

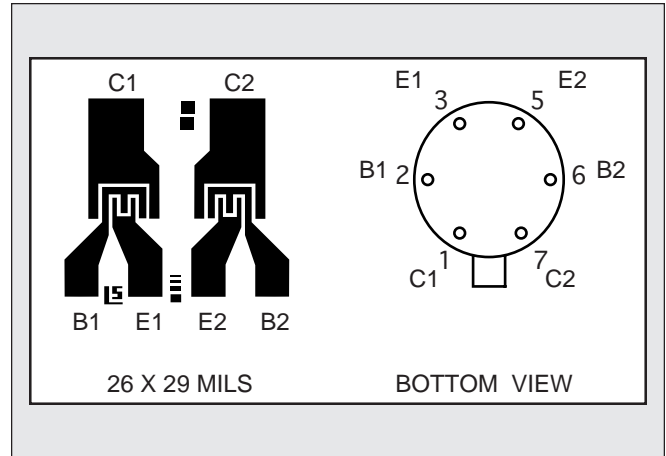
# LINEAR SYSTEMS

Linear Integrated Systems

## LS318

### LOG CONFORMANCE MONOLITHIC DUAL NPN TRANSISTORS

FEATURES		
LOG CONFORMANCE	$\Delta r_e = 1\Omega$ TYP.	
<b>ABSOLUTE MAXIMUM RATINGS</b> NOTE 1 @ 25°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)

