

2N6050 2N6051 2N6052 PNP
 2N6057 2N6058 2N6059 NPN

**COMPLEMENTARY SILICON
 DARLINGTON POWER
 TRANSISTORS**



TO-3 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N6050, 2N6057 series types are complementary silicon Darlington power transistors, manufactured by the epitaxial base process, designed for high gain 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
 Power Dissipation
 Operating and Storage Junction Temperature
 Thermal Resistance

| SYMBOL | 2N6050 | 2N6051 | 2N6052 | UNITS |
|----------------|--------|-------------|--------|--------------------|
| | 2N6057 | 2N6058 | 2N6059 | |
| V_{CBO} | 60 | 80 | 100 | V |
| V_{CEO} | 60 | 80 | 100 | V |
| V_{EBO} | | 5.0 | | V |
| I_C | | 12 | | A |
| I_{CM} | | 20 | | A |
| I_B | | 0.2 | | A |
| P_D | | 150 | | W |
| T_J, T_{stg} | | -65 to +200 | | $^\circ\text{C}$ |
| θ_{JC} | | 1.17 | | $^\circ\text{C/W}$ |

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

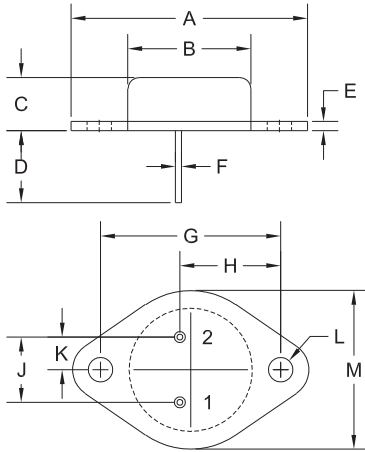
| SYMBOL | TEST CONDITIONS | MIN | MAX | UNITS |
|---------------|---|-----|-----|-------|
| I_{CEV} | $V_{CE}=\text{Rated } V_{CEO}, V_{EB}=1.5\text{V}$ | | 0.5 | mA |
| I_{CEV} | $V_{CE}=\text{Rated } V_{CEO}, V_{EB}=1.5\text{V}, T_C=150^\circ\text{C}$ | | 5.0 | mA |
| I_{CEO} | $V_{CE}=\frac{1}{2}\text{Rated } V_{CEO}$ | | 1.0 | mA |
| I_{EBO} | $V_{EB}=5.0\text{V}$ | | 2.0 | mA |
| BV_{CEO} | $I_C=100\text{mA}, (2\text{N}6050, 2\text{N}6057)$ | 60 | | V |
| BV_{CEO} | $I_C=100\text{mA}, (2\text{N}6051, 2\text{N}6058)$ | 80 | | V |
| BV_{CEO} | $I_C=100\text{mA}, (2\text{N}6052, 2\text{N}6059)$ | 100 | | V |
| $V_{CE(SAT)}$ | $I_C=6.0\text{A}, I_B=24\text{mA}$ | | 2.0 | V |
| $V_{CE(SAT)}$ | $I_C=12\text{A}, I_B=120\text{mA}$ | | 3.0 | V |
| $V_{BE(SAT)}$ | $I_C=12\text{A}, I_B=120\text{mA}$ | | 4.0 | V |
| $V_{BE(ON)}$ | $V_{CE}=3.0\text{V}, I_C=6.0\text{A}$ | | 2.8 | V |
| h_{FE} | $V_{CE}=3.0\text{V}, I_C=6.0\text{A}$ | 750 | 18K | |
| h_{FE} | $V_{CE}=3.0\text{V}, I_C=12\text{A}$ | 100 | | |
| h_{fe} | $V_{CE}=3.0\text{V}, I_C=5.0\text{A}, f=1.0\text{kHz}$ | 300 | | |
| f_T | $V_{CE}=3.0\text{V}, I_C=5.0\text{A}, f=1.0\text{MHz}$ | 4.0 | | MHz |
| C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$ (PNP types) | | 500 | pF |
| C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$ (NPN types) | | 300 | pF |

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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 (18-September 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

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

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