



**Discrete POWER & Signal Technologies**

## TIS93



### PNP General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 500 mA. Sourced from Process 63. See PN2907A for characteristics.

#### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

| Symbol                            | Parameter  | Value       | Units |
|-----------------------------------|--|-------------|-------|
| V <sub>CEO</sub>                  | Collector-Emitter Voltage                        | 40          | V     |
| V <sub>CBO</sub>                  | Collector-Base Voltage                           | 40          | V     |
| V <sub>EBO</sub>                  | Emitter-Base Voltage                             | 5.0         | V     |
| I <sub>C</sub>                    | Collector Current - Continuous                   | 800         | mA    |
| 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 |
|------------------|---|-------|-------|
|                  |   | TIS93 |       |
| P <sub>D</sub>   | Total Device Dissipation<br>Derate above 25°C | 625   | mW    |
|                  |   | 5.0   | 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   | °C/W  |



## PNP General Purpose Amplifier

(continued)

TIS93

### Electrical Characteristics

TA = 25°C unless otherwise noted

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

#### OFF CHARACTERISTICS

|               |                                      |                                   |     |     |    |
|---------------|--------------------------------------|-----------------------------------|-----|-----|----|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C = 10 \text{ mA}, I_B = 0$    | 40  |     | V  |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage     | $I_C = 100 \mu\text{A}, I_E = 0$  | 40  |     | V  |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage       | $I_E = 100 \mu\text{A}, I_C = 0$  | 5.0 |     | V  |
| $I_{CBO}$     | Collector Cutoff Current             | $V_{CB} = 20 \text{ V}, I_E = 0$  |     | 100 | nA |
| $I_{EBO}$     | Emitter Cutoff Current               | $V_{EB} = 3.0 \text{ V}, I_C = 0$ |     | 100 | nA |

#### ON CHARACTERISTICS\*

|               |                                      |   |     |      |   |
|---------------|--------------------------------------|---|-----|------|---|
| $h_{FE}$      | DC Current Gain                      | $V_{CE} = 2.0 \text{ V}, I_C = 50 \text{ mA}$ | 100 | 300  |   |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$   |     | 0.25 | V |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $V_{CE} = 2.0 \text{ V}, I_C = 50 \text{ mA}$ | 0.6 | 1.0  | V |

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