

LINEAR SYSTEMS

Twenty-Five Years Of Quality Through Innovation

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

Maximum Temperatures

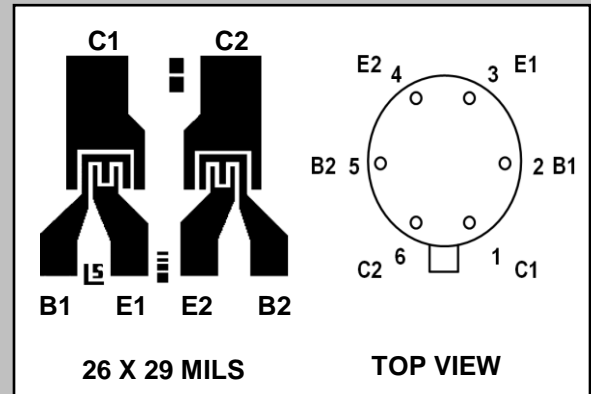
Storage Temperature Range -65°C to $+150^\circ\text{C}$

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

Maximum Power Dissipation **ONE SIDE** **BOTH SIDES**

Device Dissipation $T_A = 25^\circ\text{C}$ 250mW 500mW

Linear Derating Factor 2.3mW/ $^\circ\text{C}$ 4.3W/ $^\circ\text{C}$

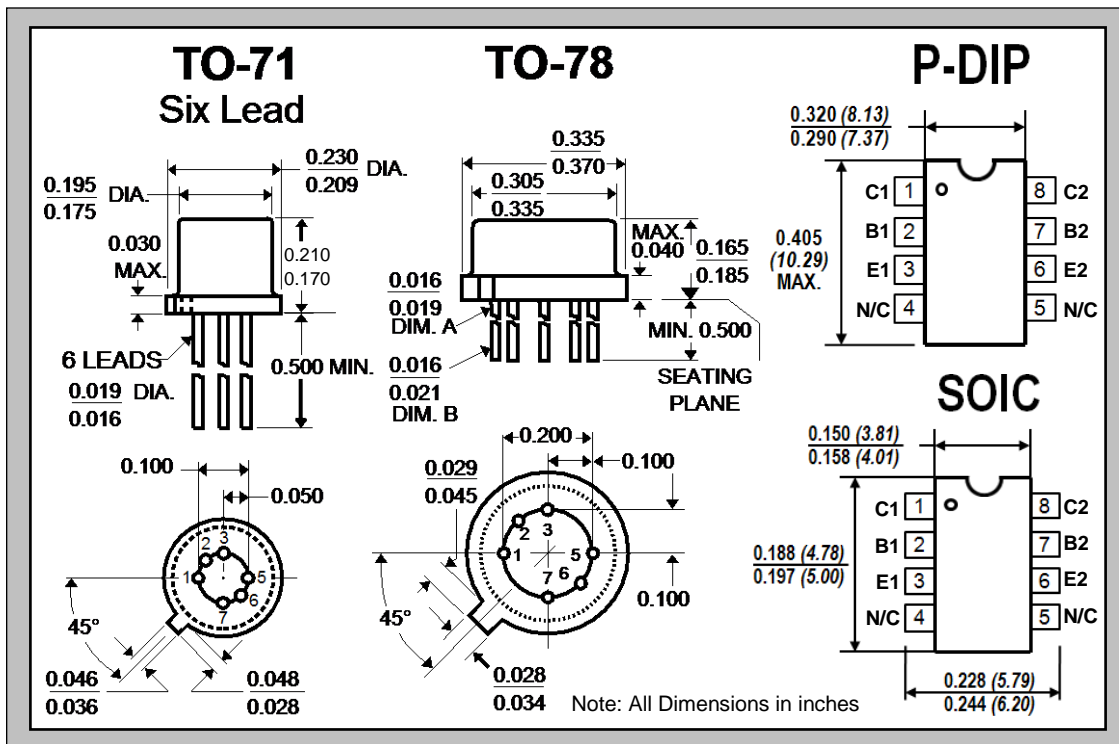


ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	IT124		UNITS	CONDITIONS
BV_{CBO}	Collector-Base Breakdown Voltage	2	MIN.	V	$I_C = 10\mu\text{A}$ $I_E = 0\text{A}$
BV_{CEO}	Collector to Emitter Voltage	2	MIN.	V	$I_C = 10\mu\text{A}$ $I_B = 0\text{A}$
BV_{EBO}	Emitter-Base Breakdown Voltage	6.2	MIN.	V	$I_E = 10\mu\text{A}$ $I_C = 0\text{A}$ NOTE 2
BV_{CCO}	Collector to Collector Voltage	50	MIN.	V	$I_{CCO} = 10\mu\text{A}$ $I_B = I_E = 0\text{A}$
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 ³	2	MAX.	pF	$I_E = 0$ $V_{CB} = 1\text{V}$
C_{C1C2}	Collector to Collector Capacitance ³	2	MAX.	pF	$V_{CC} = 0$
I_{C1C2}	Collector to Collector Leakage Current	± 500	MAX.	nA	$V_{CCO} = \pm 50\text{V}$ $I_B = I_E = 0\text{A}$
f_T	Current Gain Bandwidth Product ³	100	MIN.	MHz	$I_C = 100\mu\text{A}$ $V_{CE} = 1\text{V}$
NF	Narrow Band Noise Figure ³	3	MAX.	dB	$I_C = 10\mu\text{A}$ $V_{CE} = 3\text{V}$ $R_G = 10\text{K}\Omega$ $f = 1\text{KHz}$ $BW = 200\text{Hz}$

MATCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	IT124		UNITS	CONDITIONS
$ V_{BE1}-V_{BE2} $	Base Emitter Voltage Differential	2	TYP.	mV	$I_C = 10 \mu A$ $V_{CE} = 1V$
		5	MAX.	mV	
$\Delta V_{BE1}-V_{BE2} / \Delta T$	Base Emitter Voltage Differential Change with Temperature ³	5	TYP.	$\mu V/^\circ C$	$I_C = 10 \mu A$ $V_{CE} = 1V$ $T = -55^\circ C$ to $+125^\circ C$
		15	MAX.	$\mu V/^\circ C$	
$ I_{B1}-I_{B2} $	Base Current Differential	0.6	MAX.	nA	$I_C = 10 \mu A$ $V_{CE} = 1V$



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 μA .
3. Not a production test.

Linear Integrated Systems (LIS) is a 25-year-old, third-generation precision semiconductor company providing high-quality discrete components. Expertise brought to LIS is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company President John H. Hall. Hall, a protégé of Silicon Valley legend Dr. Jean Hoerni, was the director of IC Development at Union Carbide, co-founder and vice president of R&D at Intersil, and founder/president of Micro Power Systems.