



CERAMIC

# Power Splitter/Combiner

## SCG-2-422+

Mini-Circuits

2 Way-0° 50Ω 2800 to 4200 MHz

### THE BIG DEAL

- Isolation resistor, external 100 ohms
- Low insertion loss, 0.9 dB typ.
- Excellent amplitude unbalance, 0.1 dB typ.
- Excellent phase unbalance, 1.5 deg. typ.
- High isolation, 16 dB typ.
- ESD non-sensitive
- Temperature stable LTCC technology
- Wrap around terminations for excellent solderability
- Low cost



Generic photo used for illustration purposes only  
CASE STYLE: GE0805C-1

#### +RoHS Compliant

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

### APPLICATIONS

- ISM
- WLAN

### PRODUCT OVERVIEW

Mini-Circuits new LTCC 0° Power Splitter, model SCG-2-422+, offers industry leading combination of operating performance and size. The outstanding phase and amplitude unbalance make this component a versatile building block for use in a variety of systems and sub-system designs.

### KEY FEATURES

Feature	Advantages
Small Size	Offered in the package size, SCG-2-422+ offers an industry leading combination of size, power handling, and frequency. The small footprint allows for reduced parasitics in systems with improved performance and simplified layout.
Wrap-Around Terminations	Provides excellent solderability and easy visual inspection.
LTCC Construction	Provides repeatable performance in the rugged, ceramic package well suited for tough environments such as high humidity and temperature extremes.

REV. C  
ECO-009562  
SCG-2-422+  
MCL NY  
210831





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### ELECTRICAL SPECIFICATIONS AT 25°C

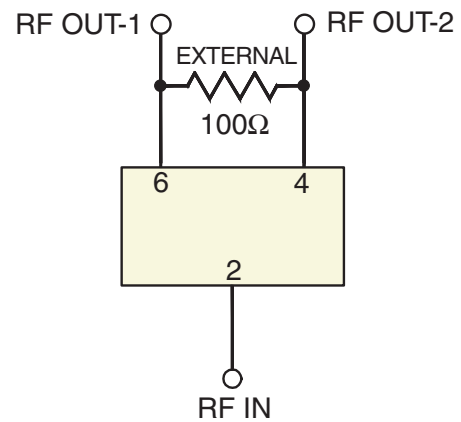
Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		2800		4200	MHz
Insertion Loss, above 3.0 dB	2800 - 4200	—	0.9	1.7	dB
Isolation	2800 - 4200	12	16	—	dB
Phase Unbalance	2800 - 4200	—	1.5	9	Degree
Amplitude Unbalance	2800 - 4200	—	0.1	0.7	dB
Return Loss (Input)	2800 - 4200	—	11	—	dB
Return Loss (Output)	2800 - 4200	—	15	—	dB

### MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	2W* max.

\* Derate linearly to 0.7W at 100°C ambient, power input as combiner is limited by rating of external resistor 100Ω resistor.  
Permanent damage may occur if any of these limits are exceeded.

### ELECTRICAL SCHEMATIC





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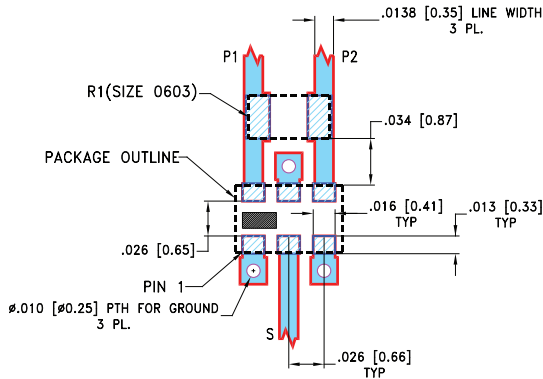
# SCG-2-422+

### PAD CONNECTIONS

SUM PORT	2
PORT 1	6
PORT 2	4
GROUND	1,3,5
PORT 1-2	resistor external 100 ohms

PRODUCT MARKING: SZ

DEMO BOARD MCL P/N: TB-1043+  
SUGGESTED PCB LAYOUT (PL-560)



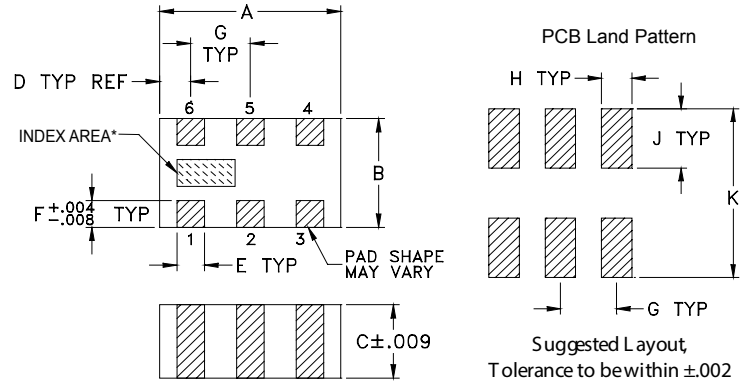
Dimensions are in inches [mm]

NOTES:

1. LINE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .0066±.0007 [.168±.018]. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
2. UNIT FOOT PRINT IS OPTIMIZED FOR PERFORMANCE AND IS DIFFERENT FROM CASE STYLE GE0805C-1 RECOMMENDATIONS.
3. CHIP COMPONENT FOOT PRINT IS SHOWN FOR REFERENCE. FOR COMPONENT VALUE REFER TO TB-1043+.
4. 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.

