

# LINEAR SYSTEMS

Linear Integrated Systems

## IT124

### SUPER-BETA MONOLITHIC DUAL NPN TRANSISTORS

#### FEATURES

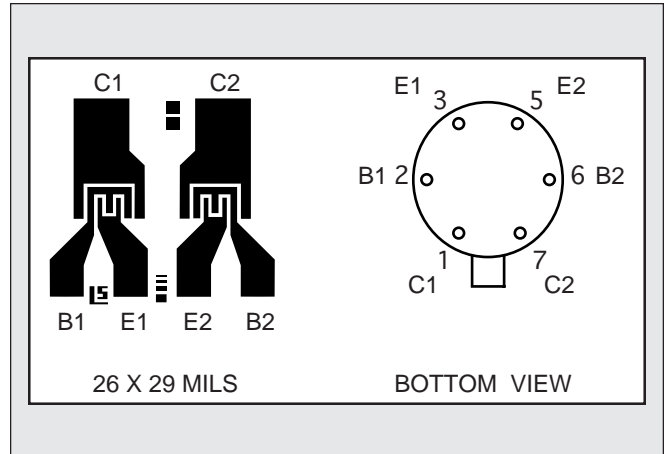
Direct Replacement for Intersil IT124

Pin for Pin Compatible

#### ABSOLUTE MAXIMUM RATINGS NOTE 1

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

|                                  |                   |                   |
|----------------------------------|-------------------|-------------------|
| $I_C$                            | Collector-Current | 10mA              |
| <b>Maximum Temperatures</b>      |                   |                   |
| Storage Temperature Range        |                   | -65°C to +200°C   |
| Operating Junction Temperature   |                   | +150°C            |
| <b>Maximum Power Dissipation</b> |                   |                   |
|                                  | <b>ONE SIDE</b>   | <b>BOTH SIDES</b> |
| Device Dissipation @ Free Air    | 250mW             | 500mW             |
| Linear Derating Factor           | 2.3mW/°C          | 4.3mW/°C          |



#### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

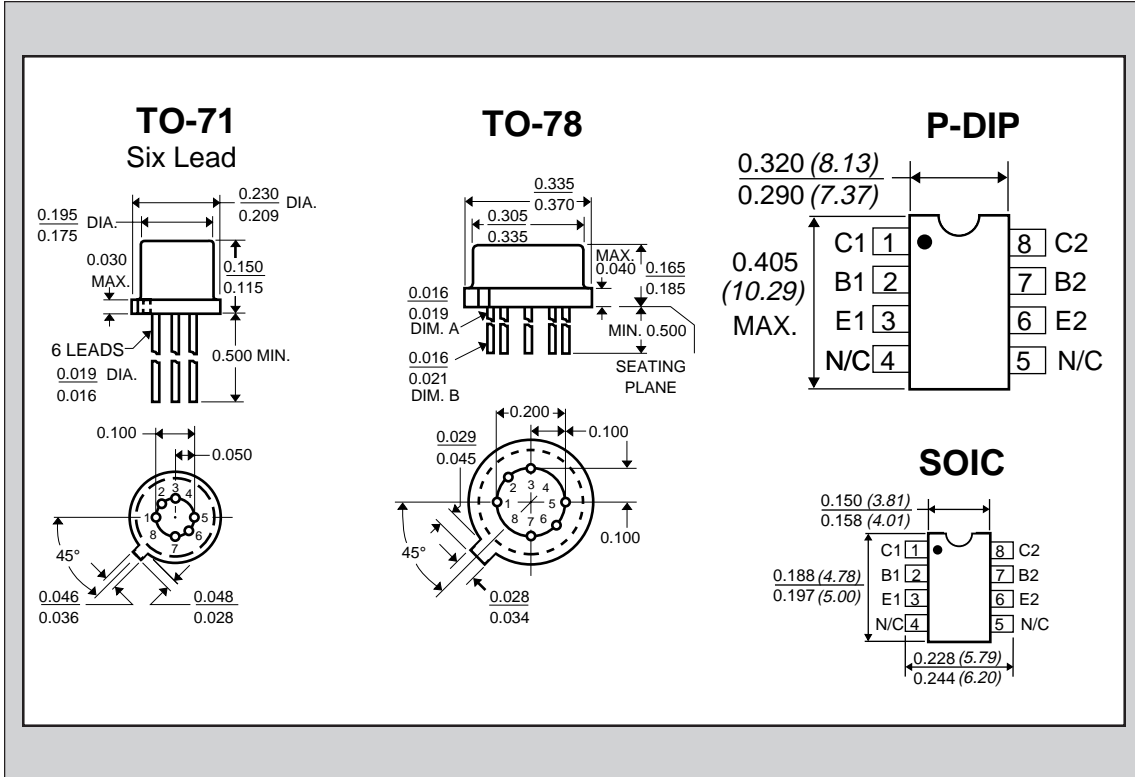
| SYMBOL        | CHARACTERISTICS                        | IT124 |      | UNITS | CONDITIONS  |
|---------------|--|-------|------|-------|---|
| $BV_{CBO}$    | Collector-Base Breakdown Voltage       | 2     | MIN. | V     | $I_C = 10\mu\text{A}$ $I_E = 0$   |
| $BV_{CEO}$    | Collector to Emitter Voltage           | 2     | MIN. | V     | $I_C = 10\mu\text{A}$ $I_B = 0$   |
| $BV_{EBO}$    | Emitter-Base Breakdown Voltage         | 6.2   | MIN. | V     | $I_E = 10\mu\text{A}$ $I_C = 0$ NOTE 2  |
| $BV_{CCO}$    | Collector to Collector Voltage         | 100   | MIN. | V     | $I_C = 10\mu\text{A}$ $I_E = 0$   |
| $h_{FE}$      | DC Current Gain                        | 1500  | MIN. |       | $I_C = 1\mu\text{A}$ $V_{CE} = 1\text{V}$   |
| $h_{FE}$      | DC Current Gain                        | 1500  | MIN. |       | $I_C = 10\mu\text{A}$ $V_{CE} = 1\text{V}$  |
| $V_{CE(SAT)}$ | Collector Saturation Voltage           | 0.5   | MAX. | V     | $I_C = 1\text{mA}$ $I_B = 0.1\text{mA}$   |
| $I_{CBO}$     | Collector Cutoff Current               | 100   | MAX. | pA    | $I_E = 0$ $V_{CB} = 1\text{V}$  |
| $I_{EBO}$     | Emitter Cutoff Current                 | 100   | MAX. | pA    | $I_C = 0$ $V_{EB} = 3\text{V}$  |
| $C_{OBO}$     | Output Capacitance                     | 2     | MAX. | pF    | $I_E = 0$ $V_{CB} = 1\text{V}$  |
| $C_{C1C2}$    | Collector to Collector Capacitance     | 2     | MAX. | pF    | $V_{CC} = 0$  |
| $I_{C1C2}$    | Collector to Collector Leakage Current | 250   | MAX. | pA    | $V_{CC} = \pm 50\text{V}$   |
| $f_T$         | Current Gain Bandwidth Product         | 100   | MIN. | MHz   | $I_C = 100\mu\text{A}$ $V_{CE} = 1\text{V}$   |
| NF            | Narrow Band Noise Figure               | 3     | MAX. | dB    | $I_C = 10\mu\text{A}$ $V_{CE} = 3\text{V}$<br>$R_G = 10\text{K}\Omega$ $f = 1\text{KHz}$<br>$BW = 200\text{Hz}$ |

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**MATCHING CHARACTERISTICS @ 25°C** (unless otherwise noted)

| SYMBOL                               | CHARACTERISTICS   | IT124   |              | UNITS                                | CONDITIONS   |
|--------------------------------------|---|---------|--------------|--------------------------------------|--|
| $ V_{BE1} - V_{BE2} $                | Base Emitter Voltage Differential                         | 2<br>5  | TYP.<br>MAX. | mV<br>mV                             | $I_C = 10 \mu A$<br>$V_{CE} = 1V$  |
| $\Delta(V_{BE1} - V_{BE2})/\Delta T$ | Base Emitter Voltage Differential Change with Temperature | 5<br>15 | TYP.<br>MAX. | $\mu V/^\circ C$<br>$\mu V/^\circ C$ | $I_C = 10 \mu A$<br>$V_{CE} = 1V$<br>$T = -55^\circ C$ to $+125^\circ C$ |
| $ I_{B1} - I_{B2} $                  | Base Current Differential                                 | 0.6     | MAX.         | nA                                   | $I_C = 10 \mu A$<br>$V_{CE} = 1V$  |



**NOTES:**

1. These ratings are limiting values above which the serviceability of any semiconductor may be impaired.
2. The reverse base-to-emitter voltage must never exceed 6.2 volts; the reverse base-to-emitter current must never exceed 10  $\mu A$ .



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