

2N4400
2N4401

SILICON
NPN TRANSISTORS



TO-92 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N4400 and 2N4401 are silicon NPN transistors designed for general purpose amplifier and switching applications. PNP complementary types are 2N4402 and 2N4403.

MARKING: FULL PART NUMBER

MAXIMUM RATINGS: ($T_A=25^\circ\text{C}$)

Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Power Dissipation
Operating and Storage Junction Temperature

| SYMBOL | | UNITS |
|----------------|-------------|------------------|
| V_{CBO} | 60 | V |
| V_{CEO} | 40 | V |
| V_{EBO} | 6.0 | V |
| I_C | 600 | mA |
| P_D | 625 | mW |
| T_J, T_{stg} | -65 to +150 | $^\circ\text{C}$ |

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

| SYMBOL | TEST CONDITIONS | 2N4400 | | 2N4401 | | UNITS |
|---------------|--|--------|------|--------|------|-------|
| | | MIN | MAX | MIN | MAX | |
| I_{CEV} | $V_{CE}=35\text{V}, V_{EB}=0.4\text{V}$ | - | 100 | - | 100 | nA |
| BV_{CBO} | $I_C=0.1\text{mA}$ | 60 | - | 60 | - | V |
| BV_{CEO} | $I_C=1.0\text{mA}$ | 40 | - | 40 | - | V |
| BV_{EBO} | $I_E=0.1\text{mA}$ | 6.0 | - | 6.0 | - | V |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | - | 0.40 | - | 0.40 | V |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | - | 0.75 | - | 0.75 | V |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | 0.75 | 0.95 | 0.75 | 0.95 | V |
| $V_{BE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | - | 1.2 | - | 1.2 | V |
| h_{FE} | $V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$ | - | - | 20 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$ | 20 | - | 40 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}, I_C=10\text{mA}$ | 40 | - | 80 | - | |
| h_{FE} | $V_{CE}=1.0\text{V}, I_C=150\text{mA}$ | 50 | 150 | 100 | 300 | |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=500\text{mA}$ | 20 | - | 40 | - | |
| h_{fe} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | 20 | 250 | 40 | 500 | |
| f_T | $V_{CE}=10\text{V}, I_C=20\text{mA}, f=100\text{MHz}$ | 200 | - | 250 | - | MHz |
| C_{ob} | $V_{CB}=5.0\text{V}, I_E=0, f=100\text{kHz}$ | - | 6.5 | - | 6.5 | pF |
| C_{ib} | $V_{BE}=0.5\text{V}, I_C=0, f=100\text{kHz}$ | - | 30 | - | 30 | pF |
| t_{on} | $V_{CC}=30\text{V}, V_{EB(OFF)}=2.0\text{V}, I_C=150\text{mA}, I_{B1}=15\text{mA}$ | - | 35 | - | 35 | ns |
| t_{off} | $V_{CC}=30\text{V}, I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$ | - | 255 | - | 255 | ns |

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TO-92 CASE - MECHANICAL OUTLINE



R1

| SYMBOL | INCHES | | MILLIMETERS | |
|---------|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A (DIA) | 0.175 | 0.205 | 4.45 | 5.21 |
| B | 0.170 | 0.210 | 4.32 | 5.33 |
| C | 0.500 | - | 12.70 | - |
| D | 0.016 | 0.022 | 0.41 | 0.56 |
| E | 0.100 | | 2.54 | |
| F | 0.050 | | 1.27 | |
| G | 0.125 | 0.165 | 3.18 | 4.19 |
| H | 0.080 | 0.105 | 2.03 | 2.67 |
| I | 0.015 | | 0.38 | |

TO-92 (REV: R1)

LEAD CODE:

- 1) Emitter
- 2) Base
- 3) Collector

MARKING:
FULL PART NUMBER

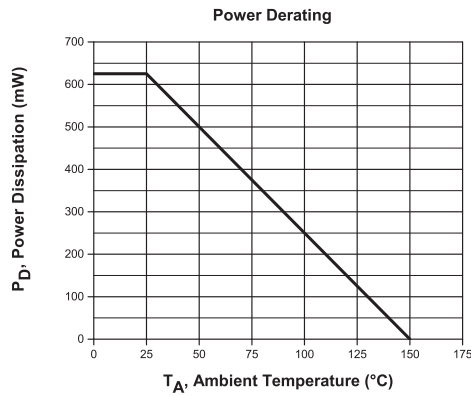
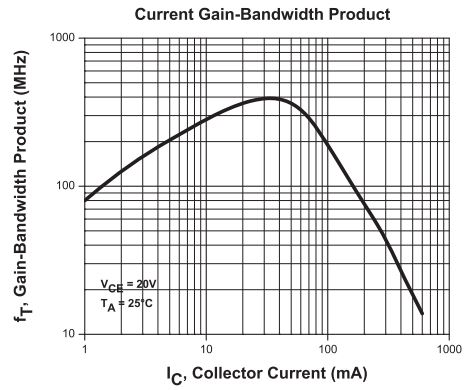
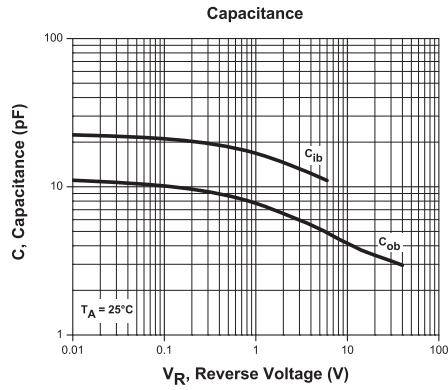
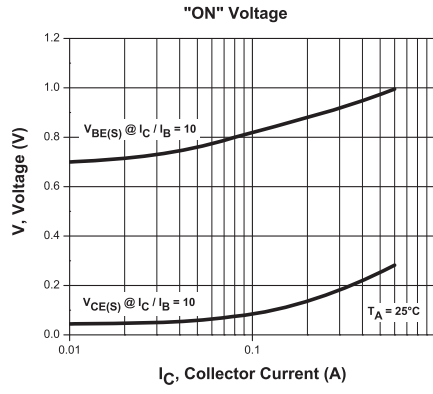
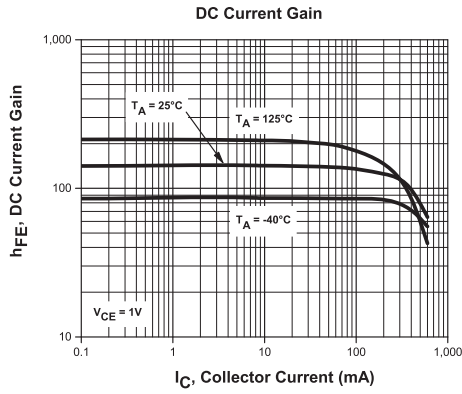
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TYPICAL ELECTRICAL CHARACTERISTICS



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OUTSTANDING SUPPORT AND SUPERIOR SERVICES



PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

CONTACT US

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