

# Attenuator/Switch

SYAS-860

50Ω Bi-Phase 600 to 1000 MHz



CASE STYLE: TTT166

### Maximum Ratings

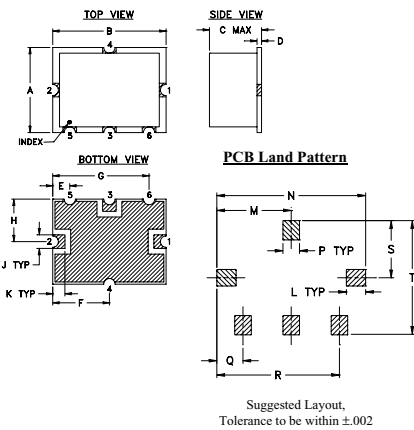
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Control Current	30mA

Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

INPUT	1
OUTPUT	2
CONTROL	3
GROUND	4,5,6

### Outline Drawing

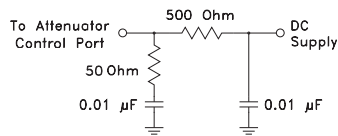


Suggested Layout, Tolerance to be within ±.002

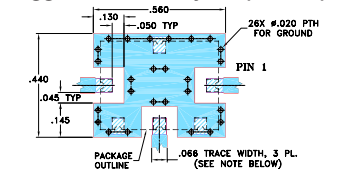
### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt.
.38	.50	.15	.020	.075	.250	.425	.187	.050	.050	.070	.270	.540	.060	.095	.445	.208	.415	grams
9.65	12.70	3.81	0.51	1.91	6.35	10.80	4.75	1.27	1.27	1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	0.8

### suggested control port biasing configuration



### Demo Board MCL P/N: TB-12 Suggested PCB Layout (PL-079)



- NOTE:
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  - IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
  - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.  
 ■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
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### Features

- wideband 600 to 1000 MHz

### Applications

- bi-phase modulator

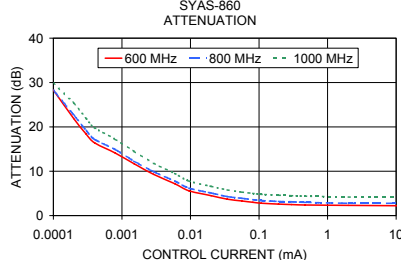
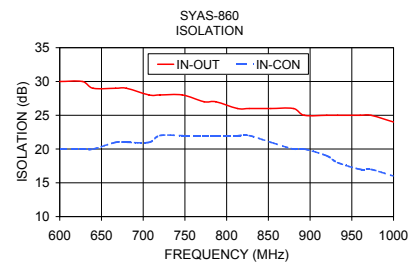
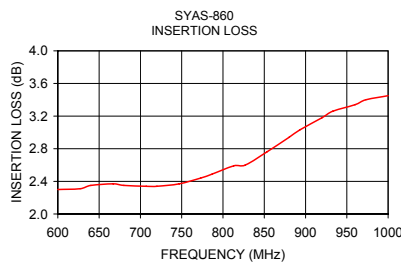
### Attenuator/Switch Electrical Specifications

FREQUENCY (MHz)	INSERTION LOSS (dB) ±20 mA	MAX. INPUT PWR (dBm) ±20 mA	IN-OUT ISOLATION (dB) 0 mA		BI-PHASE X̄ (±20 mA) Typ.	
			Typ.	Min.	Δ AMP (dB)	Phase (deg.) deviation from 180°
600-1000	DC-0.05	1 dB compr. no damage	25	18	0.5	4.0

Performance specifications apply for input power up to 10 dB below stated 1 dB compression.

### Typical Performance Data

Freq. (MHz)	I. Loss (dB) at 20mA	±Control ΔAMP (dB)	20mA ΔPhase (deg.)	Isolation (dB)		Input R. Loss (dB)	Control Current (mA)	Attenuation (dB)			Phase Δ ref at 15mA Ctrl			Input VSWR			
				(in-out)	(in-con)			600 MHz	800 MHz	1000 MHz	600 MHz	800 MHz	1000 MHz	600 MHz	800 MHz	1000 MHz	
600	2.30	0.015	0.07	182.1	30	20	10.8	0.0000	35.3	29.9	28.6	-60.9	-101.2	-133.3	2.9	2.3	3.1
627	2.31	0.013	0.06	182.4	30	20	11.2	0.0001	28.3	28.3	29.9	11.7	-34.3	-80.9	2.9	2.3	3.0
640	2.35	0.011	0.06	182.4	29	20	11.3	0.0002	21.8	22.6	25.3	14.5	-18.8	-51.0	2.7	2.2	2.9
667	2.37	0.007	0.06	182.6	29	21	11.4	0.0003	18.4	19.2	21.9	11.1	-16.0	-41.8	2.5	2.1	2.7
680	2.35	0.005	0.07	182.8	29	21	11.4	0.0004	16.4	17.2	19.8	9.9	-13.7	-36.0	2.4	2.0	2.6
707	2.34	0.005	0.08	182.7	28	21	11.2	0.0008	14.1	14.9	17.2	9.4	-10.4	-28.8	2.2	1.8	2.4
720	2.34	0.007	0.10	182.9	28	22	11.1	0.0015	11.7	12.3	14.5	8.8	-7.2	-21.8	1.9	1.7	2.3
747	2.37	0.008	0.13	183.0	28	22	10.7	0.0029	9.3	9.9	11.8	7.8	-4.8	-15.9	1.7	1.5	2.2
773	2.44	0.009	0.16	183.2	27	22	10.2	0.0059	7.2	7.8	9.5	6.1	-3.3	-11.3	1.4	1.4	2.2
787	2.49	0.011	0.19	183.2	27	22	10.0	0.0095	5.6	6.2	7.8	4.4	-2.3	-7.9	1.2	1.4	2.3
813	2.59	0.014	0.20	183.3	26	22	9.5	0.0200	4.5	5.1	6.6	3.1	-1.7	-5.1	1.2	1.5	2.6
827	2.60	0.018	0.24	183.6	26	22	9.2	0.0344	3.7	4.3	5.8	2.0	-1.2	-3.8	1.3	1.7	2.9
853	2.76	0.021	0.26	183.7	26	21	8.6	0.0559	3.3	3.9	5.3	1.3	-1.0	-2.7	1.4	1.8	3.2
880	2.94	0.032	0.33	183.8	26	20	8.1	0.0814	3.0	3.6	5.0	0.8	-0.9	-2.0	1.5	1.9	3.4
893	3.03	0.037	0.35	183.8	25	20	7.9	0.1072	2.8	3.4	4.8	0.7	-0.9	-1.7	1.5	1.9	3.6
920	3.18	0.040	0.40	183.9	25	19	7.4	0.1926	2.6	3.2	4.6	0.3	-0.7	-1.1	1.6	2.0	3.8
933	3.26	0.047	0.43	183.9	25	18	7.2	0.2959	2.5	3.1	4.5	0.1	-0.6	-0.8	1.6	2.1	3.9
960	3.34	0.049	0.48	183.8	25	17	6.7	0.4662	2.4	3.0	4.4	0.0	-0.5	-0.5	1.7	2.1	4.0
973	3.40	0.051	0.49	183.8	25	17	6.6	2.0106	2.3	2.8	4.2	0.0	-0.3	-0.2	1.7	2.2	4.2
1000	3.45	0.050	0.49	183.9	24	16	6.2	15.0980	2.2	2.8	4.1	0.0	-0.1	0.1	1.7	2.2	4.3



### electrical schematic

