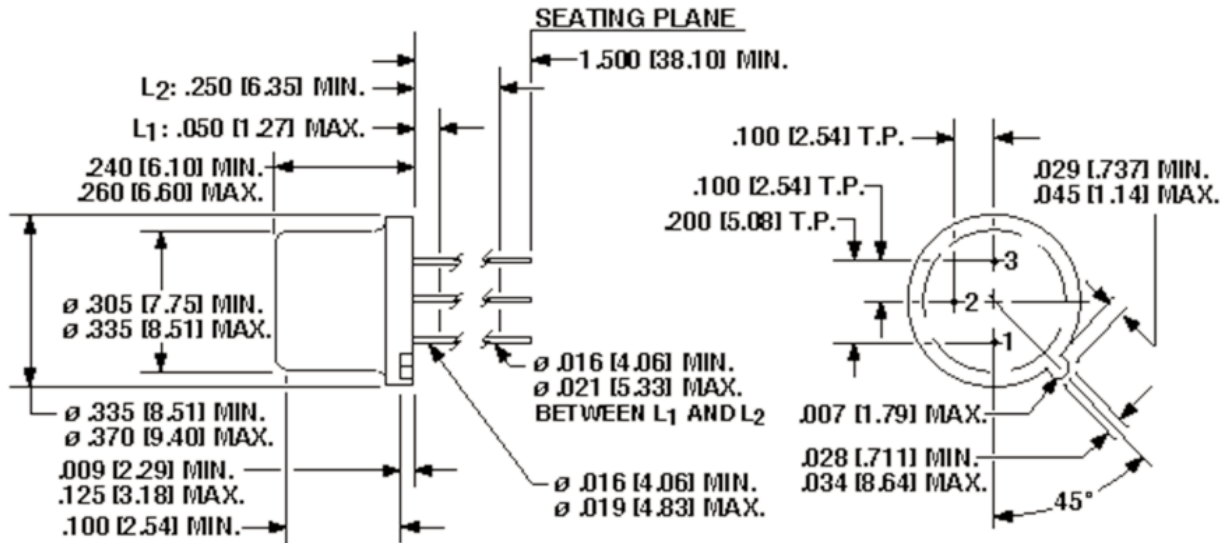
Ratings	Symbol	Value
Collector - Emitter Voltage	$V_{CEO}$	80 Vdc
Collector - Base Voltage	$V_{CBO}$	100 Vdc
Emitter - Base Voltage	$V_{EBO}$	5.5 Vdc
Collector Current	$I_C$	2 Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	$P_T$	1.0 W 100 W
Operating & Storage Temperature Range	$T_{OP}, T_{STG}$	$-65^\circ\text{C}$ to $+200^\circ\text{C}$

### Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	$10^\circ\text{C/W}$

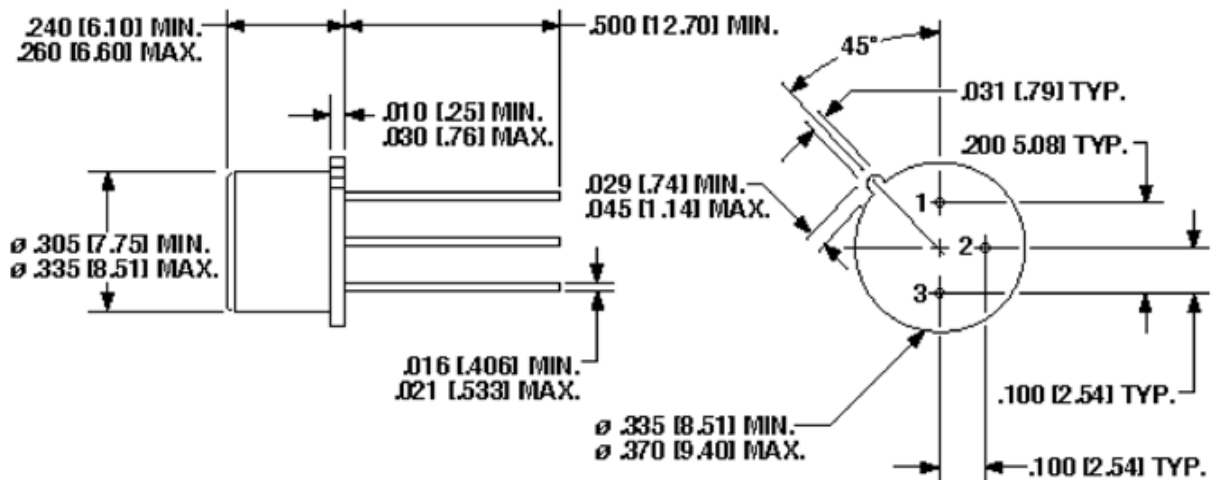
## Outline Drawings

### TO-5 Package (2N5152L, 2N5154L)



Dimensions are in inches.

### TO-39 (TO-205AD) Package (2N5152, 2N5154)



Dimensions are in inches.

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