

## Linear Systems replaces discontinued Intersil IT121

The IT121 is a monolithic pair of NPN transistors mounted in a single P-DIP package. The monolithic dual chip design reduces parasitics and gives better performance while ensuring extremely tight matching. The IT121 is a direct replacement for discontinued Intersil IT121.

The 8 Pin P-DIP provides ease of manufacturing, and the symmetrical pinout prevents improper orientation.

(See Packaging Information).

### IT121 Features:

- High  $h_{FE}$  at low current
- Tight matching
- Tight  $V_{BE}$  tracking
- Low Output Capacitance

### FEATURES

Direct Replacement for INTERSIL IT121

HIGH  $h_{FE}$  @ LOW CURRENT  $\geq 80$  @  $10\mu A$

OUTPUT CAPACITANCE  $\leq 2.0pF$

$V_{BE}$  tracking  $\leq 10mV/^{\circ}C$

**ABSOLUTE MAXIMUM RATINGS**<sup>1</sup>  
@  $25^{\circ}C$  (unless otherwise noted)

### Maximum Temperatures

Storage Temperature  $-65^{\circ}C$  to  $+200^{\circ}C$

Operating Junction Temperature  $-55^{\circ}C$  to  $+150^{\circ}C$

### Maximum Power Dissipation

Continuous Power Dissipation (One side) 250mW

Continuous Power Dissipation (Both sides) 500mW

Linear Derating factor (One side)  $2.3mW/^{\circ}C$

Linear Derating factor (Both sides)  $4.3mW/^{\circ}C$

### Maximum Currents

Collector Current 10mA

### MATCHING CHARACTERISTICS @ $25^{\circ}C$ (unless otherwise stated)

| SYMBOL                                   | CHARACTERISTIC  | MIN | TYP | MAX | UNITS             | CONDITIONS  |
|--|---|-----|-----|-----|-------------------|---|
| $ V_{BE1} - V_{BE2} $                    | Base Emitter Voltage Differential                         | --  | --  | 3   | mV                | $I_C = 10\mu A, V_{CE} = 5V$  |
| $\Delta (V_{BE1} - V_{BE2})  / \Delta T$ | Base Emitter Voltage Differential Change with Temperature | --  | --  | 10  | $\mu V/^{\circ}C$ | $I_C = 10\mu A, V_{CE} = 5V$<br>$T_A = -55^{\circ}C$ to $+125^{\circ}C$ |
| $ I_{B1} - I_{B2} $                      | Base Current Differential                                 | --  | --  | 25  | nA                | $I_C = 10\mu A, V_{CE} = 5V$  |

### ELECTRICAL CHARACTERISTICS @ $25^{\circ}C$ (unless otherwise noted)

| SYMBOL        | CHARACTERISTICS                        | MIN. | TYP. | MAX. | UNITS | CONDITIONS   |
|---------------|--|------|------|------|-------|--|
| $BV_{CBO}$    | Collector to Base Voltage              | 45   | --   | --   | V     | $I_C = 10\mu A, I_E = 0$   |
| $BV_{CEO}$    | Collector to Emitter Voltage           | 45   | --   | --   | V     | $I_C = 10\mu A, I_B = 0$   |
| $BV_{EBO}$    | Emitter-Base Breakdown Voltage         | 6.2  | --   | --   | V     | $I_E = 10\mu A, I_C = 0$   |
| $BV_{CCO}$    | Collector to Collector Voltage         | 60   | --   | --   | V     | $I_C = 10\mu A, I_E = 0$   |
| $h_{FE}$      | DC Current Gain                        | 80   | --   | --   |       | $I_C = 10\mu A, V_{CE} = 5V$   |
|               |  | 100  | --   | --   |       | $I_C = 1.0mA, V_{CE} = 5V$   |
| $V_{CE(SAT)}$ | Collector Saturation Voltage           | --   | --   | 0.5  | V     | $I_C = 0.5mA, I_B = 0.05mA$  |
| $I_{EBO}$     | Emitter Cutoff Current                 | --   | --   | 1    | nA    | $I_C = 0, V_{EB} = 3V$   |
| $I_{CBO}$     | Collector Cutoff Current               | --   | --   | 1    | nA    | $I_E = 0, V_{CB} = 45V$  |
| $C_{OBO}$     | Output Capacitance                     | --   | --   | 2    | pF    | $I_E = 0, V_{CB} = 5V$   |
| $C_{C1C2}$    | Collector to Collector Capacitance     | --   | --   | 2    | pF    | $V_{CC} = 0V$  |
| $I_{C1C2}$    | Collector to Collector Leakage Current | --   | --   | 10   | nA    | $V_{CC} = \pm 60V$   |
| $f_T$         | Current Gain Bandwidth Product         | 180  | --   | --   | MHz   | $I_C = 1mA, V_{CE} = 5V$   |
| NF            | Narrow Band Noise Figure               | --   | --   | 3    | dB    | $I_C = 100\mu A, V_{CE} = 5V, BW = 200Hz, R_G = 10K\Omega, f = 1KHz$ |

### Notes:

1. Absolute Maximum ratings are limiting values above which serviceability 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  $10\mu A$ .

### Available Packages:

IT121 in P-DIP  
IT121 available as bare die



Please contact Micross for full package and die dimensions:

Email: [chipcomponents@micross.com](mailto:chipcomponents@micross.com)  
Web: [www.micross.com/distribution.aspx](http://www.micross.com/distribution.aspx)

### P-DIP (Top View)

