

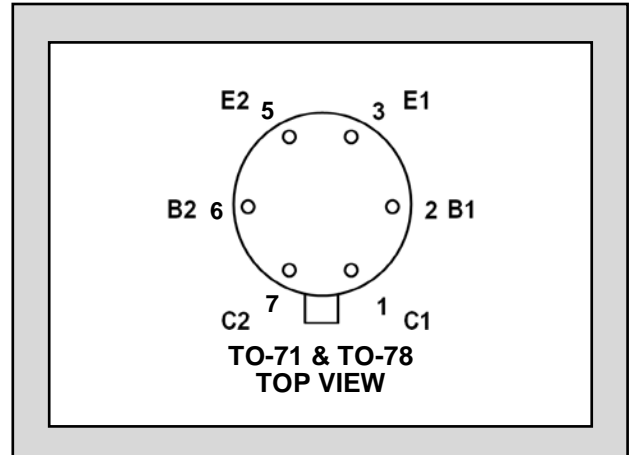
# LINEAR SYSTEMS

Improved Standard Products®

## LS358

LOG CONFORMANCE  
MONOLITHIC DUAL  
PNP TRANSISTORS

FEATURES		
LOG CONFORMANCE	$\Delta r_e \leq 1\Omega$ from ideal TYP.	
<b>ABSOLUTE MAXIMUM RATINGS NOTE 1</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)		
$I_C$	Collector-Current	-10mA
<b>Maximum Temperatures</b>		
Storage Temperature Range		-65°C to +150°C
Operating Junction Temperature		-55°C to +150°C
<b>Maximum Power Dissipation</b>		<b>ONE SIDE</b> <b>BOTH SIDES</b>
Device Dissipation $T_A = 25^\circ\text{C}$		250mW    500mW
Linear Derating Factor		2.3mW/°C    4.3mW/°C

