



THE DATASHEET OF
2N4399



2N4398
2N4399
2N5745

**PNP SILICON
POWER TRANSISTOR**



TO-3 CASE



www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N4398 series types are PNP silicon power transistors designed for power 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 |
| Peak Collector Current |
| Continuous Base Current |
| Peak Base Current |
| Power Dissipation |
| Power Dissipation ($T_A=25^\circ\text{C}$) |
| Operating and Storage Junction Temperature |
| Thermal Resistance |
| Thermal Resistance |

| SYMBOL | 2N4398 | 2N4399 | 2N5745 | UNITS |
|----------------|--------|-------------|--------|--------------------|
| V_{CB0} | 40 | 60 | 80 | V |
| V_{CEO} | 40 | 60 | 80 | V |
| V_{EBO} | 5.0 | 5.0 | 5.0 | V |
| I_C | 30 | 30 | 20 | A |
| I_{CM} | | 50 | | A |
| I_B | | 7.5 | | A |
| I_{BM} | | 15 | | A |
| P_D | | 200 | | W |
| P_D | | 5.0 | | W |
| T_J, T_{stg} | | -65 to +200 | | $^\circ\text{C}$ |
| θ_{JA} | | 35 | | $^\circ\text{C/W}$ |
| θ_{JC} | | 0.875 | | $^\circ\text{C/W}$ |

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

| SYMBOL | TEST CONDITIONS | 2N4398 | | 2N4399 | | 2N5745 | | UNITS |
|----------------------|----------------------------------------------------------------|--------|------|--------|------|--------|-----|-------|
| | | MIN | MAX | MIN | MAX | MIN | MAX | |
| I_{CBO} | $V_{CB}=\text{Rated } V_{CBO}$ | - | 1.0 | - | 1.0 | - | 1.0 | mA |
| I_{CEX} | $V_{CE}=\text{Rated } V_{CEO}, V_{EB}=1.5\text{V}$ | - | 5.0 | - | 5.0 | - | 5.0 | mA |
| I_{CEX} | $V_{CE}=30\text{V}, V_{EB}=1.5\text{V}, T_C=150^\circ\text{C}$ | - | 10 | - | 10 | - | - | mA |
| I_{CEX} | $V_{CE}=80\text{V}, V_{EB}=1.5\text{V}, T_C=150^\circ\text{C}$ | - | - | - | - | - | 10 | mA |
| I_{CEO} | $V_{CE}=\text{Rated } V_{CEO}$ | - | 5.0 | - | 5.0 | - | 5.0 | mA |
| I_{EBO} | $V_{EB}=5.0\text{V}$ | - | 5.0 | - | 5.0 | - | 5.0 | mA |
| BV_{CEO} | $I_C=200\text{mA}$ | 40 | - | 60 | - | 80 | - | V |
| $V_{CE(\text{SAT})}$ | $I_C=10\text{A}, I_B=1.0\text{A}$ | - | 0.75 | - | 0.75 | - | 1.0 | V |
| $V_{CE(\text{SAT})}$ | $I_C=15\text{A}, I_B=1.5\text{A}$ | - | 1.0 | - | 1.0 | - | 1.5 | V |
| $V_{CE(\text{SAT})}$ | $I_C=20\text{A}, I_B=2.0\text{A}$ | - | 2.0 | - | 2.0 | - | - | V |
| $V_{CE(\text{SAT})}$ | $I_C=20\text{A}, I_B=4.0\text{A}$ | - | - | - | - | - | 2.0 | V |
| $V_{CE(\text{SAT})}$ | $I_C=30\text{A}, I_B=6.0\text{A}$ | - | 4.0 | - | 4.0 | - | - | V |
| $V_{BE(\text{SAT})}$ | $I_C=10\text{A}, I_B=1.0\text{A}$ | - | 1.6 | - | 1.6 | - | 1.7 | V |
| $V_{BE(\text{SAT})}$ | $I_C=15\text{A}, I_B=1.5\text{A}$ | - | 1.85 | - | 1.85 | - | 2.0 | V |
| $V_{BE(\text{SAT})}$ | $I_C=20\text{A}, I_B=2.0\text{A}$ | - | 2.5 | - | 2.5 | - | - | V |
| $V_{BE(\text{SAT})}$ | $I_C=20\text{A}, I_B=4.0\text{A}$ | - | - | - | - | - | 2.5 | V |
| $V_{BE(\text{ON})}$ | $V_{CE}=2.0\text{V}, I_C=10\text{A}$ | - | - | - | - | - | 1.5 | V |
| $V_{BE(\text{ON})}$ | $V_{CE}=2.0\text{V}, I_C=15\text{A}$ | - | 1.7 | - | 1.7 | - | - | V |
| $V_{BE(\text{ON})}$ | $V_{CE}=4.0\text{V}, I_C=20\text{A}$ | - | - | - | - | - | 2.5 | V |
| $V_{BE(\text{ON})}$ | $V_{CE}=4.0\text{V}, I_C=30\text{A}$ | - | 3.0 | - | 3.0 | - | - | V |

R0 (30-July 2012)

2N4398
2N4399
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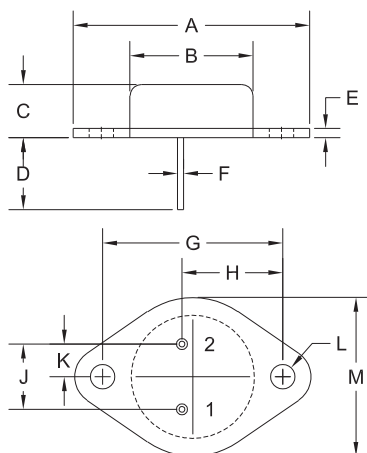
PNP SILICON
POWER TRANSISTOR



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

| SYMBOL | TEST CONDITIONS | 2N4398 | | 2N4399 | | 2N5745 | | UNITS |
|----------|----------------------------------------------------------------|--------|-----|--------|-----|--------|-----|---------------|
| | | MIN | MAX | MIN | MAX | MIN | MAX | |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=1.0\text{A}$ | 40 | - | 40 | - | 40 | - | |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=10\text{A}$ | - | - | - | - | 15 | 60 | |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=15\text{A}$ | 15 | 60 | 15 | 60 | - | - | |
| h_{FE} | $V_{CE}=2.0\text{V}, I_C=20\text{A}$ | - | - | - | - | 5.0 | - | |
| h_{FE} | $V_{CE}=4.0\text{V}, I_C=30\text{A}$ | 5.0 | - | 5.0 | - | - | - | |
| h_{fe} | $V_{CE}=10\text{V}, I_C=1.0\text{A}, f=1.0\text{kHz}$ | 40 | - | 40 | - | 40 | - | |
| f_T | $V_{CE}=10\text{V}, I_C=1.0\text{A}, f=1.0\text{MHz}$ | 4.0 | - | 4.0 | - | 2.0 | - | MHz |
| t_r | $V_{CC}=30\text{V}, I_C=10\text{A}, I_{B1}=I_{B2}=1.0\text{A}$ | - | 0.4 | - | 0.4 | - | 1.0 | μs |
| t_s | $V_{CC}=30\text{V}, I_C=10\text{A}, I_{B1}=I_{B2}=1.0\text{A}$ | - | 1.5 | - | 1.5 | - | 2.0 | μs |
| t_f | $V_{CC}=30\text{V}, I_C=10\text{A}, I_{B1}=I_{B2}=1.0\text{A}$ | - | 0.6 | - | 0.6 | - | 1.0 | μs |

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

R0 (30-July 2012)

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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