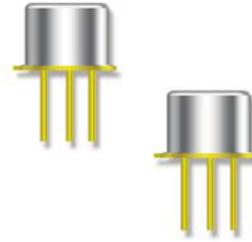


Features

- Available in commercial, JAN, JANTX, JANTXV, JANS and JANSR 100K rads (Si) per MIL-PRF-19500/545
- TO-5 Package: 2N5151L, 2N5153L
- TO-39 (TO-205AD) Package: 2N5151, 2N5153



Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
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}	μAdc	—	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}	μAdc	—	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}	μAdc	—	50
On Characteristics					
Forward Current Transfer Ratio	$I_C = 50 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5151	H_{FE}	-	20	—
	2N5153			50	—
	$I_C = 2.5 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5151			30	90
2N5153	70	200			
	$I_C = 5.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5151			20	—
	2N5153			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
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 500 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 10 \text{ mHz}$ 2N5151 2N5153	$ H_{FE} $	-	6 7	—
Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 100 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 10 \text{ mHz}$ 2N5151 2N5153	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.
Switching Characteristics					
Turn-On Time	$I_C = 5.0 \text{ Adc}; I_{B1} = 500 \text{ mAdc}$	T_{ON}	μs	—	0.5
Turn-Off Time	$R_L = 6 \Omega$	T_{OFF}	μs	—	1.5
Storage Time	$I_{B2} = -500 \text{ mAdc}$	T_S	μs	—	1.4
Fall Time	$V_{BE(OFF)} = 3.7 \text{ Vdc}$	T_f	μs	—	0.5
Safe Operating Area					
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

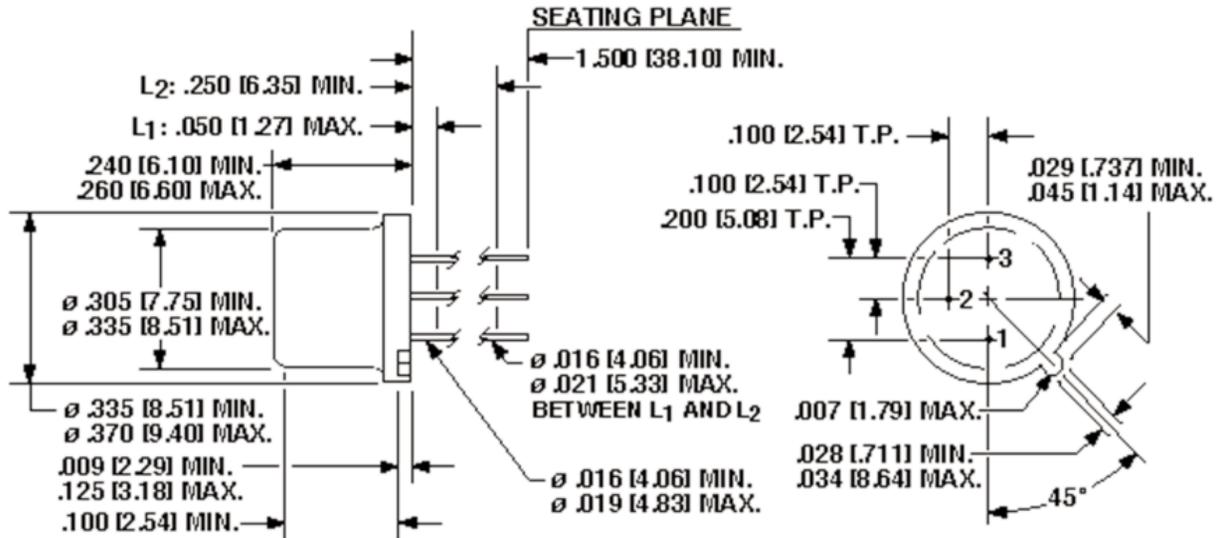
Ratings	Symbol	Value
Collector - Emitter Voltage	V_{CEO}	80 Vdc
Collector - Base Voltage	V_{CBO}	100 Vdc
Emitter - Base Voltage	V_{EBO}	5.5 Vdc
Collector Current	I_C	2 Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_T	1.0 W 100 W
Operating & Storage Temperature Range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

Thermal Characteristics

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

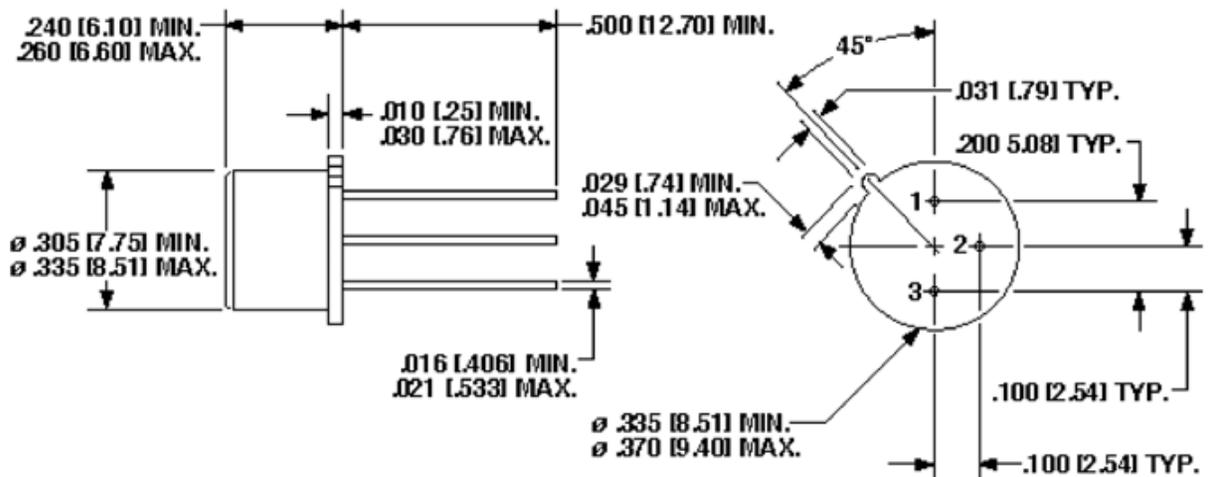
Outline Drawings

TO-5 Package (2N5151L, 2N5153L)



Dimensions are in inches.

TO-39 (TO-205AD) Package (2N5151, 2N5153)



Dimensions are in inches.

MACOM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with MACOM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.