Surface Mount

High IP3 Monolithic Amplifier

Broadband, 50&75 ohms 5 to 1000 MHz

HELA-10+
HELA-10

CASE STYLE: CM624

Model	Price	Qty.
HELA-10(+)	$15.95	(1-24)
HELA Kit (see table below)	$19.95	(1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Maximum Ratings

Heat Slug Temperature	110°C
Storage Temperature	-40°C to +125°C
DC Voltage	+13V
DC Power	7.15W

Pin Connections

RF IN 1,2	3,6
RF OUT 1,2	14,11
DC	10,15
GROUND	1,4,5,8,9,12,13,16
NO CONNECTION	2,7*

*Adding bias resistors may improve IP3, IP2.
See Application Notes:
Enhanced linearity in the HELA-10 Power Amplifier (AN60-009)

High IP3, wideband, balanced linear amplifier HELA-10 (AN60-0033)

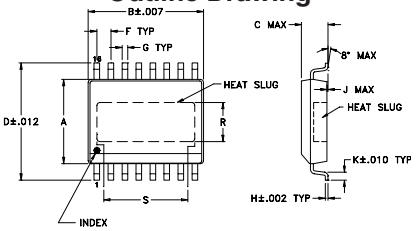
Features

- excellent flatness, ±0.4 dB typ.
- very high IP3, 49 dBm typ. at 150 MHz & 45 dBm typ. at 800 MHz
- very high IP2, 88 dBm typ.
- low noise figure, 3.5 dB typ.
- aqueous washable

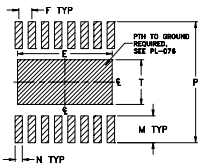
Applications

- Cellular
- Catv
- Instrumentation

Outline Drawing



PCB Land Pattern



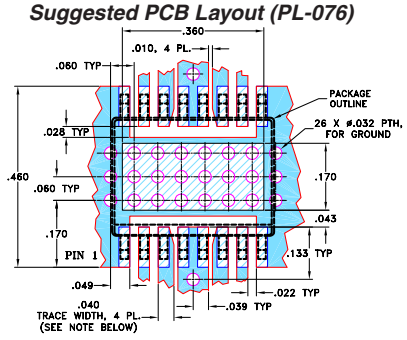
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J
.295	.405	.098	.406	.360	.050	.016	.008	.004
7.49	10.29	2.49	10.31	9.14	1.27	0.41	0.20	0.10

K	L	M	N	P	R	S	T	wt
.032	--	.102	.028	.460	.13	.34	.170	grams
0.81	--	2.59	0.71	11.68	3.30	8.64	4.32	0.67

Demo Board MCL P/N: TB-16,-17,-30,-45
Suggested PCB Layout (PL-076)



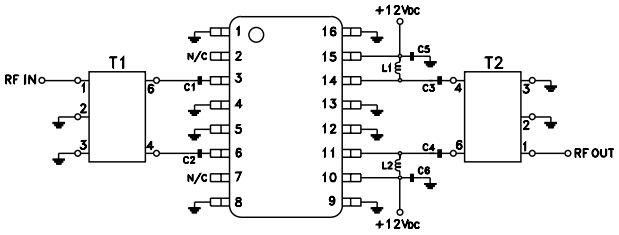
NOTE: 1.TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS 0.057" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Specifications at 25°C

KIT[1] NO.	FREQ. (MHz) f_L-f_U	OHMS	GAIN[2] (dB) Min.	Typ.	Max.	Typ. Flatness	MAXIMUM POWER (dBm) Output (1 dB Compr.) Typ.	Min.	Input[3] (no damage)	DYNAMIC RANGE NF (dB) Typ.	IP3 (dBm) Typ.	VSWR[4] (:1) IN Typ.	OUT Typ.	DC POWER Volt (V) Nom.	Current (mA) Max.	THERMAL RESISTANCE[5] θjc °C/W
HELA-10A(+)	50-1000	75	9.5	12	13	±0.4	30	26	20	3.5	47	1.22	1.22	12	525	6
HELA-10B(+)	50-1000	50	9.5	12	13	±0.4	30	26	20	3.5	47	1.22	1.22	12	525	6
HELA-10C(+)	5-450	75	9.3	11.4	12.5	±0.4	30	26	20	3.5	48	1.3	1.22	12	525	6
HELA-10D(+)	8-300	50	9.3	11	12.5	±0.4	30	26	20	3.5	48	1.2	1.2	12	525	6

1. Kit consists of HELA-10 plus transformers, see table below.
2. Includes transformer losses at input & output.
3. Open load is not recommended, potentially can cause damage. With no load, derate max. input power by 20 dB.
4. For 75 ohm. For 50 ohm, VSWR increases from 1.2:1 at 1 GHz to 2.0:1 at 50MHz.
5. Thermal resistance is from junction to heat slug. (mounting paddle).

Application Schematic Diagram



APPLICATION CIRCUIT	T1	T2	C1 TO C6	L1, L2	PCB LAYOUT	EVALUATION BOARD
A	ADTL1-18-75	ADTL1-18-75	0.01μF	0.75μH	B14-TB-30	TB-16
B	ADTL1-12	ADTL1-12	0.01μF	0.75μH	B14-TB-17	TB-17
C	ADT1-1WT	ADTL1-4-75	0.039μF	3.3μH	B14-TB-16	TB-30
D	ADT1.5-1	ADT1.5-1	0.039μF	3.3μH	B14-TB-17	TB-45

Assembly Guideline

Reflow solder the slug to the ground plane; PC board layouts for 75 ohm (B14-TB-16), (B14-TB-30), and for 50 ohm (B14-TB-17) are available upon request. Please contact Applications Department or consult our web site.

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. **2.** Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. **3.** The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp.

REV. L
M102713
HELA-10
A ED-6636T
B ED-6636T
C ED-7157/1
D ED-7491/2
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