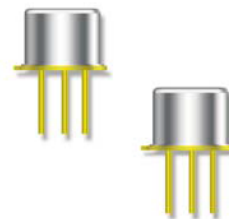


## PNP Power Silicon Transistor

Rev. V1

## Features

- JAN, JANTX, JANTXV, JANS, and JANSR 100K rads (si) per MIL-PRF-19500/561
- TO-39 (TO-205AD) Package



## Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Off Characteristics</b>					
Collector - Emitter Breakdown Voltage	$I_C = 50 \text{ mA dc}$	$V_{(BR)CEO}$	Vdc	100	—
Collector - Emitter Cutoff Current	$V_{CE} = 100 \text{ Vdc}$ $V_{CE} = 90 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	$I_{CEO}$ $I_{CEX}$	$\mu\text{A dc}$	—	100 10
Collector - Base Cutoff Current	$V_{CB} = 100 \text{ Vdc}$	$I_{CBO}$	$\mu\text{A dc}$	—	10
Emitter - Base Cutoff Current	$V_{EB} = 6.0 \text{ Vdc}$	$I_{EBO}$	$\mu\text{A dc}$	—	100
<b>On Characteristics<sup>1</sup></b>					
Forward Current Transfer Ratio	$I_C = 0.5 \text{ A dc}, V_{CE} = 2.0 \text{ Vdc}$ $I_C = 2.0 \text{ A dc}, V_{CE} = 2.0 \text{ Vdc}$ $I_C = 5.0 \text{ A dc}, V_{CE} = 2.0 \text{ Vdc}$	$H_{FE}$	-	60 60 40	— 240 —
Collector - Emitter Saturation Voltage	$I_C = 2.0 \text{ A dc}, I_B = 0.2 \text{ A dc}$ $I_C = 5.0 \text{ A dc}, I_B = 0.5 \text{ A dc}$	$V_{CE(SAT)}$	Vdc	—	0.7 1.2
Emitter - Base Saturation Voltage	$I_C = 2.0 \text{ A dc}, I_B = 0.2 \text{ A dc}$ $I_C = 5.0 \text{ A dc}, I_B = 0.5 \text{ A dc}$	$V_{BE(SAT)}$	Vdc	—	1.2 1.8
<b>Dynamic Characteristics</b>					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 0.5 \text{ A dc}, V_{CE} = 10.0 \text{ Vdc}, f = 10 \text{ MHz}$	$ H_{FE} $	-	3	15
Output Capacitance	$V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	$C_{OBO}$	pF	—	300
Input Capacitance	$V_{BE} = 2 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	$C_{IBO}$	pF	—	1250
<b>Switching Characteristics</b>					
Delay Time	$V_{CC} = -40 \text{ Vdc}; V_{BE(OFF)} = 2.3 \text{ Vdc}$	$T_D$	ns	—	100
Rise Time	$I_C = 2.0 \text{ A dc}, I_{B1} = 0.2 \text{ A dc}$	$T_R$	ns	—	100
Storage Time	$V_{CC} = -40 \text{ Vdc}; I_C = 2.0 \text{ A dc}$	$T_S$	$\mu\text{s}$	—	2.0
Fall Time	$I_{B1} = -I_{B2} = 0.2 \text{ A dc}$	$T_F$	ns	—	200
<b>Safe Operating Area</b>					
DC Tests:	$T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t \geq 0.5 \text{ s}$				
Test 1:	$V_{CE} = 2 \text{ Vdc}, I_C = 5 \text{ A dc}$				
Test 2:	$V_{CE} = 90 \text{ Vdc}, I_C = 55 \text{ mA dc}$				

1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## PNP Power Silicon Transistor

Rev. V1

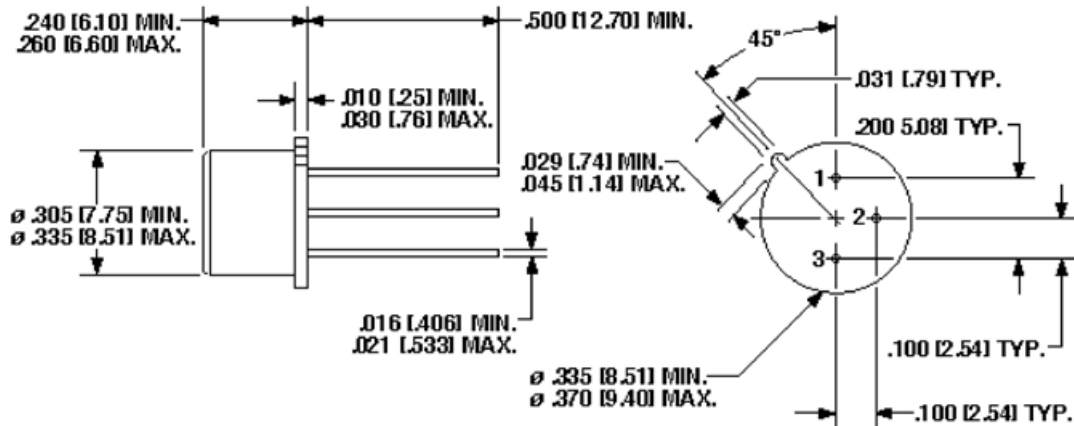
## Absolute Maximum Ratings

Ratings	Symbol	Value
Collector - Emitter Voltage	$V_{CEO}$	100 Vdc
Collector - Base Voltage	$V_{CBO}$	100 Vdc
Emitter - Base Voltage	$V_{EBO}$	6 Vdc
Base Current	$I_B$	1 Adc
Collector Current	$I_C$	5 Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	$P_T$	1.0 W 17.5 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 Drawing



1. Dimensions are in inches [mm].

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.