LINEAR SYSTEMS

Improved Standard Products®

LS318

LOG CONFORMANCE MONOLITHIC DUAL NPN TRANSISTORS

FEATURES	
LOG CONFORMANCE	Δre =1 TYP.

ABSOLUTE MAXIMUM RATINGS NOTE 1 (T_A= 25°C unless otherwise noted)			
I_C	Collector-Current	10mA	
Maximum Temperatures			
Storage Temperature Range		-55°C to +150°C	
Operating Junction Temperature		-55°C to +150°C	
Maximum Power Dissipation		**ONE SIDE**	**BOTH SIDES**
Device Dissipation T_A=25°C		250mW	500mW
Linear Derating Factor		2.3mW/°C	4.3mW/°C

E2 5   3 E1

B2 6   2 B1

C2 7   1 C1

**TO 71 & TO 78
TOP VIEW**
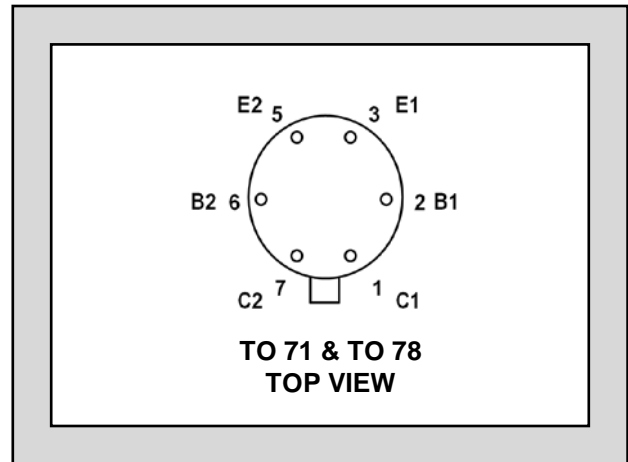
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	LS318		UNITS	CONDITIONS
Δre	Log Conformance	1.5	MAX.	Ω	I_C = 10-100-1000µA V_{CE} = 5V
BV_{CBO}	Collector-Base Breakdown Voltage	25	MIN.	V	I_C = 10µA I_E = 0A
BV_{CEO}	Collector to Emitter Voltage	25	MIN.	V	I_C = 100µA I_B = 0A
BV_{EBO}	Emitter-Base Breakdown Voltage	6.0	MIN.	V	I_E = 10µA I_C = 0A **NOTE 2**
BV_{CCO}	Collector to Collector Voltage	45	MIN.	V	I_C = 10µA $I_B = I_E$ =0A
h_{FE}	DC Current Gain	150	MIN.		I_C = 10µA V_{CE} = 5V
		600	MAX.		
h_{FE}	DC Current Gain	150	MIN.		I_C = 100µA 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 = 0.1 mA
I_{CBO}	Collector Cutoff Current	0.2	MAX.	nA	I_E = 0A V_{CB} = 20V
I_{EBO}	Emitter Cutoff Current	0.2	MAX.	nA	I_C = 0A V_{EB} = 3V
C_{OBO}	Output Capacitance	1.8		pF	I_E = 0A V_{CB} = 3V f=1MHz **NOTE 3**
C_{C1C2}	Collector to Collector Capacitance	1.8		pF	V_{CC} = 0V f=1MHz **NOTE 3**
I_{C1C2}	Collector to Collector Leakage Current	0.5	MAX.	µA	V_{CC} = ±45V $I_B = I_E$ = 0A
f_T	Current Gain Bandwidth Product	220		MHz	I_C = 1mA V_{CE} = 5V **NOTE 3**
NF	Narrow Band Noise Figure	3	MAX.	dB	I_C = 100µA V_{CE} = 5V **NOTE 3** BW = 200Hz, R_G = 10 K f=1KHz

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MATCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

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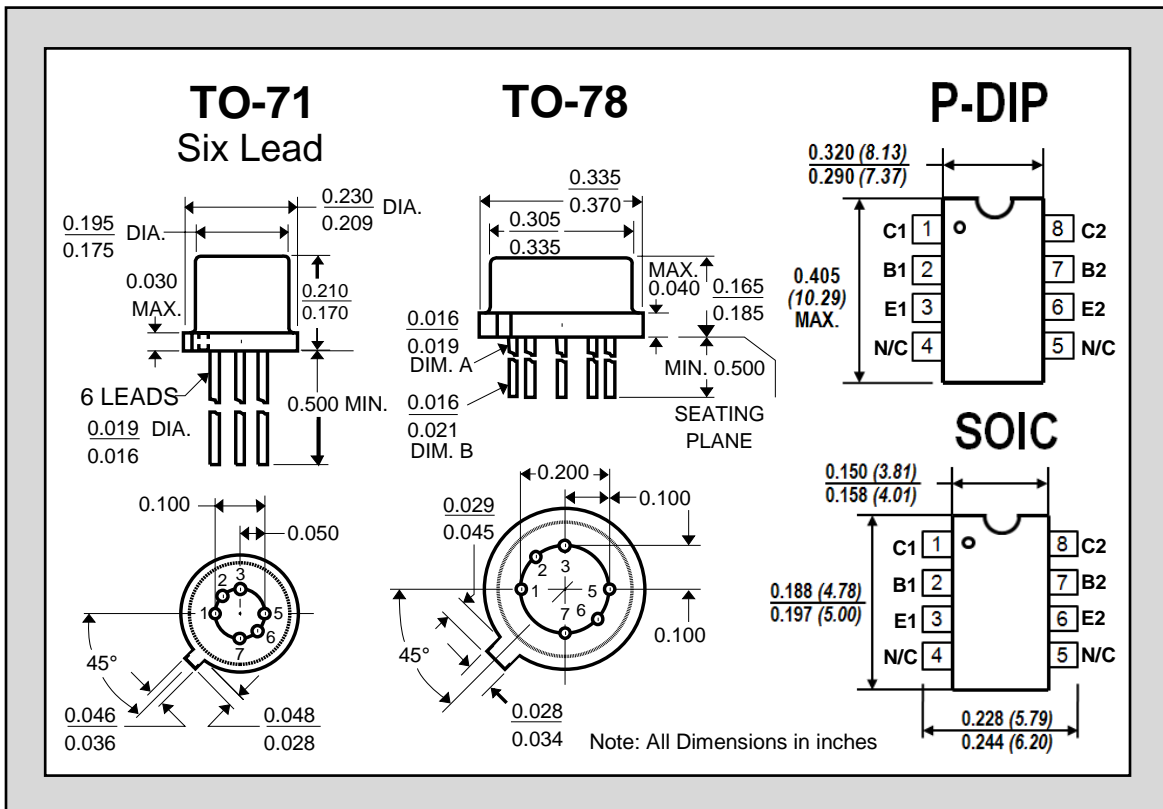
NOTES:

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 µA.
3. Not tested; guaranteed by design.
4. All MIN/TYP/MAX values are absolute numbers. Negative signs indicate electrical polarity only.

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