

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

PN2221
PN2221A
PN2222
PN2222A

NPN Silicon Transistor

JEDEC TO-92 Case

DESCRIPTION

The CENTRAL SEMICONDUCTOR PN2221,A,PN2222,A are Silicon NPN Planar Epitaxial Transistors designed for small signal general purpose and switching applications.

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

| | | PN2221 PN2222 | PN2221A PN2222A | |
|---|----------------|------------------|--------------------|--------------------|
| Collector-Base Voltage | V_{CB0} | 60 | 75 | Vdc |
| Emitter-Base Voltage | V_{EB0} | 5.0 | 6.0 | Vdc |
| Collector-Emitter Voltage | V_{CE0} | 30 | 40 | Vdc |
| Collector Current-Continuous | I_C | | 800 | mAdc |
| Power Dissipation | P_T | | 625 | mW |
| Operating and Storage Junction Temperature | T_J, T_{stg} | -65 TO +150 | | $^{\circ}\text{C}$ |

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

| Symbol | Test Conditions | PN2221 PN2222 | | PN2221A PN2222A | | Unit |
|-------------|--|-------------------|-----|--------------------|-----|------|
| | | Min | Max | Min | Max | |
| I_{CB0} | $V_{CB}=50\text{V}$ | | 10 | | | nA |
| I_{CB0} | $V_{CB}=60\text{V}$ | | | 10 | | nA |
| I_{CEV} | $V_{CE}=60\text{V}, V_{EB}=3.0\text{V}$ | | | 10 | | nA |
| I_{EB0} | $V_{EB}=3.0\text{V}$ | | 10 | 10 | | nA |
| BV_{CB0} | $I_C=10\mu\text{A}$ | 60 | | 75 | | V |
| BV_{EB0} | $I_E=10\mu\text{A}$ | 5.0 | | 6.0 | | V |
| BV_{CE0} | $I_C=10\text{mA}$ | 30 | | 40 | | V |
| $V_{CE}(s)$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | | 0.4 | | 0.3 | V |
| $V_{CE}(s)$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | | 1.6 | | 1.0 | V |
| $V_{BE}(s)$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | | 1.3 | | 1.2 | V |
| $V_{BE}(s)$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | | 2.6 | | 2.0 | V |
| | | PN2221 PN2221A | | PN2222 PN2222A | | Unit |
| | | Min | Max | Min | Max | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=100\mu\text{A}$ | 20 | | 35 | | - |
| h_{FE} | $V_{CE}=10\text{V}, I_C=1\text{mA}$ | 25 | | 50 | | - |
| h_{FE} | $V_{CE}=10\text{V}, I_C=10\text{mA}$ | 35 | | 75 | | - |
| h_{FE} | $V_{CE}=10\text{V}, I_C=150\text{mA}$ | 40 | 120 | 100 | 300 | - |
| h_{FE} | $V_{CE}=1\text{V}, I_C=150\text{mA}$ | 20 | | 50 | | - |
| h_{FE} | $V_{CE}=10\text{V}, I_C=500\text{mA}$ (PN2221, PN2222 Only) | 20 | | 30 | | - |
| h_{FE} | $V_{CE}=10\text{V}, I_C=500\text{mA}$ (PN2221A, PN2222A Only) | 25 | | 40 | | - |
| f_T | $V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ (Except PN2222A) | 250 | | 250 | | MHz |
| f_T | $V_{CE}=20\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ (PN2222A only) | | | 300 | | MHz |
| C_{ob} | $V_{CB}=10\text{V}, f=100\text{kHz}$ | | 8.0 | | 8.0 | pF |
| t_{ON} | $V_{CC}=30\text{V}, I_C=150\text{mA}, I_B=15\text{mA}$ | | 35 | | 35 | ns |
| t_{OFF} | $V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$ | | 285 | | 285 | ns |