### OUTLINE DRAWING



\*Shape of index marking may vary

### OUTLINE DIMENSIONS (Inches/mm)

A	B	C	D	E	F
.079	.049	.033	.014	.012	.012
2.01	1.24	0.84	0.36	0.30	0.30
G	H	J	K		wt
.026	.014	.039	.110		grams
0.66	0.36	1.00	2.80		.008



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# Power Splitter/Combiner

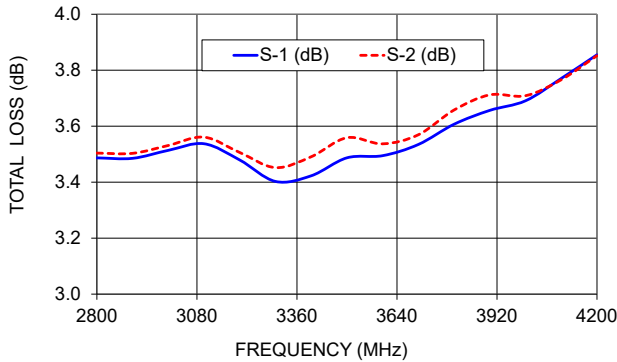
# SCG-2-422+

### TYPICAL PERFORMANCE DATA

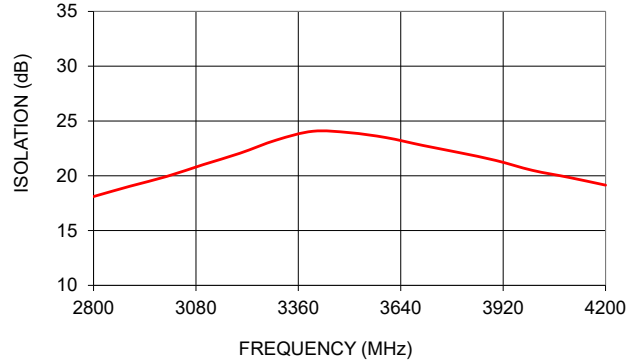
Frequency (MHz)	Total Loss <sup>1</sup> (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	Return Loss (dB)		
	S-1	S-2				S	1	2
2800	3.49	3.50	0.02	18.11	3.42	15.02	28.32	21.11
2900	3.49	3.50	0.02	19.05	3.44	15.54	27.33	20.71
3000	3.51	3.53	0.02	19.94	3.49	15.57	26.19	20.11
3100	3.54	3.56	0.02	21.02	3.55	15.99	25.24	19.64
3200	3.48	3.51	0.03	22.06	3.56	17.19	24.30	19.11
3300	3.40	3.45	0.05	23.26	3.55	17.68	23.49	18.69
3400	3.42	3.49	0.07	24.06	3.62	16.18	22.53	18.11
3500	3.49	3.56	0.07	23.94	3.81	15.89	21.31	17.40
3600	3.49	3.54	0.04	23.48	3.83	16.54	20.35	16.91
3700	3.53	3.57	0.03	22.77	3.71	14.73	19.58	16.49
3800	3.61	3.66	0.05	22.11	3.68	13.67	19.05	16.30
3900	3.66	3.71	0.06	21.40	3.94	13.79	18.53	16.05
4000	3.69	3.71	0.02	20.50	4.11	13.96	18.04	15.73
4100	3.77	3.77	0.00	19.85	4.08	12.67	17.24	15.39
4200	3.86	3.85	0.00	19.15	4.06	11.90	16.46	14.98

1. Total Loss = Insertion Loss + 3dB splitter loss.

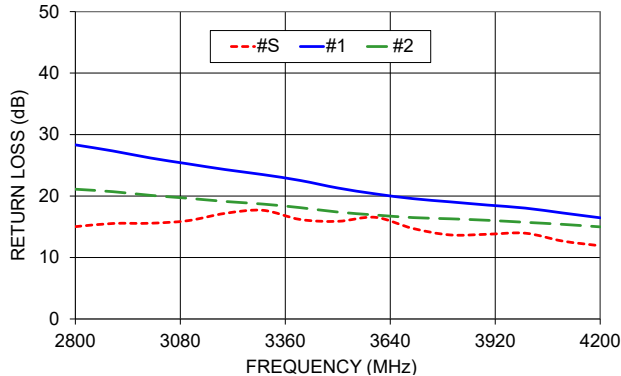
SCG-2-422+  
TOTAL LOSS



SCG-2-422+  
ISOLATION



SCG-2-422+  
RETURN LOSS



- 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](http://www.minicircuits.com/MCLStore/terms.jsp)

