

2N2904 2N2904A
2N2905 2N2905A

PNP SILICON TRANSISTORS



TO-39 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N2904, 2N2905 series types are PNP silicon transistors manufactured by the epitaxial planar process, designed for small signal, general purpose and switching applications.

MARKING: FULL PART NUMBER

| | SYMBOL | 2N2904 | 2N2904A | UNITS |
|--|----------------|-------------|---------|------------------|
| | | 2N2905 | 2N2905A | |
| Collector-Base Voltage | V_{CBO} | 60 | 60 | V |
| Collector-Emitter Voltage | V_{CEO} | 40 | 60 | V |
| Emitter-Base Voltage | V_{EBO} | | 5.0 | V |
| Continuous Collector Current | I_C | | 0.6 | A |
| Power Dissipation | P_D | | 0.8 | W |
| Power Dissipation ($T_C=25^\circ\text{C}$) | P_D | | 3.0 | W |
| Operating and Storage Junction Temperature | T_J, T_{stg} | -65 to +200 | | $^\circ\text{C}$ |

| ELECTRICAL CHARACTERISTICS: ($T_A=25^\circ\text{C}$) | | 2N2904 | | 2N2904A | | UNITS |
|--|--|---------|-----|---------|-----|-------|
| SYMBOL | TEST CONDITIONS | 2N2905 | | 2N2905A | | |
| | | MIN | MAX | MIN | MAX | |
| I_{CBO} | $V_{CB}=50\text{V}$ | - | 20 | - | 10 | nA |
| I_{CEV} | $V_{CE}=30\text{V}, V_{EB}=0.5\text{V}$ | - | - | - | 50 | nA |
| BV_{CBO} | $I_C=10\mu\text{A}$ | 60 | - | 60 | - | V |
| BV_{CEO} | $I_C=10\text{mA}$ | 40 | - | 60 | - | V |
| BV_{EBO} | $I_E=10\mu\text{A}$ | 5.0 | - | 5.0 | - | V |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | - | 0.4 | - | 0.4 | V |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | - | 1.6 | - | 1.6 | V |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | - | 1.3 | - | 1.3 | V |
| $V_{BE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | - | 2.6 | - | 2.6 | V |
| | | 2N2904 | | 2N2905 | | |
| | | 2N2904A | | 2N2905A | | |
| | | MIN | MAX | MIN | MAX | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=100\mu\text{A}$ (2N2904, 2N2905) | 20 | - | 35 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=100\mu\text{A}$ (2N2904A, 2N2905A) | 40 | - | 75 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}$ (2N2904, 2N2905) | 25 | - | 50 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=1.0\text{mA}$ (2N2904A, 2N2905A) | 40 | - | 100 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=10\text{mA}$ (2N2904, 2N2905) | 35 | - | 75 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=10\text{mA}$ (2N2904A, 2N2905A) | 40 | - | 100 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=150\text{mA}$ | 40 | 120 | 100 | 300 | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=500\text{mA}$ (2N2904, 2N2905) | 20 | - | 30 | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=500\text{mA}$ (2N2904A, 2N2905A) | 40 | - | 50 | - | |

R2 (6-April 2015)

2N2904 2N2904A
2N2905 2N2905A

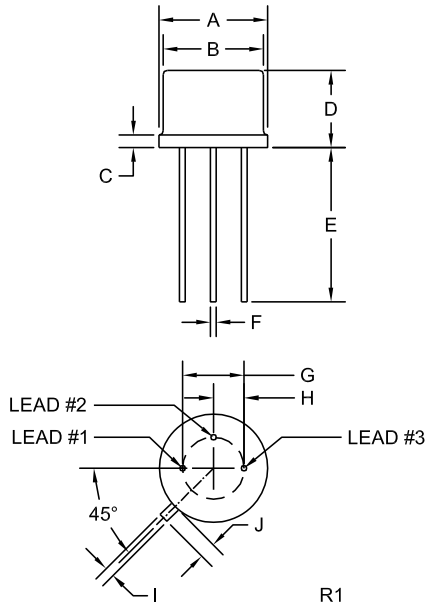
PNP SILICON TRANSISTORS



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

| SYMBOL | TEST CONDITIONS | MIN | MAX | UNITS |
|-----------|---|-----|-----|-------|
| f_T | $V_{CE}=20\text{V}$, $I_C=50\text{mA}$, $f=100\text{MHz}$ | 200 | | MHz |
| C_{ob} | $V_{CB}=10\text{V}$, $f=100\text{kHz}$ | | 8.0 | pF |
| t_{on} | $V_{CC}=30\text{V}$, $I_C=150\text{mA}$, $I_B=15\text{mA}$ | | 45 | ns |
| t_{off} | $V_{CC}=6.0\text{V}$, $I_C=150\text{mA}$, $I_{B1}=I_{B2}=15\text{mA}$ | | 180 | ns |

TO-39 CASE - MECHANICAL OUTLINE



| SYMBOL | DIMENSIONS | | | |
|---------|------------|-------|-------------|------|
| | INCHES | | MILLIMETERS | |
| | MIN | MAX | MIN | MAX |
| A (DIA) | 0.335 | 0.370 | 8.51 | 9.40 |
| B (DIA) | 0.315 | 0.335 | 8.00 | 8.51 |
| C | - | 0.040 | - | 1.02 |
| D | 0.240 | 0.260 | 6.10 | 6.60 |
| E | 0.500 | - | 12.70 | - |
| F (DIA) | 0.016 | 0.021 | 0.41 | 0.53 |
| G (DIA) | 0.200 | | 5.08 | |
| H | 0.100 | | 2.54 | |
| I | 0.028 | 0.034 | 0.71 | 0.86 |
| J | 0.029 | 0.045 | 0.74 | 1.14 |

TO-39 (REV: R1)

LEAD CODE:

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

MARKING: FULL PART NUMBER

R2 (6-April 2015)

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

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centrasemi.com

Worldwide Field Representatives:
www.centrasemi.com/wwreps

Worldwide Distributors:
www.centrasemi.com/wwdistributors

For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: www.centrasemi.com/terms