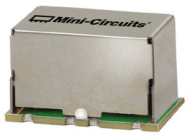
SURFACE MOUNT

Directional Coupler SYDC-25-92VHP+

50Ω 25 dB Coupling 120 to 870 MHz 75Watt

THE BIG DEAL

- High power, 75W max. with output load VSWR 1.4 max
- High power, 20W max. with output open or short
- Low mainline loss, 0.2 dB typ.
- Good VSWR, 1.2 typ.



Generic photo used for illustration purposes only

CASE STYLE: AH1647

+RoHS Compliant

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

APPLICATIONS

- Military mobile

PRODUCT OVERVIEW

Mini-Circuits' SYDC-25-92VHP+ surface mount directional coupler provides exceptionally high power handling up to 75W and low mainline loss of 0.2 dB for applications from 120 to 870 MHz. The coupler features core and wire construction mounted on an 8-lead printed laminate base with wraparound terminations for excellent solderability. The unit measures 0.43 x 0.69 x 0.41", accommodating dense circuit board layouts.

KEY FEATURES

Feature	Advantages
High power handling, 75W	Usable in many systems with high-power requirements
Low mainline loss, 0.2 dB typ.	Provides excellent through-path signal power transmission
Small size, 0.43 x 0.69 x 0.41"	Provides high power capability while saving space in systems with tight layouts

REV. A
ECO-010123
SYDC-25-92VHP+
WP/CP/AM
211014

Directional Coupler SYDC-25-92VHP+

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Condition (MHz)	Min.	Typ.	Max.	Unit
Frequency Range	—	120	—	870	MHz
Mainline Loss (above theoretical 0.04 dB)	120	—	0.2	0.5	dB
	500	—	0.2	0.4	
	870	—	0.3	0.5	
Coupling	120-870	—	25	—	dB
	120	—	26.1	—	
	500	—	25.1	—	
	870	—	23.9	—	
Coupling Flatness	120-870	—	1.2	1.9	dB
Directivity	120	13	18	—	dB
	500	11	16	—	
	870	10	14	—	
Return Loss (Input)	120-250	14	18	—	dB
	250-500	18	22	—	
	500-870	16	20	—	
Return Loss (Output)	120-250	14	18	—	dB
	250-500	18	22	—	
	500-870	16	20	—	
Return Loss (Coupling)	120	15	18	—	dB
	500	17	22	—	
	870	14	17	—	
Input Power[1]	120-870	—	—	75	W

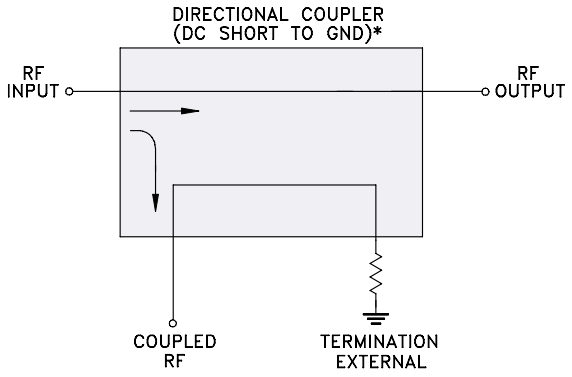
1. Power handling 75W/max at room temperature with output load 1.4:1/max. Power handling is decreased with poor VSWR or higher temperature. The user must provide adequate means of heat removal to limit the temperature of ground connection under the PCB to 65°C, in order to ensure the proper performance. At 25°C ambient temperature this requires thermal resistance of PCB heatsink 3.5°C/W.

MAXIMUM RATINGS

Parameter	Ratings
Operating temperature	-40°C to 65°C Case*
Storage temperature	-55°C to 100°C

*Case temperature is defined as temperature on ground leads.
Permanent damage may occur if any of these limits are exceeded.

ELECTRICAL SCHEMATIC



* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

SURFACE MOUNT

Directional Coupler SYDC-25-92VHP+

PAD CONNECTIONS

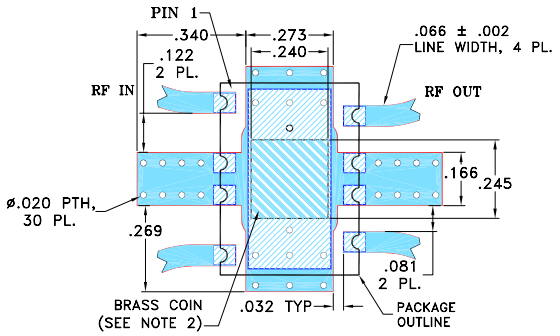
INPUT	1
OUTPUT	8
COUPLED	4
50Ω TERM EXTERNAL**	5
GROUND	2, 3, 6, 7

** External termination must be able to handle 250mW min.

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TBSYDC25-92VHP+

SUGGESTED PCB LAYOUT (PL-351)



