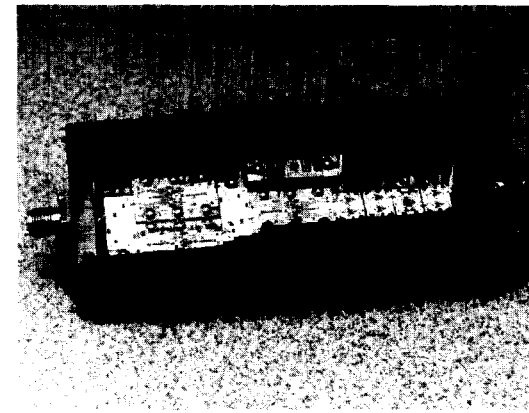
AVANTEK
A Subsidiary of Hewlett-Packard

APT Series: Thin-Film Wideband Power Amplifiers

Features

- GaAs FET and MIC Reliability For Military Applications
- Compact Designs Replace Bulky TWTs
- 2 Watts Of Power To 8 GHz
- 1 Watt Of Power To 18 GHz
- Octave And Straddle Band Frequency Ranges
- Welded Aluminum Hermetic Cases

APT Series – 2 to 18 GHz Wideband Thin-Film Power Amplifiers



Description

The Avantek APT Series, GaAs FET amplifiers provides linear power output levels (at 1 dB gain compression) of up to 2 watts in a wide range of microwave frequency bands. The compact and rugged thin-film MIC construction makes these amplifiers particularly well suited for the most demanding environments. Avantek's own GaAs FETs and MMICs are used to provide the high performance and reliability demanded by military applications.

Stable operation, regardless of source or load conditions, is the result of balanced module design used throughout the amplifier. Thorough characterization of cascadable amplifier modules makes custom gain and power needs readily achieveable.

All APT amplifiers feature internal temperature compensation, voltage regulation, and protection for both reverse and dual bias.

Typical Applications Include:

- Driver Amplifiers In ECM Transmitters and Expendables
- Output Amplifiers In Decoy Transmitters
- Driver Amplifiers In RF Distribution Newworks
- Augmentor Amplifiers In Target Drones
- Output Amplifiers In Test Equipment (ATE & AGE)

Military, Industrial And General Applications

Guaranteed Specifications at 0° to +50°C Case Temperature

Model	Frequency Response (GHz) Min.	Gain (dB) Min.	Gain (dB) Max.	Noise Figure (dB) Max.	Power Output for 1 dB Gain Comp. (dBm) Min.	Power Output (watts) Min.	Gain Flatness (±dB) Max	Typical Intercept Point for Third Order Intermod Products (dBm)	VSWR (50 ohms) Maximum In	VSWR (50 ohms) Maximum Out	Input Power Voltage (VDC±3%)	Input Power Typical Current (mA)	Case Type
APT-4063	2-4	28	38	4.5	+30	1.0	1.5	+37	2.0	2.0	+15[1]	900	IS6P[2]
APT-4064	2-4	39	49	4.5	+30	1.0	1.5	+37	2.0	2.0	+15[1]	1050	IS6P[2]
APT-4074	2-4	33	43	4.5	+33	2.0	1.5	+40	2.0	2.0	+15[1]	1800	IS6P[2]
APT-6065	2-6	35	45	5.5	+30	1.0	1.5	+37	2.0	2.0	+15[1]	1350	IC6[2]
APT-6077	2-6	40	50	6.0	+33	2.0	1.5	+40	2.0	2.0	+15[1]	2300	IC8[2]
APT-8255	2-8	30	40	6.0	+27	0.5	2.0	+34	2.0	2.0	+15[1]	800	IC6[2]
APT-8266	2-8	35	45	7.0	+30	1.0	2.0	+37	2.0	2.0	+15[1]	1300	IC8[2]
APT-8056	4-8	35	45	5.5	+29	0.8	1.5	+36	2.0	2.0	+15[1]	1500	IC8[2]
APT-8066	4-8	35	45	5.5	+30	1.0	1.5	+37	2.0	2.0	+15[1]	1500	IC8[2]
APT-8076	4-8	30	40	7.5	+33	2.0	1.5	+40	2.0	2.0	+15[1]	2500	IC7P[2]
APT-10555	4.5-10.5	34	44	5.0	+26	0.4	1.5	+33	2.0	2.0	+12[1]	800	IC6[2]
APT-10566	4.5-10.5	29	40	8.0	+30	1.0	2.0	+38	2.0	2.0	+15[1,3] and -15	2200 -100	ICD8[2]
APT-12057	6-12	35	45	6.0	+26	0.4	1.5	+33	2.0	2.0	+12[1]	1100	IX8[2]
APT-12066	6-12	28	39	8.0	+30	1.0	1.5	+37	2.0	2.0	+15	2500	IK7P[2]
APT-18646	6-18	20	30	10.0	+23	0.2	2.0	+30	2.0	2.0	+12[1]	1400	IX8[2]
APT-18649	6-18	35	45	8.0	+23	0.2	2.0	+30	2.0	2.0	+12[1]	900	IX10[2]
APT-18656	6-18	18	28	13.0	+27	0.5	2.0	+33	2.0	2.0	+12[1]	2300	IK7P[2]
APT-18659	6-18	36	46	8.5	+27	0.5	2.0	+33	2.0	2.0	+12[1]	2500	IK11P[2]
APT18-2722	6-18	22	32	9.0	+27	0.5	2.0	+34	2.0	2.0	+12	1720	IKC8
APT18-2730	6-18	30	40	8.0	+27	0.5	2.0	+34	2.0	2.0	+12	1750	IKC8
APT18-2735	6-18	35	45	8.0	+27	0.5	2.0	+34	2.0	2.0	+12	1775	IKC8
APT18-3026	6-18	26	37	13.0	+30	1.0	3.0	+36	2.0	2.0	+12	2900	IKC6P
APT18-3032	6-18	32	44	10.0	+30	1.0	3.0	+36	2.0	2.0	+12	2950	IKC8P
APT18-3038	6-18	38	51	10.0	+30	1.0	3.0	+36	2.0	2.0	+12	3025	IKC8P
APT-18615	6-18	26	37	13.0	+30	1.0	3.0	+33	2.0	2.0	+12[1] and -12	3400 -250	IKD6P
APT-18616	6-18	32	44	10.0	+30	1.0	3.0	+33	2.0	2.0	+12[1] and -12	3400 -250	IKD8P
APT-18617	6-18	38	51	10.0	+30	1.0	3.0	+33	2.0	2.0	+12[1] and -12	3400 -250	IKD8P

