

## Linear Systems replaces discontinued Intersil IT124

The LS124 is a monolithic pair of Super-Beta NPN transistors mounted in a single SOT-23 package. The monolithic dual chip design reduces parasitics and gives better performance while ensuring extremely tight matching. The LS124 is a direct replacement for discontinued Intersil IT124.

The 6 Pin SOT-23 provides ease of manufacturing, and a lower cost assembly option.

(See Packaging Information).

### LS124 Features:

- Very high gain
- Tight matching
- Low Output Capacitance

### FEATURES

Direct Replacement for INTERSIL LS124

HIGH GAIN  $h_{FE} \geq 1500 @ 1 \text{ AND } 10\mu\text{A}$

LOW OUTPUT CAPACITANCE  $\leq 2.0\text{pF}$

$V_{BE}$  tracking  $\leq 5.0\text{mV}/^\circ\text{C}$

**ABSOLUTE MAXIMUM RATINGS**<sup>1</sup>  
@ 25°C (unless otherwise noted)

### Maximum Temperatures

Storage Temperature -65°C to +200°C

Operating Junction Temperature -55°C to +150°C

### Maximum Power Dissipation

Continuous Power Dissipation (One side) 250mW

Continuous Power Dissipation (Both sides) 500mW

Linear Derating factor (One side) 2.3mW/°C

Linear Derating factor (Both sides) 4.3mW/°C

### Maximum Currents

Collector Current 10mA

### MATCHING CHARACTERISTICS @ 25°C (unless otherwise stated)

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

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

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

### Notes:

- Absolute Maximum ratings are limiting values above which serviceability may be impaired
- The reverse base-to-emitter voltage must never exceed 6.2 volts; the reverse base-to-emitter current must never exceed 10 $\mu\text{A}$ .

Available Packages:

LS124 in SOT-23  
LS124 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)

SOT-23 (Top View)