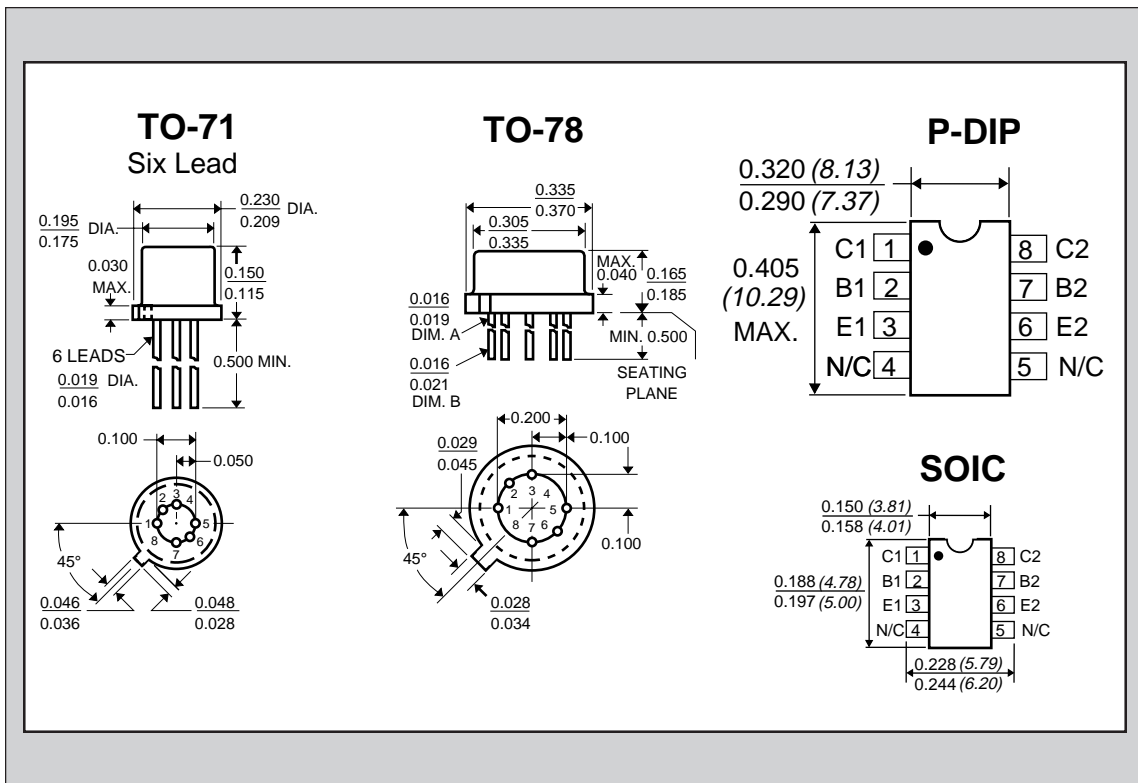
SYMBOL	CHARACTERISTICS	LS318		UNITS	CONDITIONS
$\Delta r_e$	Log Conformance	1.5	MAX.	$\Omega$	$I_C = 10-100-1000\mu A$ $V_{CE} = 5V$
$BV_{CBO}$	Collector-Base Breakdown Voltage	25	MIN.	V	$I_C = 10\mu A$ $I_E = 0$
$BV_{CEO}$	Collector to Emitter Voltage	25	MIN.	V	$I_C = 10\mu A$ $I_B = 0$
$BV_{EBO}$	Emitter-Base Breakdown Voltage	6.2	MIN.	V	$I_E = 10\mu A$ $I_C = 0$ NOTE 2
$BV_{CCO}$	Collector to Collector Voltage	45	MIN.	V	$I_C = 10\mu A$ $I_E = 0$
$h_{FE}$	DC Current Gain	150	MIN.		$I_C = 10\mu A$ $V_{CE} = 5V$
		600	MAX.		
$h_{FE}$	DC Current Gain	150	MIN.		$I_C = 100\mu A$ $V_{CE} = 5V$
		600	MAX.		
$h_{FE}$	DC Current Gain	150	MIN.		$I_C = 1mA$ $V_{CE} = 5V$
$V_{CE(SAT)}$	Collector Saturation Voltage	0.25	MAX.	V	$I_C = 1mA$ $I_B = 0.1mA$
$I_{CBO}$	Collector Cutoff Current	0.2	MAX.	nA	$I_E = 0$ $V_{CB} = 20V$
$I_{EBO}$	Emitter Cutoff Current	0.2	MAX.	nA	$I_C = 0$ $V_{EB} = 3V$
$C_{OBO}$	Output Capacitance	2	MAX.	pF	$I_E = 0$ $V_{CB} = 3V$
$C_{C1C2}$	Collector to Collector Capacitance	2	MAX.	pF	$V_{CC} = 0$
$I_{C1C2}$	Collector to Collector Leakage Current	0.5	MAX.	nA	$V_{CC} = \pm 45V$
$f_T$	Current Gain Bandwidth Product	200	MIN.	MHz	$I_C = 1mA$ $V_{CE} = 5V$
NF	Narrow Band Noise Figure	3	MAX.	dB	$I_C = 100\mu A$ $V_{CE} = 5V$ $BW = 200Hz$ $R_G = 10K\Omega$ $f = 1KHz$

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

SYMBOL	CHARACTERISTICS	LS318		UNITS	CONDITIONS
$ V_{BE1} - V_{BE2} $	Base Emitter Voltage Differential	0.4 1	TYP. MAX.	mV mV	$I_C = 10 \mu A$ $V_{CE} = 5V$
$\Delta(V_{BE1} - V_{BE2})/^\circ C$	Base Emitter Voltage Differential Change with Temperature	1 5	TYP. MAX.	$\mu V/^\circ C$	$I_C = 10 \mu A$ $V_{CE} = 5V$ $T_A = -55^\circ C$ to $+125^\circ C$
$ I_{B1} - I_{B2} $	Base Current Differential	10	MAX.	nA	$I_C = 10 \mu A$ $V_{CE} = 5V$
$ \Delta(I_{B1} - I_{B2})/^\circ C $	Base Current Differential Change with Temperature	0.5	MAX.	nA/°C	$I_C = 10 \mu A$ $V_{CE} = 5V$ $T_A = -55^\circ C$ to $+125^\circ C$
$h_{FE1}/h_{FE2}$	DC Current Gain Differential	5	TYP.	%	$I_C = 10 \mu A$ $V_{CE} = 5V$



**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  $\mu A$ .