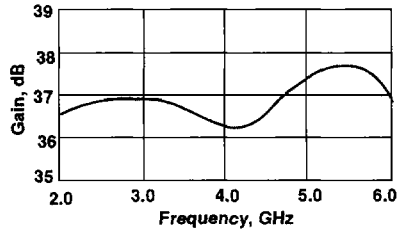
Maximum RF input: +20 dBm CW or + 30 dBm, 1 µsec, 1% duty cycle.

Notes:
1: Integral voltage regulator
2 SMA connector only
3: Contains internal gate/drain bias sequencing
4: Single +15v supply can be used instead of +15v and +12v dual supply
5: Power output saturated (dBm)

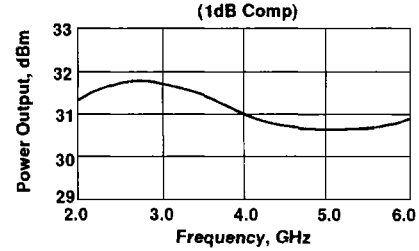
Performance Curves

Typical Performance @ 25°C Case Temperature

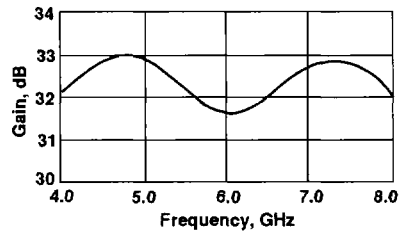
APT-6065 GAIN



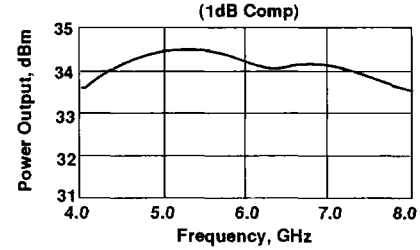
OUTPUT POWER (1dB Comp)



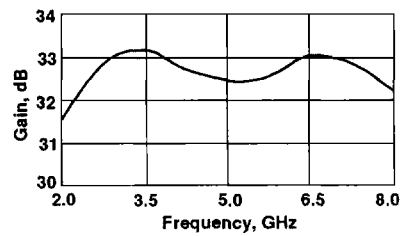
APT-8076 GAIN



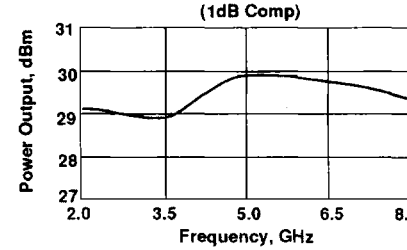
OUTPUT POWER (1dB Comp)



APT-8255 GAIN



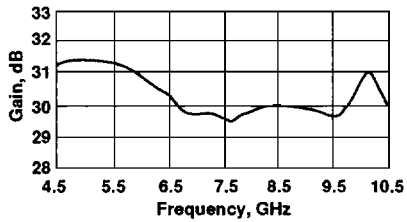
OUTPUT POWER (1dB Comp)