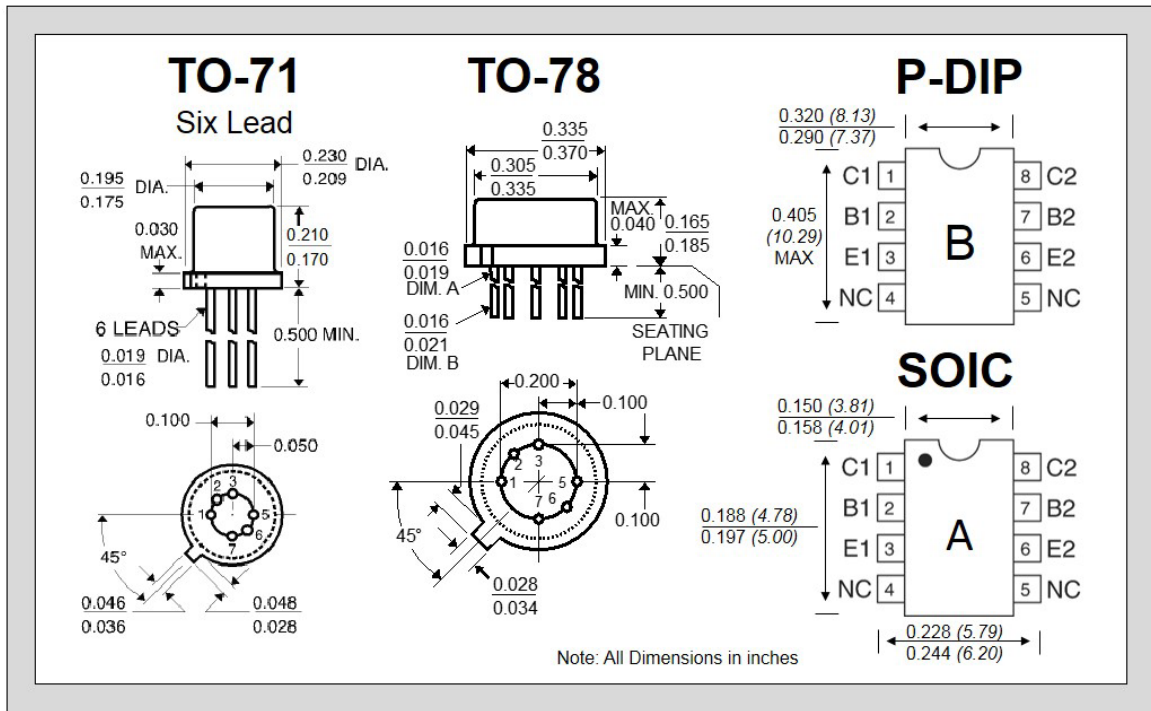


### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	LS358		UNITS	CONDITIONS
$\Delta r_e$	Log Conformance	1.5		$\Omega$	$I_C = -10-100-1000\mu\text{A}$ $V_{CE} = -5\text{V}$
$BV_{CBO}$	Collector-Base Breakdown Voltage	-20	MIN.	V	$I_C = -10\mu\text{A}$ $I_E = 0\text{A}$
$BV_{CEO}$	Collector to Emitter Voltage	-20	MIN.	V	$I_C = -1\text{mA}$ $I_B = 0\text{A}$
$BV_{EBO}$	Emitter-Base Breakdown Voltage	-6.0	MIN.	V	$I_E = -10\mu\text{A}$ $I_C = 0\text{A}$ <b>NOTE 2</b>
$BV_{CCO}$	Collector to Collector Voltage	45	MIN.	V	$I_C = \pm 10\mu\text{A}$ , $I_B = I_E = 0\text{A}$
$h_{FE}$	DC Current Gain	100 600	MIN. MAX.		$I_C = -10\mu\text{A}$ $V_{CE} = -5\text{V}$
$h_{FE}$	DC Current Gain	100 600	MIN. MAX.		$I_C = -100\mu\text{A}$ $V_{CE} = -5\text{V}$
$h_{FE}$	DC Current Gain	100	MIN.		$I_C = -1\text{mA}$ $V_{CE} = -5\text{V}$
$V_{CE(SAT)}$	Collector Saturation Voltage	-0.5	MAX.	V	$I_C = -1\text{mA}$ $I_B = -0.1\text{mA}$
$I_{CBO}$	Collector Cutoff Current	-0.2	MAX.	nA	$I_E = 0\text{A}$ $V_{CB} = -15\text{V}$
$I_{EBO}$	Emitter Cutoff Current	-0.2	MAX.	nA	$I_C = 0\text{A}$ $V_{EB} = -3\text{V}$
$C_{OBO}$	Output Capacitance <sup>4</sup>	2.0	MAX.	pF	$I_E = 0\text{A}$ $V_{CB} = -5\text{V}$
$C_{C1C2}$	Collector to Collector Capacitance <sup>4</sup>	2.0	MAX.	pF	$V_{CC} = 0\text{V}$
$I_{C1C2}$	Collector to Collector Leakage Current	$\pm 0.5$	MAX.	$\mu\text{A}$	$V_{CC} = \pm 45\text{V}$ $I_B = I_E = 0\text{A}$
$f_T$	Current Gain Bandwidth Product <sup>4</sup>	200	MIN.	MHz	$I_C = -1\text{mA}$ $V_{CE} = -5\text{V}$
NF	Narrow Band Noise Figure <sup>4</sup>	3.0	MAX.	dB	$I_C = -100\mu\text{A}$ $V_{CE} = -5\text{V}$ $BW = 200\text{Hz}$ $R_G = 10\text{K}\Omega$ $f = 1\text{KHz}$

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

SYMBOL	CHARACTERISTIC	LS358		UNITS	CONDITIONS
$ V_{BE1}-V_{BE2} $	Base Emitter Voltage Differential	0.4	TYP.	mV	$I_C = -10 \mu A$ $V_{CE} = -5V$
		1	MAX.	mV	
$\Delta  (V_{BE1}-V_{BE2}) /^\circ C$	Base Emitter Voltage Differential <sup>4</sup> Change with Temperature	1	TYP.	$\mu V/^\circ C$	$I_C = -10 \mu A$ $V_{CE} = -5V$ $T_A = -55^\circ C$ to $+125^\circ C$
$ I_{B1}-I_{B2} $	Base Current Differential	5	MAX.	nA	$I_C = -10 \mu A$ $V_{CE} = -5V$
$ \Delta (I_{B1}-I_{B2}) /^\circ C$	Base Current Differential <sup>4</sup> Change with Temperature	0.5	TYP.	nA/ $^\circ C$	$I_C = -10 \mu A$ $V_{CE} = -5V$ $T_A = -55^\circ C$ 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 6.0 volts; the reverse base-to-emitter current must never exceed 10  $\mu A$ .
3. All MIN/TYP/MAX Limits are absolute values. Negative signs indicate electrical polarity only.
4. Not tested; guaranteed by design.

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