

2N4904 2N4905 2N4906 PNP
2N4913 2N4914 2N4915 NPN

**COMPLEMENTARY SILICON
POWER TRANSISTORS**



TO-3 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N4904, 2N4913 series types are complementary silicon power transistors, manufactured by the epitaxial base process, designed for general purpose amplifier and switching applications.

MARKING: FULL PART NUMBER

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

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

| SYMBOL | 2N4904 | 2N4905 | 2N4906 | UNITS |
|----------------|--------|-------------|--------|--------------------|
| | 2N4913 | 2N4914 | 2N4915 | |
| V_{CBO} | 40 | 60 | 80 | V |
| V_{CEO} | 40 | 60 | 80 | V |
| V_{EBO} | | 5.0 | | V |
| I_C | | 5.0 | | A |
| I_B | | 1.0 | | A |
| P_D | | 87.5 | | W |
| T_J, T_{stg} | | -65 to +200 | | $^\circ\text{C}$ |
| θ_{JC} | | 2.0 | | $^\circ\text{C/W}$ |

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

| SYMBOL | TEST CONDITIONS | PNP | | NPN | | UNITS |
|---------------|---------------------------------------------------------------------------|-----|-----|-----|-----|-------|
| | | MIN | MAX | MIN | MAX | |
| I_{CBO} | $V_{CB}=\text{Rated } V_{CBO}$ | - | 0.1 | - | 1.0 | mA |
| I_{CEO} | $V_{CE}=\text{Rated } V_{CEO}$ | - | 1.0 | - | 1.0 | mA |
| I_{CEV} | $V_{CE}=\text{Rated } V_{CEO}, V_{BE}=1.5\text{V}$ | - | 0.1 | - | 1.0 | mA |
| I_{CEV} | $V_{CE}=\text{Rated } V_{CEO}, V_{BE}=1.5\text{V}, T_C=150^\circ\text{C}$ | - | 2.0 | - | 2.0 | mA |
| I_{EBO} | $V_{EB}=5.0\text{V}$ | - | 1.0 | - | 1.0 | mA |
| BV_{CEO} | $I_C=200\text{mA}$ (2N4904, 2N4913) | 40 | - | 40 | - | V |
| BV_{CEO} | $I_C=200\text{mA}$ (2N4905, 2N4914) | 60 | - | 60 | - | V |
| BV_{CEO} | $I_C=200\text{mA}$ (2N4906, 2N4915) | 80 | - | 80 | - | V |
| $V_{CE(SAT)}$ | $I_C=2.5\text{A}, I_B=250\text{mA}$ | - | 1.0 | - | 1.0 | V |
| $V_{CE(SAT)}$ | $I_C=5.0\text{A}, I_B=1.0\text{A}$ | - | 1.5 | - | 1.5 | V |
| $V_{BE(ON)}$ | $V_{CE}=2.0\text{V}, I_C=2.5\text{A}$ | - | 1.4 | - | 1.4 | V |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=2.5\text{A}$ | 25 | 100 | 25 | 100 | |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=5.0\text{A}$ | 7.0 | - | 7.0 | - | |
| h_{fe} | $V_{CE}=10\text{V}, I_C=500\text{mA}, f=1.0\text{kHz}$ | 40 | - | 20 | - | |
| f_T | $V_{CE}=10\text{V}, I_C=1.0\text{A}, f=1.0\text{MHz}$ | 4.0 | - | 4.0 | - | MHz |

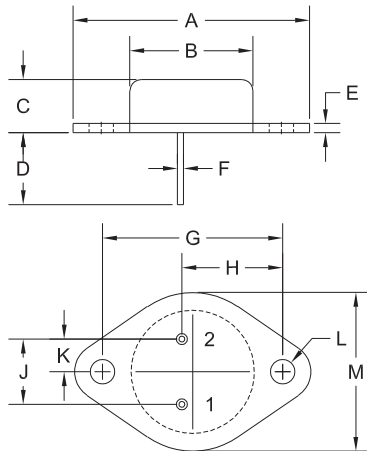
R1 (7-March 2013)

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 POWER TRANSISTORS**



TO-3 CASE - MECHANICAL OUTLINE



| DIMENSIONS | | | | |
|------------|--------|-------|-------------|-------|
| SYMBOL | INCHES | | MILLIMETERS | |
| | MIN | MAX | MIN | MAX |
| A | 1.516 | 1.573 | 38.50 | 39.96 |
| B (DIA) | 0.748 | 0.875 | 19.00 | 22.23 |
| C | 0.250 | 0.450 | 6.35 | 11.43 |
| D | 0.433 | 0.516 | 11.00 | 13.10 |
| E | 0.054 | 0.065 | 1.38 | 1.65 |
| F | 0.035 | 0.045 | 0.90 | 1.15 |
| G | 1.177 | 1.197 | 29.90 | 30.40 |
| H | 0.650 | 0.681 | 16.50 | 17.30 |
| J | 0.420 | 0.440 | 10.67 | 11.18 |
| K | 0.205 | 0.225 | 5.21 | 5.72 |
| L (DIA) | 0.151 | 0.172 | 3.84 | 4.36 |
| M | 0.984 | 1.050 | 25.00 | 26.67 |

TO-3 (REV: R2)

R2

LEAD CODE:

- 1) Base
- 2) Emitter
- Case) Collector

MARKING:

FULL PART NUMBER

R1 (7-March 2013)