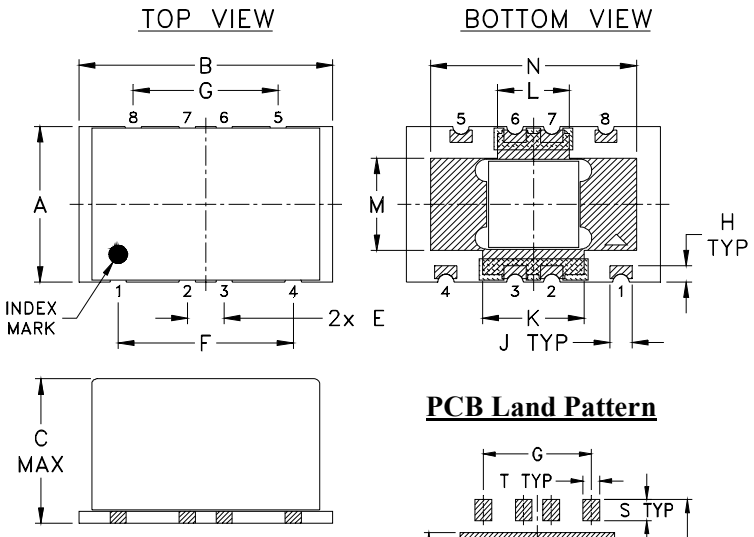
NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. SUGGEST TO PROVIDE BRASS COIN FOR BETTER HEAT TRANSFER FROM THE UNIT. OTHERWISE PROVIDE ARRAY OF THERMAL VIAS ADEQUATE TO LIMIT TEMPERATURE OF GROUND CONNECTIONS UNDER THE UNIT TO 65°C.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

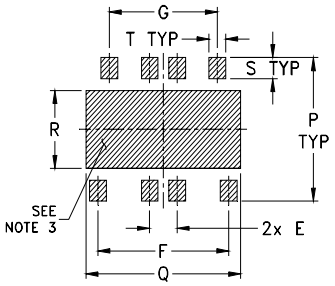
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

DENOTES BRASS COIN.

OUTLINE DRAWING



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	E	F	G	H	J	K
.433	.690	.415	.100	.476	.394	.045	.060	.276
11.00	17.53	10.54	2.54	12.09	10.01	1.14	1.52	7.01

L	M	N	P	Q	R	S	T	wt
.194	.257	.560	.475	.561	.258	.069	.061	grams
4.93	6.53	14.22	12.07	14.25	6.55	1.75	1.55	2.80

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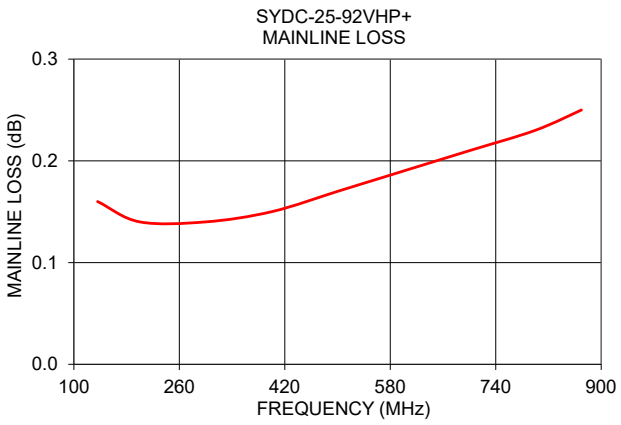
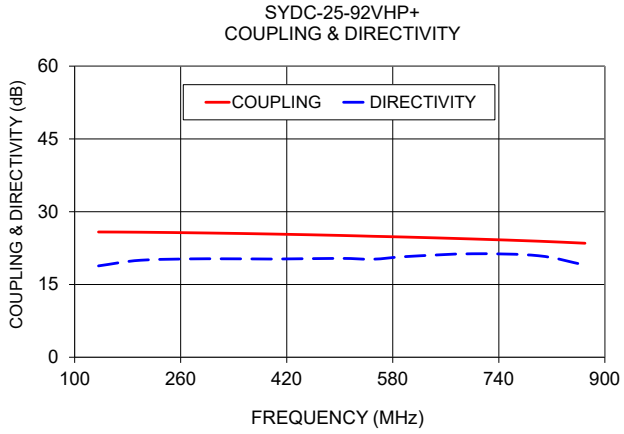
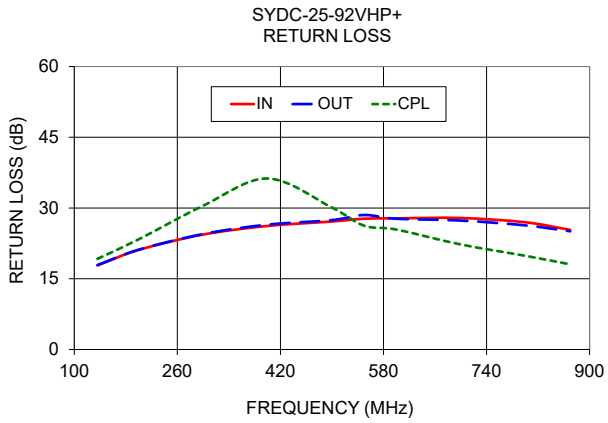
TYPICAL PERFORMANCE DATA

Frequency (MHz)	Mainline Loss (dB) In-Out	Coupling (dB) In-Cpl	Directivity (dB)	Return Loss (dB) In	Return Loss (dB) Out	Return Loss (dB) Cpl
136	0.16	25.82	18.83	17.82	17.91	19.22
200	0.14	25.77	20.00	21.11	21.16	23.36
300	0.14	25.61	20.30	24.37	24.48	30.48
400	0.15	25.39	20.24	26.19	26.47	36.26
500	0.17	25.11	20.38	27.14	27.43	30.09
550	0.18	24.93	20.21	27.73	28.51	26.25
600	0.19	24.77	20.75	27.81	27.72	25.43
700	0.21	24.38	21.33	27.88	27.34	22.27
800	0.23	23.92	20.92	26.98	26.32	19.87
870	0.25	23.50	19.00	25.36	25.07	18.05







NOTES

A. 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.

B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

C. The parts covered by this specification document 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