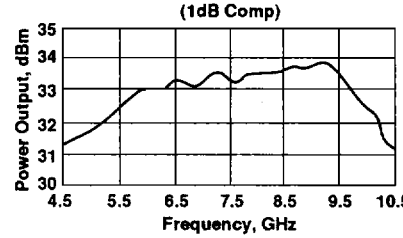
Performance Curves

Typical Performance @ 25°C Case Temperature

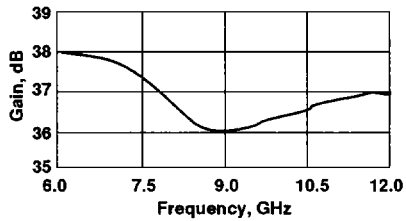
APT-10566 GAIN



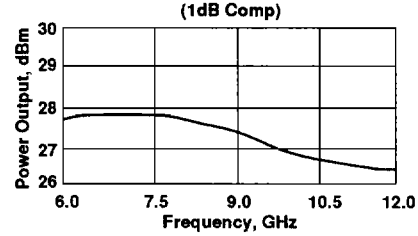
OUTPUT POWER (1dB Comp)



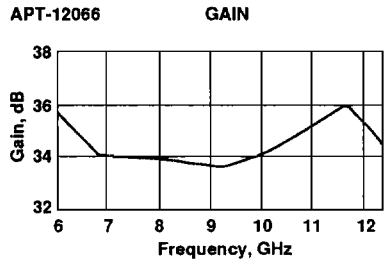
APT-12057 GAIN



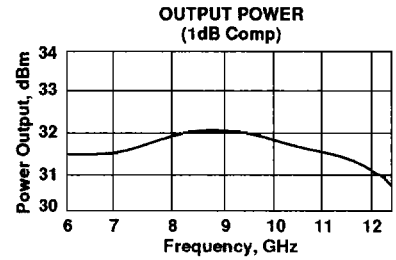
OUTPUT POWER (1dB Comp)



APT-12066 GAIN



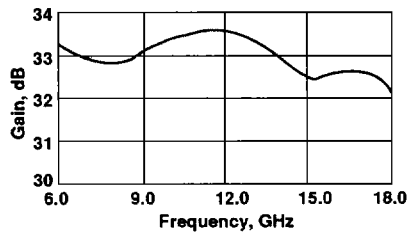
OUTPUT POWER (1dB Comp)



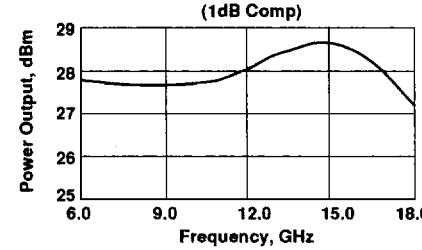
Performance Curves

Typical Performance @ 25°C Case Temperature

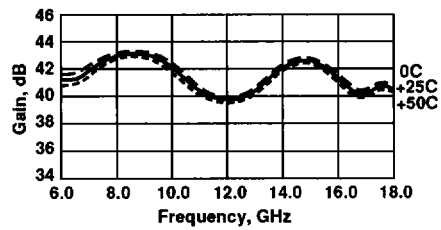
APT-18659 GAIN



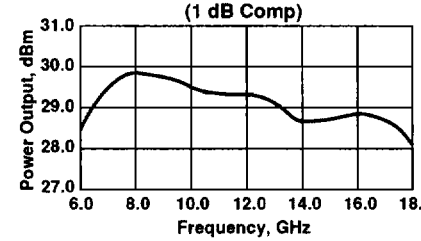
OUTPUT POWER (1dB Comp)



