2N2222A

Small Signal Switching Transistor

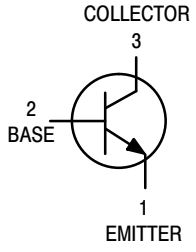
NPN Silicon

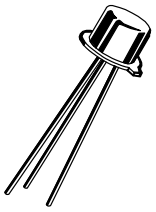
ON Semiconductor®

http://onsemi.com

Features

- MIL−PRF−19500/255 Qualified
- Available as JAN, JANTX, and JANTXV





TO−18
CASE 206AA
STYLE 1

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Value	Unit
Collector − Emitter Voltage	V_{CEO}	50	Vdc
Collector − Base Voltage	V_{CBO}	75	Vdc
Emitter − Base Voltage	V_{EBO}	6.0	Vdc
Collector Current − Continuous	I_C	800	mAdc
Total Device Dissipation @ T_A = 25°C	P_T	500	mW
Total Device Dissipation @ T_C = 25°C	P_T	1.0	W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	325	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	150	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

ORDERING INFORMATION

Device	Package	Shipping
JAN2N2222A	TO−18	Bulk
JANTX2N2222A		
JANTXV2N2222A		

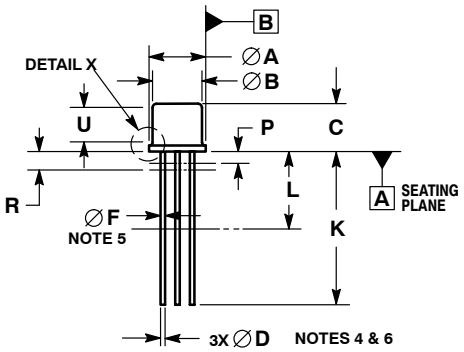
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

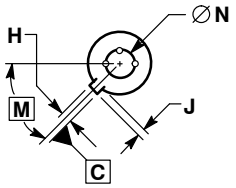
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Breakdown Voltage (I_C = 10 mAdc)	$V_{(BR)CEO}$	50	–	Vdc
Collector−Base Cutoff Current	I_{CBO}			
(V_{CB} = 75 Vdc)		–	10	μAdc
(V_{CB} = 60 Vdc)		–	10	nAdc
Emitter−Base Cutoff Current	I_{EBO}			
(V_{EB} = 6.0 Vdc)		–	10	μAdc
(V_{EB} = 4.0 Vdc)		–	10	nAdc
Collector−Emitter Cutoff Current (V_{CE} = 50 Vdc)	I_{CES}	–	50	nAdc
ON CHARACTERISTICS (Note 1)				
DC Current Gain	h_{FE}			–
(I_C = 0.1 mAdc, V_{CE} = 10 Vdc)		50	–	
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)		75	325	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)		100	–	
(I_C = 150 mAdc, V_{CE} = 10 Vdc)		100	300	
(I_C = 500 mAdc, V_{CE} = 10 Vdc)		30	–	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$			Vdc
(I_C = 150 mAdc, I_B = 15 mAdc)		–	0.3	
(I_C = 500 mAdc, I_B = 50 mAdc)		–	1.0	
Base−Emitter Saturation Voltage	$V_{BE(sat)}$			Vdc
(I_C = 150 mAdc, I_B = 15 mAdc)		0.6	1.2	
(I_C = 500 mAdc, I_B = 50 mAdc)		–	2.0	
SMALL−SIGNAL CHARACTERISTICS				
Magnitude of Small−Signal Current Gain (I_C = 20 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)	$\|h_{fe}\|$	2.5	–	–
Small−Signal Current Gain (I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1 kHz)	h_{fe}	50	–	–
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz)	C_{ibo}	–	25	pF
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0,100 kHz ≤ f ≤ 1.0 MHz)	C_{obo}	–	8.0	pF
SWITCHING (SATURATED) CHARACTERISTICS				
Turn−On Time (Reference Figure in MIL−PRF−19500/255)	t_{on}	–	35	ns
Turn−Off Time (Reference Figure in MIL−PRF−19500/255)	t_{off}	–	300	ns

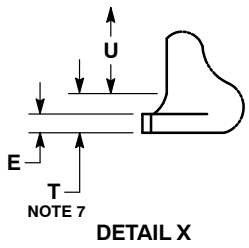
1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

PACKAGE DIMENSIONS

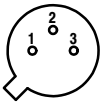
TO−18 3
CASE 206AA
ISSUE O







DETAIL X



LEAD IDENTIFICATION DETAIL

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION J MEASURED FROM DIAMETER A TO EDGE.
4. LEAD TRUE POSITION TO BE DETERMINED AT THE GUAGE PLANE DEFINED BY DIMENSION R.
5. DIMENSION F APPLIES BETWEEN DIMENSION P AND L.
6. DIMENSION D APPLIES BETWEEN DIMENSION L AND K.
7. BODY CONTOUR OPTIONAL WITHIN ZONE DEFINED BY DIMENSIONS A, B, AND T.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	5.31	5.84	0.209	0.230
B	4.52	4.95	0.178	0.195
C	4.32	5.33	0.170	0.210
D	0.41	0.53	0.016	0.021
E	---	0.76	---	0.030
F	0.41	0.48	0.016	0.019
H	0.91	1.17	0.036	0.046
J	0.71	1.22	0.028	0.048
K	12.70	19.05	0.500	0.750
L	6.35	---	0.250	---
M	45 ° BSC		45 ° BSC	
N	2.54 BSC		0.100 BSC	
P	---	1.27	---	0.050
R	1.37 BSC		0.054 BSC	
T	---	0.76	---	0.030
U	2.54	---	0.100	---

STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
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