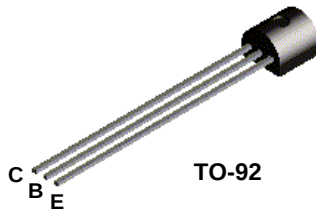


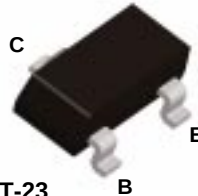


## MPSA65

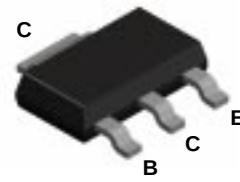


TO-92

## MMBTA65

SOT-23  
Mark: 2W

## PZTA65



SOT-223

## PNP Darlington Transistor

This device is designed for applications requiring extremely high current gain at currents to 800 mA. Sourced from Process 61. See MPSA64 for characteristics.

### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

| Symbol                            | Parameter                                        | Value       | Units |
|-----------------------------------|--------------------------------------------------|-------------|-------|
| V <sub>CES</sub>                  | Collector-Emitter Voltage                        | 30          | V     |
| V <sub>CBO</sub>                  | Collector-Base Voltage                           | 30          | V     |
| V <sub>EBO</sub>                  | Emitter-Base Voltage                             | 10          | V     |
| I <sub>C</sub>                    | Collector Current - Continuous                   | 1.2         | A     |
| T <sub>J</sub> , T <sub>stg</sub> | Operating and Storage Junction Temperature Range | -55 to +150 | °C    |

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics

TA = 25°C unless otherwise noted

| Symbol           | Characteristic                                | Max        |            |              | Units       |
|------------------|-----------------------------------------------|------------|------------|--------------|-------------|
|                  |                                               | MPSA65     | *MMBTA65   | **PZTA65     |             |
| P <sub>D</sub>   | Total Device Dissipation<br>Derate above 25°C | 625<br>5.0 | 350<br>2.8 | 1,000<br>8.0 | mW<br>mW/°C |
| R <sub>θJC</sub> | Thermal Resistance, Junction to Case          | 83.3       |            |              | °C/W        |
| R <sub>θJA</sub> | Thermal Resistance, Junction to Ambient       | 200        | 357        | 125          | °C/W        |

\*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

\*\*Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.

# PNP Darlington Transistor

(continued)

## Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|--------|-----------|-----------------|-----|-----|-------|
|--------|-----------|-----------------|-----|-----|-------|

### OFF CHARACTERISTICS

|               |                                     |                            |    |     |    |
|---------------|-------------------------------------|----------------------------|----|-----|----|
| $V_{(BR)CES}$ | Collector-Emitter Breakdown Voltage | $I_C = 100 \mu A, I_B = 0$ | 30 |     | V  |
| $I_{CBO}$     | Collector-Cutoff Current            | $V_{CB} = 30 V, I_E = 0$   |    | 100 | nA |
| $I_{EBO}$     | Emitter-Cutoff Current              | $V_{EB} = 8.0 V, I_C = 0$  |    | 100 | nA |

### ON CHARACTERISTICS\*

|               |                                      |                                                                 |                  |     |   |
|---------------|--------------------------------------|-----------------------------------------------------------------|------------------|-----|---|
| $h_{FE}$      | DC Current Gain                      | $I_C = 10 mA, V_{CE} = 5.0 V$<br>$I_C = 100 mA, V_{CE} = 5.0 V$ | 50,000<br>20,000 |     |   |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 100 mA, I_B = 0.1 mA$                                    |                  | 1.5 | V |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $I_C = 100 mA, V_{CE} = 5.0 V$                                  |                  | 2.0 | V |

### SMALL SIGNAL CHARACTERISTICS

|       |                                  |                                                 |     |  |     |
|-------|----------------------------------|-------------------------------------------------|-----|--|-----|
| $f_T$ | Current Gain - Bandwidth Product | $I_C = 10 mA, V_{CE} = 5.0 V,$<br>$f = 100 MHz$ | 100 |  | MHz |
|-------|----------------------------------|-------------------------------------------------|-----|--|-----|

\*Pulse Test: Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2.0\%$

MPSA65 / MMBTA65 / PZTA65

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| Bottomless <sup>™</sup>          | GlobalOptoisolator <sup>™</sup> | QFET <sup>™</sup>               | TinyLogic <sup>™</sup> |
| CoolFET <sup>™</sup>             | GTO <sup>™</sup>                | QS <sup>™</sup>                 | UHC <sup>™</sup>       |
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### Definition of Terms

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|--------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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