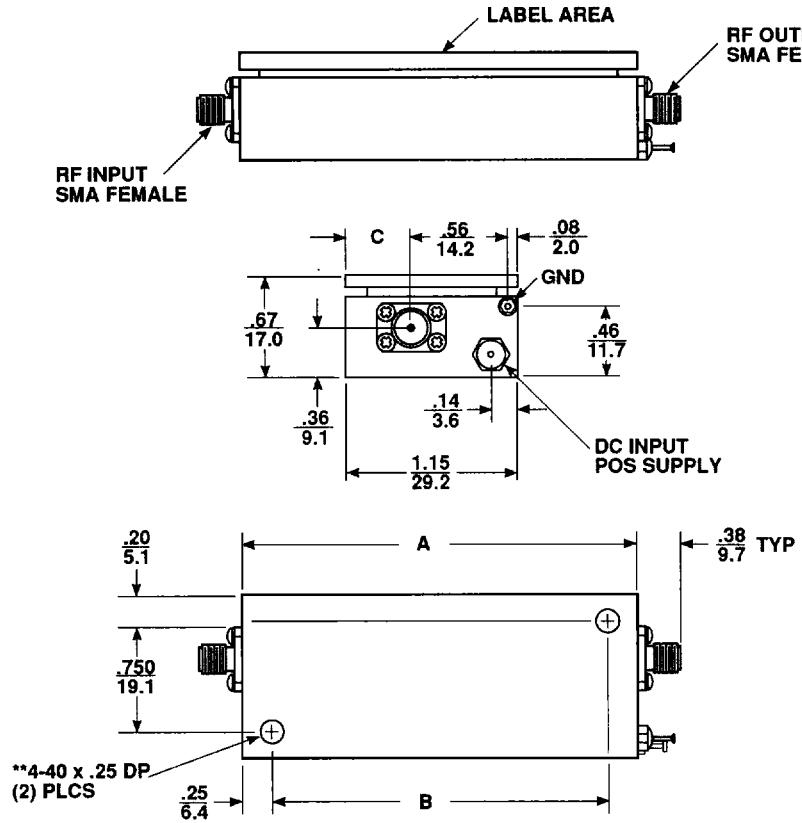
APT18-2735 GAIN



POWER OUTPUT (1 dB Comp)



Case Drawing
IC/IX Series



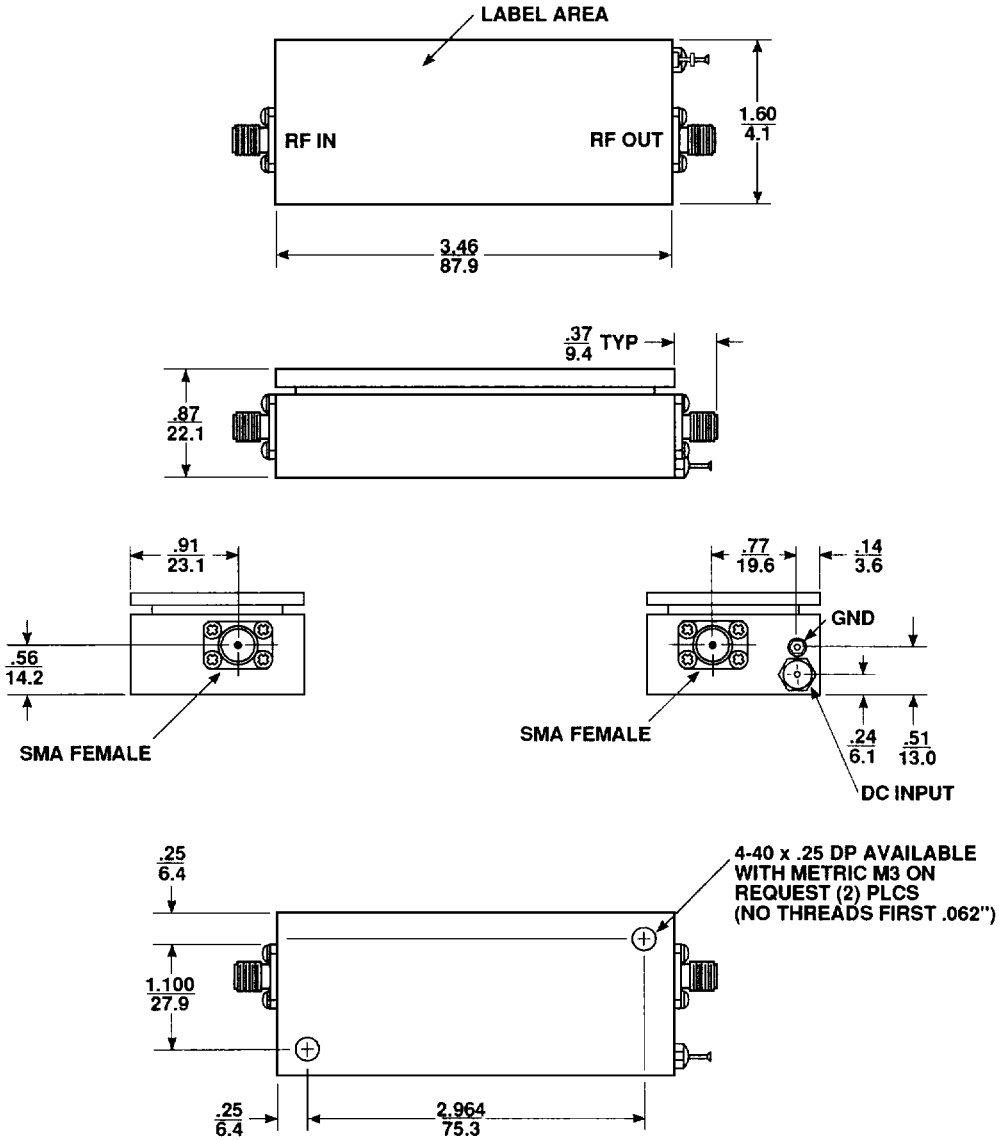
**AVAILABLE WITH METRIC THREAD M3 ON REQUEST.
NO THREADS FIRST .062"

