

MPSA12  
MPSA13  
MPSA14

**SILICON  
NPN DARLINGTON TRANSISTORS**



**TO-92 CASE**



[www.centralemi.com](http://www.centralemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR MPSA12 series devices are silicon NPN Darlington transistors, manufactured by the epitaxial planar process, designed for applications requiring extremely high gain.

**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 |
| Thermal Resistance                         |

| SYMBOL         | MPSA12 | MPSA13      | MPSA14 | UNITS              |
|----------------|--------|-------------|--------|--------------------|
| $V_{CBO}$      | -      | 30          | 30     | V                  |
| $V_{CES}$      | 20     | 30          | 30     | V                  |
| $V_{EBO}$      |        | 10          |        | V                  |
| $I_C$          |        | 500         |        | mA                 |
| $P_D$          |        | 625         |        | mW                 |
| $T_J, T_{stg}$ |        | -65 to +150 |        | $^\circ\text{C}$   |
| $\Theta_{JA}$  |        | 200         |        | $^\circ\text{C/W}$ |

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

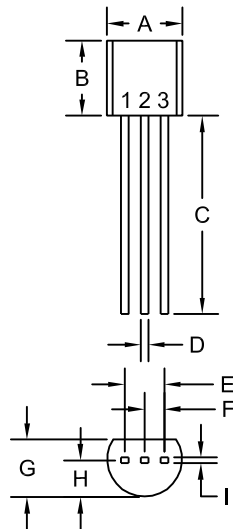
| SYMBOL        | TEST CONDITIONS                                        | MPSA12 |     | MPSA13 |     | MPSA14 |     | UNITS |
|---------------|--------------------------------------------------------|--------|-----|--------|-----|--------|-----|-------|
|               |                                                        | MIN    | MAX | MIN    | MAX | MIN    | MAX |       |
| $I_{CBO}$     | $V_{CB}=15\text{V}$                                    | -      | 100 | -      | -   | -      | -   | nA    |
| $I_{CBO}$     | $V_{CB}=30\text{V}$                                    | -      | -   | -      | 100 | -      | 100 | nA    |
| $I_{CES}$     | $V_{CE}=15\text{V}$                                    | -      | 100 | -      | -   | -      | -   | nA    |
| $I_{EBO}$     | $V_{EB}=10\text{V}$                                    | -      | 100 | -      | 100 | -      | 100 | nA    |
| $BV_{CES}$    | $I_C=100\mu\text{A}$                                   | 20     | -   | 30     | -   | 30     | -   | V     |
| $V_{CE(SAT)}$ | $I_C=10\text{mA}, I_B=10\mu\text{A}$                   | -      | 1.0 | -      | -   | -      | -   | V     |
| $V_{CE(SAT)}$ | $I_C=100\text{mA}, I_B=100\mu\text{A}$                 | -      | -   | -      | 1.5 | -      | 1.5 | V     |
| $V_{BE(ON)}$  | $V_{CE}=5.0\text{V}, I_B=10\text{mA}$                  | -      | 1.4 | -      | -   | -      | -   | V     |
| $V_{BE(ON)}$  | $V_{CE}=5.0\text{V}, I_B=100\text{mA}$                 | -      | -   | -      | 2.0 | -      | 2.0 | V     |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=10\text{mA}$                  | 20K    | -   | 5K     | -   | 10K    | -   |       |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=100\text{mA}$                 | -      | -   | 10K    | -   | 20K    | -   |       |
| $f_T$         | $V_{CE}=5.0\text{V}, I_C=10\text{mA}, f=100\text{MHz}$ | -      | -   | 125    | -   | 125    | -   | MHz   |

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#### TO-92 CASE - MECHANICAL OUTLINE



| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| 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

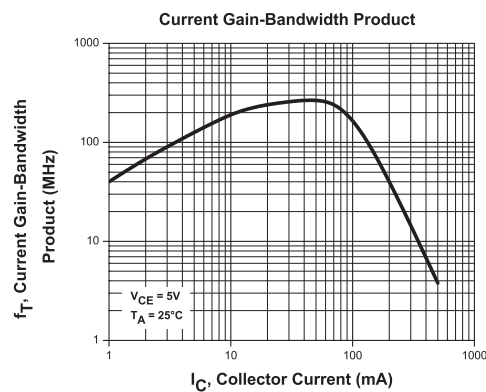
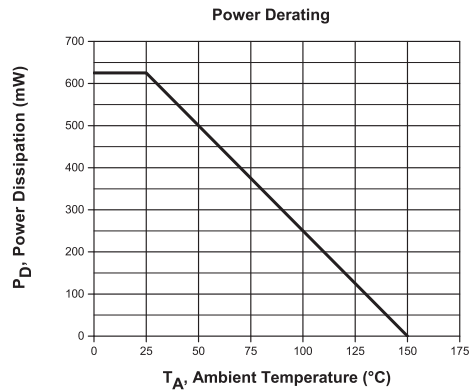
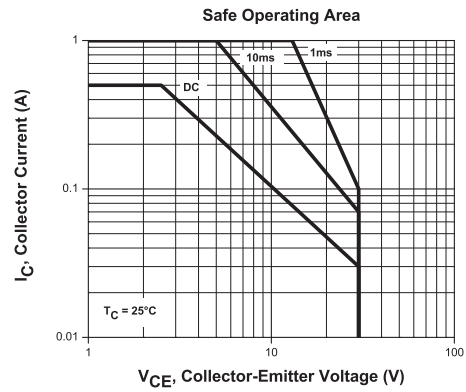
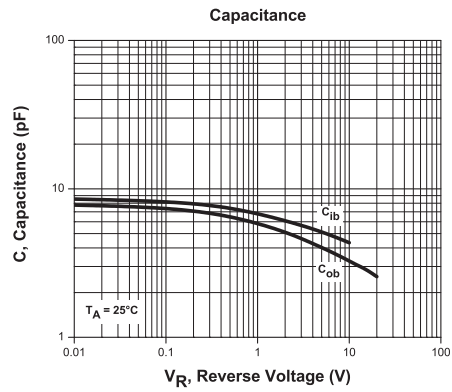
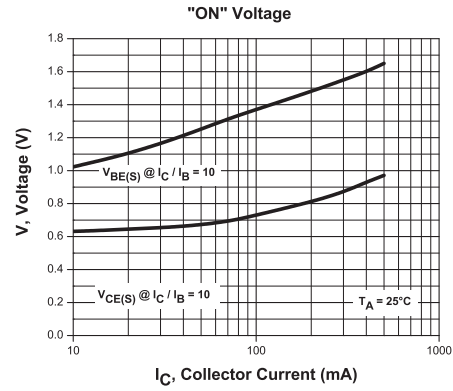
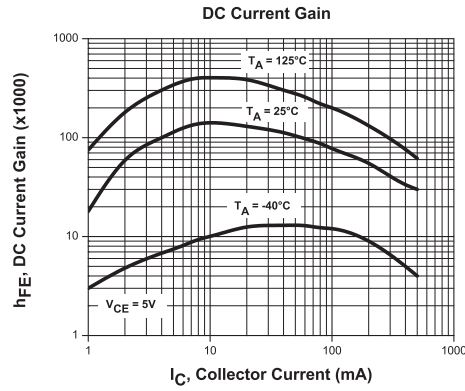
R1 (18-March 2014)

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## TYPICAL ELECTRICAL CHARACTERISTICS



R1 (18-March 2014)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### 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

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### DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2<sup>nd</sup> 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

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### 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).

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### CONTACT US

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