LINEAR SYSTEMS

Linear Integrated Systems

LS312 (Marked LS31F)

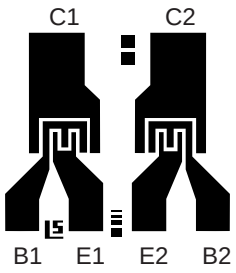
MONOLITHIC DUAL NPN TRANSISTORS

FEATURES	
VERY HIGH GAIN	h_{FE} ≥ 200 @ 10∝A-1mA
TIGHT V_{BE} MATCHING	$\|V_{BE1}-V_{BE2}\|$ = 0.2mV TYP.
HIGH f_T	250MHz TYP. @ 1mA

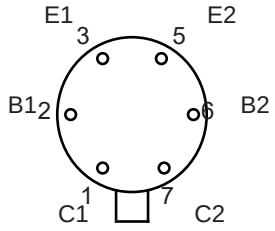
ABSOLUTE MAXIMUM RATINGS NOTE 1 @ 25°C (unless otherwise noted)		
I_C	Collector Current	10mA

Maximum Temperatures	
Storage Temperature	-65° to +200°C
Operating Junction Temperature	+150°C

Maximum Power Dissipation	ONE SIDE	BOTH SIDES
Device Dissipation @ Free Air	250mW	500mW
Linear Derating Factor	2.3mW/°C	4.3mW/°C



26 X 29 MILS



BOTTOM VIEW

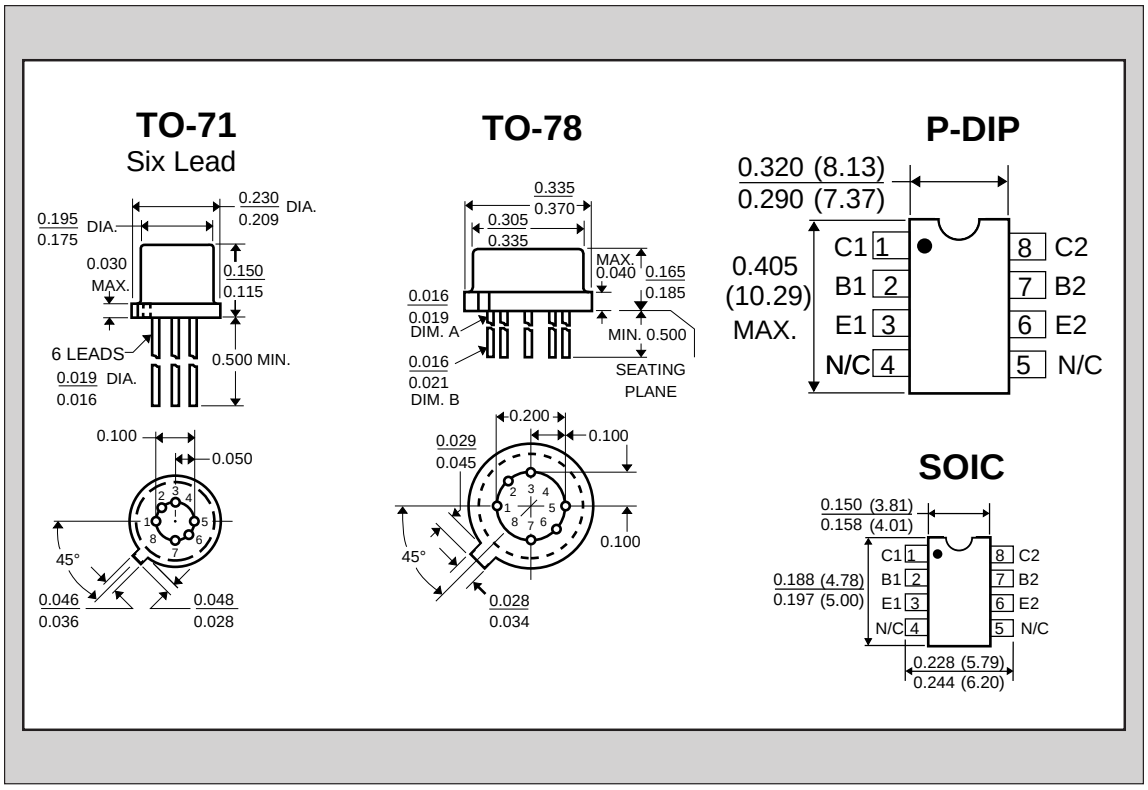
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS			LS312			UNITS	CONDITIONS
BV_{CBO}	Collector to Base Voltage			60		MIN.	V	I_C = 10∝A I_E = 0
BV_{CEO}	Collector to Emitter Voltage			60		MIN.	V	I_C = 10∝A I_B = 0
BV_{EBO}	Emitter-Base Breakdown Voltage			6.2		MIN.	V	I_E = 10∝A I_C = 0 NOTE 2
BV_{CCO}	Collector to Collector Voltage			100		MIN.	V	I_C = 10∝A I_E = 0
h_{FE}	DC Current Gain			200		MIN. MAX.		I_C = 10∝A V_{CE} = 5V
h_{FE}	DC Current Gain			200		MIN.		I_C = 100∝A V_{CE} = 5V
h_{FE}	DC Current Gain			200		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} = 30V
I_{EBO}	Emitter Cutoff Current			0.2		MAX.	nA	I_E = 0 V_{CB} = 3V
C_{OBO}	Output Capacitance			2		MAX.	pF	I_E = 0 V_{CB} = 5V
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} = +/-100V
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∝A V_{CE} = 5V BW = 200Hz, R_G = 10 KΩ f=1KHz

Linear Integrated Systems 4042 Clipper Court, Fremont, CA 94538 • TEL: (510) 490-9160 • FAX: (510) 353-0261

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS			LS312		MIN.	UNITS	CONDITIONS
$\lvert V_{BE1}-V_{BE2}\rvert$	Base Emitter Voltage Differential			0.2 0.5		TYP. MAX	mV mV.	I_C = 10 ∝A V_{CE} = 5V
$\Delta\lvert(V_{BE1}-V_{BE2})\rvert$/°C	Base Emitter Voltage Differential Change with Temperature			0.5 2		TYP. MAX.	∝V/°C	$_C$ = 10 ∝A V_{CE} = 5V T_A = -55°C to +125°C
$\lvert I_{B1}- I_{B2}\rvert$	Base Current Differential			 5		TYP. MAX.	nA nA	I_C = 10∝A V_{CE} = 5V
$\lvert\Delta(I_{B1}-I_{B2})\rvert$/°C	Base Current Differential Change With Temperature			0.3		MAX.	nA/°C	$_C$ = 10∝A V_{CE} = 5V T_A = -55°C to +125°C
h_{FE1}/h_{FE2}	Current Gain Differential			5		TYP.	%	I_C = 10∝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∝A.