CASE	DIMENSION						WEIGHT	
	A		B		C		OZ	GMS
	IN	MM	IN	MM	IN	MM	TYP	TYP
IC6	2.750	69.8	2.250	57.1	.465	11.8	4	114
IX8	2.750	69.8	2.250	57.1	.510	12.9	4	114
IX10	3.250	82.5	2.750	69.8	.510	12.9	4	114
IC8	3.417	86.8	2.917	74.1	.465	11.8	5	142

NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN $\frac{\text{INCHES}}{\text{MM}}$
2. TOLERANCES (INCHES): .XX ± .02
   .XXX ± .010
   ALL TOLERANCES BEFORE PAINT AND/OR LABELING

Case Drawing
IC7P

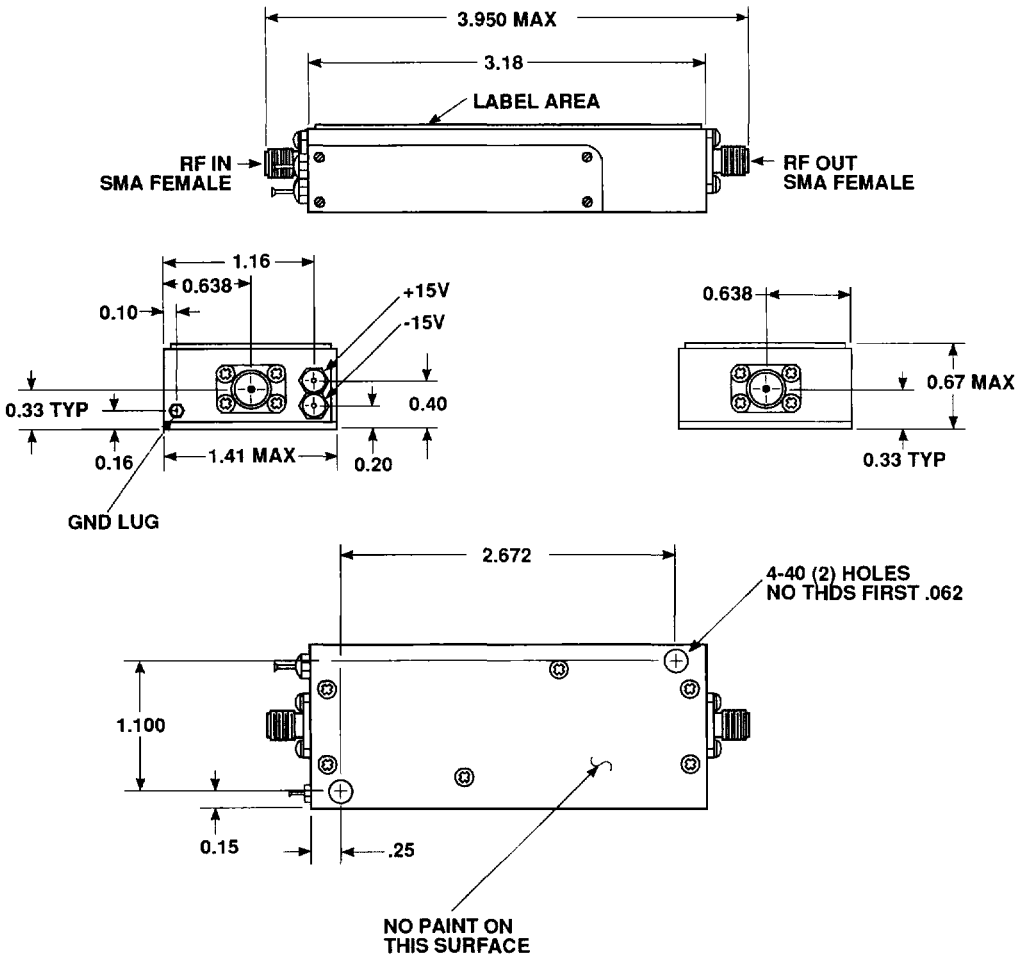


NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN $\frac{\text{INCHES}}{\text{MM}}$
2. TOLERANCES (INCHES): .XX ± .02
   .XXX ± .010

