

## Linear Systems replaces discontinued Intersil IT120

The LS120 is a monolithic pair of NPN transistors mounted in a single TO-78 package. The monolithic dual chip design reduces parasitics and gives better performance while ensuring extremely tight matching. The LS120 is a direct replacement for discontinued Intersil IT120.

The hermetically sealed TO-78 is well suited for hi-rel and harsh environment applications.

(See Packaging Information).

### LS120 Features:

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

### FEATURES

Direct Replacement for INTERSIL IT120

HIGH  $h_{FE}$  @ LOW CURRENT  $\geq 200 @ 10\mu A$

OUTPUT CAPACITANCE  $\leq 2.0pF$

$V_{BE}$  tracking  $\leq 5.0\mu V/^{\circ}C$

**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	mV	$I_C = 10\mu A, V_{CE} = 5V$
$\Delta (V_{BE1} - V_{BE2})  / \Delta T$	Base Emitter Voltage Differential Change with Temperature	--	--	5	$\mu V/^{\circ}C$	$I_C = 10\mu A, V_{CE} = 5V$ $T_A = -55^{\circ}C$ to $+125^{\circ}C$
$ I_{B1} - I_{B2} $	Base Current Differential	--	--	5	nA	$I_C = 10\mu A, V_{CE} = 5V$

### ELECTRICAL CHARACTERISTICS @ 25°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	$I_E = 10\mu A, I_C = 0^2$
$BV_{CCO}$	Collector to Collector Voltage	60	--	--	V	$I_C = 10\mu A, I_E = 0$
$h_{FE}$	DC Current Gain	200	--	--		$I_C = 10\mu A, V_{CE} = 5V$
		225	--	--		$I_C = 1.0mA, V_{CE} = 5V$
$V_{CE(SAT)}$	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	220	--	--	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:

LS120 in TO-78  
LS120 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)

TO-78 (Bottom View)

