

2N2222A

Small Signal Switching Transistor

NPN Silicon

Features

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

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Value | Unit |
|---|----------------|-------------|------------------|
| Collector - Emitter Voltage | V_{CE0} | 50 | Vdc |
| Collector - Base Voltage | V_{CB0} | 75 | Vdc |
| Emitter - Base Voltage | V_{EB0} | 6.0 | Vdc |
| Collector Current - Continuous | I_C | 800 | mA _{dc} |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ | P_T | 500 | mW |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ | P_T | 1.0 | W |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -65 to +200 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

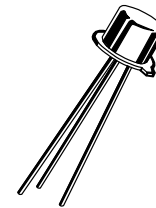
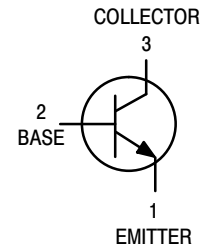
| Characteristic | Symbol | Max | Unit |
|---|-----------------|-----|---------------------------|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 325 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 150 | $^\circ\text{C}/\text{W}$ |

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.



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TO-18
CASE 206AA
STYLE 1

ORDERING INFORMATION

| Device | Package | Shipping |
|---------------|---------|----------|
| JAN2N2222A | TO-18 | Bulk |
| JANTX2N2222A | | |
| JANTXV2N2222A | | |

2N2222A

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

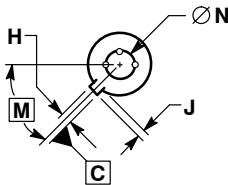
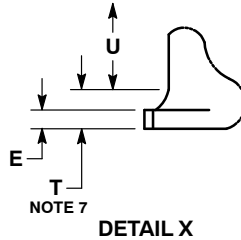
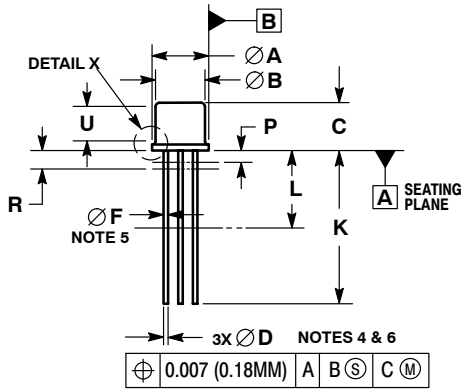
| Characteristic | Symbol | Min | Max | Unit |
|--|---------------|------------------------------|---------------------------|-------------------------|
| OFF CHARACTERISTICS | | | | |
| Collector – Emitter Breakdown Voltage ($I_C = 10 \text{ mAdc}$) | $V_{(BR)CEO}$ | 50 | – | Vdc |
| Collector–Base Cutoff Current ($V_{CB} = 75 \text{ Vdc}$) ($V_{CB} = 60 \text{ Vdc}$) | I_{CBO} | – – | 10 10 | μAdc nAdc |
| Emitter–Base Cutoff Current ($V_{EB} = 6.0 \text{ Vdc}$) ($V_{EB} = 4.0 \text{ Vdc}$) | I_{EBO} | – – | 10 10 | μAdc nAdc |
| Collector–Emitter Cutoff Current ($V_{CE} = 50 \text{ Vdc}$) | I_{CES} | – | 50 | nAdc |
| ON CHARACTERISTICS (Note 1) | | | | |
| DC Current Gain ($I_C = 0.1 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 150 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$) | h_{FE} | 50 75 100 100 30 | – 325 – 300 – | – |
| Collector – Emitter Saturation Voltage ($I_C = 150 \text{ mAdc}$, $I_B = 15 \text{ mAdc}$) ($I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$) | $V_{CE(sat)}$ | – – | 0.3 1.0 | Vdc |
| Base – Emitter Saturation Voltage ($I_C = 150 \text{ mAdc}$, $I_B = 15 \text{ mAdc}$) ($I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$) | $V_{BE(sat)}$ | 0.6 – | 1.2 2.0 | Vdc |
| SMALL-SIGNAL CHARACTERISTICS | | | | |
| Magnitude of Small-Signal Current Gain ($I_C = 20 \text{ mAdc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 100 \text{ MHz}$) | $ h_{fe} $ | 2.5 | – | – |
| Small-Signal Current Gain ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1 \text{ kHz}$) | h_{fe} | 50 | – | – |
| Input Capacitance ($V_{EB} = 0.5 \text{ Vdc}$, $I_C = 0$, $100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$) | C_{ibo} | – | 25 | pF |
| Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$) | 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 $\leq 2.0\%$.

2N2222A

PACKAGE DIMENSIONS

TO-18 3 CASE 206AA ISSUE O



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 GAUGE 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.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-------|-----------|-------|
| | 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:

1. EMITTER
2. BASE
3. COLLECTOR

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