ALL TOLERANCES BEFORE PAINT AND/OR LABELING

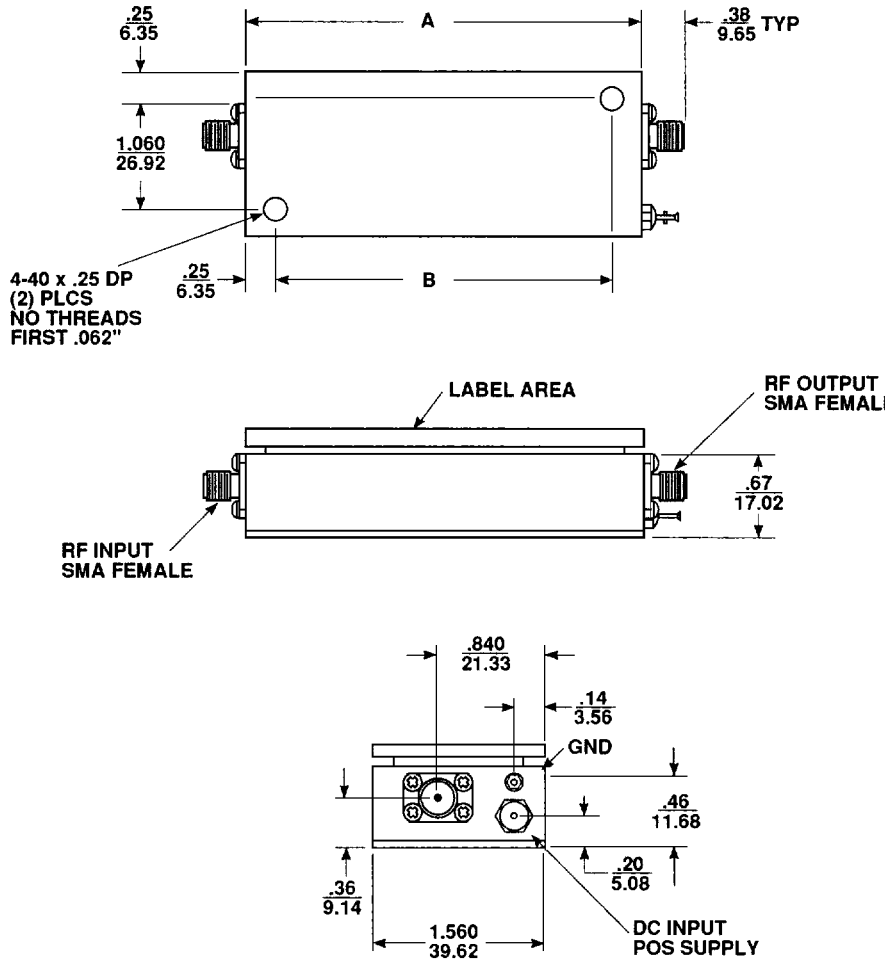
Case Drawing
ICD8



NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: .XX ± .02
   .XXX ± .010
   ALL TOLERANCES BEFORE PAINT AND/OR LABELING

Case Drawing
IK_P



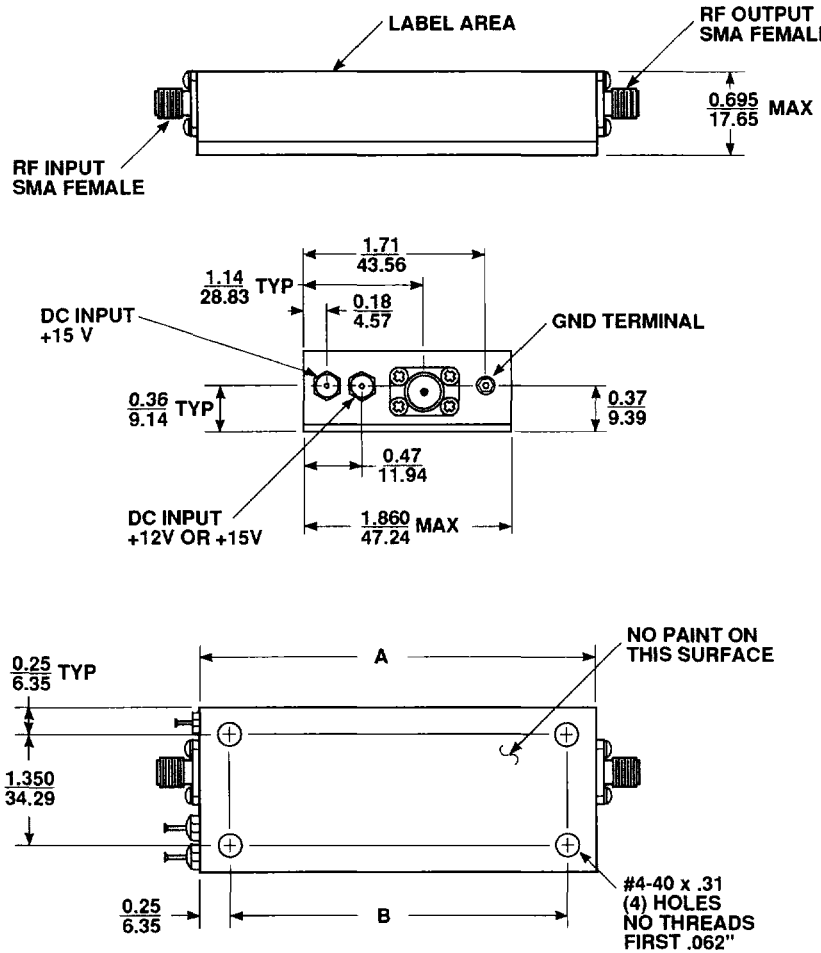
CASE	DIMENSION				WEIGHT	
	A		B		OZ	GMS
	IN	MM	IN	MM	TYP	TYP
IK7P	2.908	73.86	2.408	61.16	6	170
IK11P	3.908	99.26	3.408	86.56	7	199

NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN $\frac{\text{INCHES}}{\text{MM}}$
2. TOLERANCES (INCHES): .XX ± .02
   .XXX ± .010

ALL TOLERANCES BEFORE PAINT AND/OR LABELING

Case Drawing
IKD_P Series



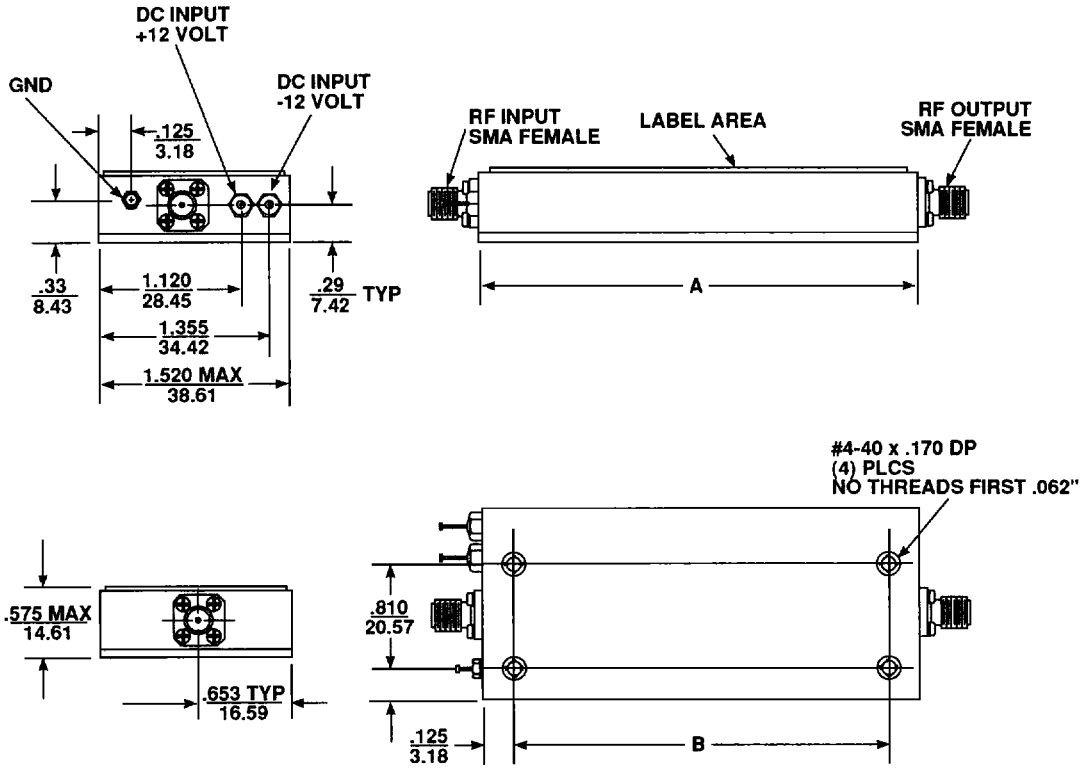
CASE	DIMENSION			
	A		B	
	IN	MM	IN	MM
IKD12P	3.920 MAX	99.57 MAX	3.408	86.56
IKD14P	4.420 MAX	112.27 MAX	3.908	99.26

NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN $\frac{\text{INCHES}}{\text{MM}}$
2. TOLERANCES (INCHES): .XX ± .02
   .XXX ± .010

ALL TOLERANCES BEFORE PAINT AND/OR LABELING

Case Drawing
IKD_P Series

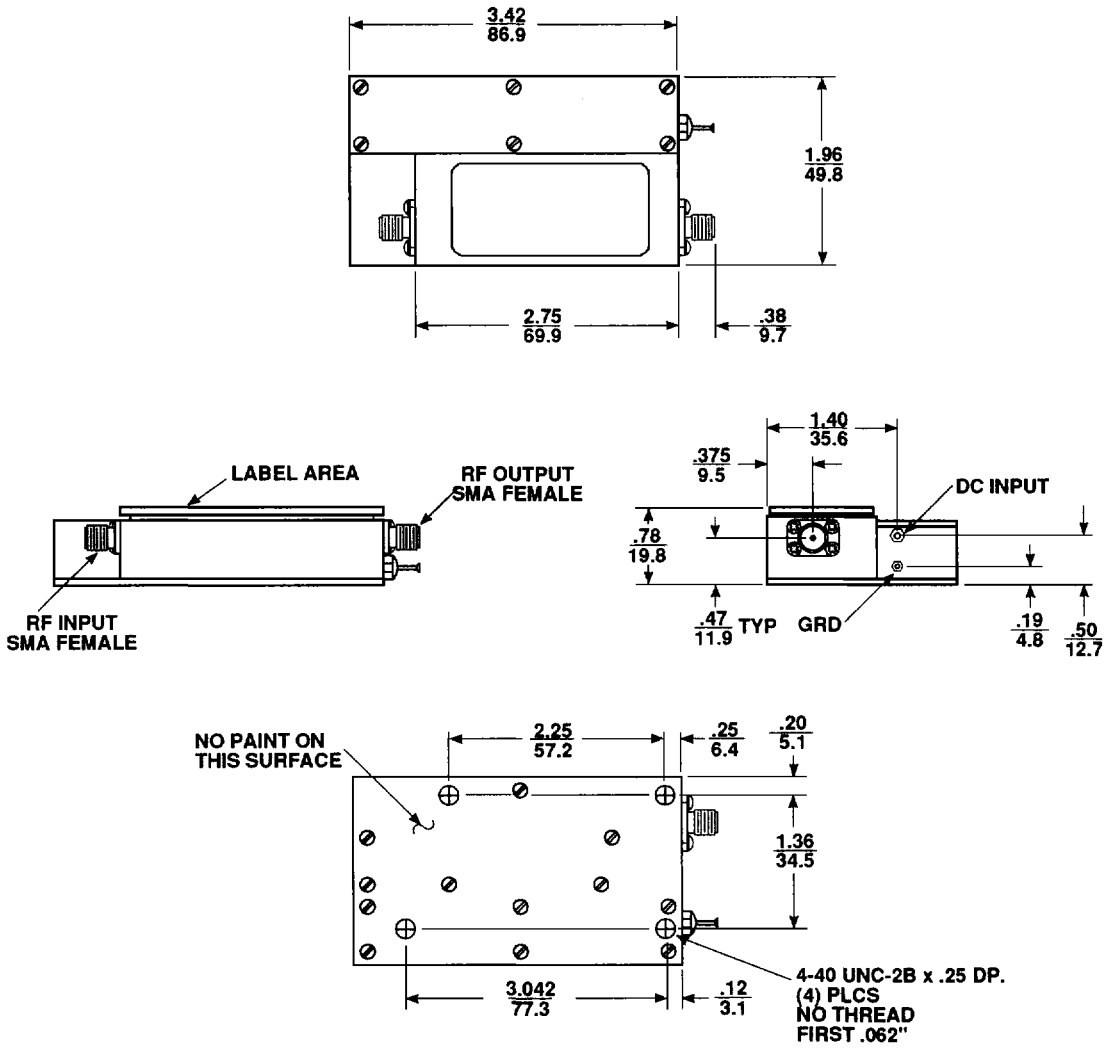


CASE	DIMENSION				WEIGHT	
	A		B		OZ	GMS
	IN (MAX)	MM	IN	MM	TYP	TYP
IKD6P	3.500	88.90	3.230	82.04	4.8	135
IKD8P	4.000	101.60	3.730	94.740	5.5	155

NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN $\frac{\text{INCHES}}{\text{MM}}$
2. TOLERANCES (INCHES): .XX ± .02
   .XXX ± .010
   ALL TOLERANCES BEFORE PAINT AND/OR LABELING

Case Drawing
IS6P Series



NOTES (UNLESS OTHERWISE SPECIFIED):

1. DIMENSIONS ARE SPECIFIED IN INCHES / MM
2. TOLERANCES (INCHES): .XX ± .02
   .XXX ± .010
   ALL TOLERANCES BEFORE PAINT AND/OR LABELING
3. WEIGHT: 6 OZ. (170 GMS.) TYP