CERAMIC

Power Splitter / Combiner

SCG-3-752+

3 Way-0° 50Ω 4500 to 7500 MHz

THE BIG DEAL

- Isolation Resistor, External 150Ω
- Low Insertion Loss, 1.3 dB Typ.
- Excellent Phase Unbalance, 5 Deg. Typ.
- Wrap Around Terminations for Excellent Solderability



Generic photo used for illustration purposes only

CASE STYLE: GE0805C-1

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

APPLICATIONS

- WIFI6
- 5G Sub 6 GHz

PRODUCT OVERVIEW

The Mini-Circuits' SCG-3-752+ is a compact, high-performance 3-way power splitter operating from 4.5 to 7.5 GHz. Built using advanced Low-Temperature Co-fired Ceramic (LTCC) technology, this device delivers an exceptional balance of size and performance.

KEY FEATURES

Features	Advantages
Small Size	Offered in the package size, SCG-3-752+ 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. A
ECO-015153
SCG-3-752+
MCL NY
250701

Power Splitter / Combiner SCG-3-752+

3 Way-0° 50Ω 4500 to 7500 MHz

ELECTRICAL SPECIFICATIONS[1] AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		4500		7500	MHz
Average Insertion Loss, Above 4.8 dB	4500-7500		1.3	2.1	dB
Isolation	4500-7500	11	14		dB
Phase Unbalance	4500-7500		5	10	Degree
Amplitude Unbalance	4500-7500		0.8	1.2	dB
Return Loss (Input)	4500-7500		10		dB
Return Loss (Output)	4500-7500		10		dB

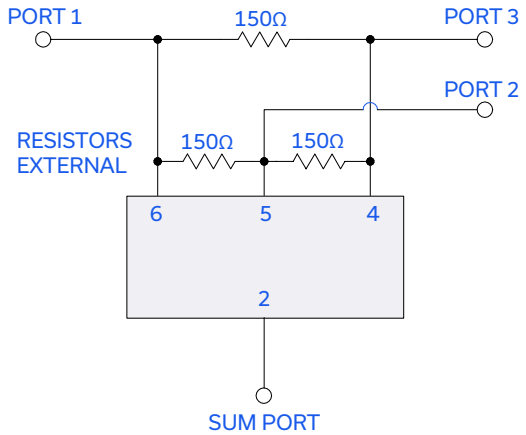
1. Tested on TB-SCG-3-752+. Evaluation Board losses have been de-embedded.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Input Power	2 W[2] max.

2. Power input as combiner is limited by rating of external resistors. Permanent damage may occur if any of these limits are exceeded.
*Power input as combiner is limited by rating of external resistors

ELECTRICAL SCHEMATIC



CERAMIC

Power Splitter / Combiner SCG-3-752+

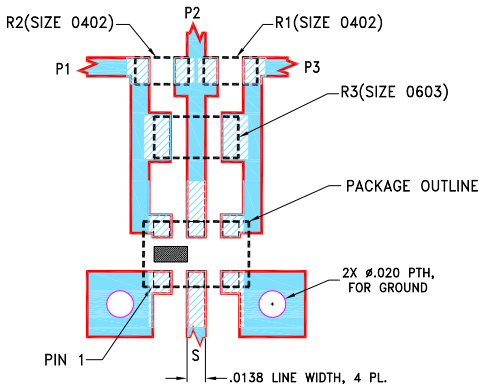
3 Way-0° 50Ω 4500 to 7500 MHz

PAD CONNECTIONS

SUM PORT	2
PORT 1	6
PORT 2	5
PORT 3	4
GROUND	1,3
PORT 1-2, 2-3, 1-3	Resistor external 150Ω

PRODUCT MARKING: PT

DEMO BOARD MCL P/N: TB-SCG-3-752+
SUGGESTED PCB LAYOUT (PL-621)

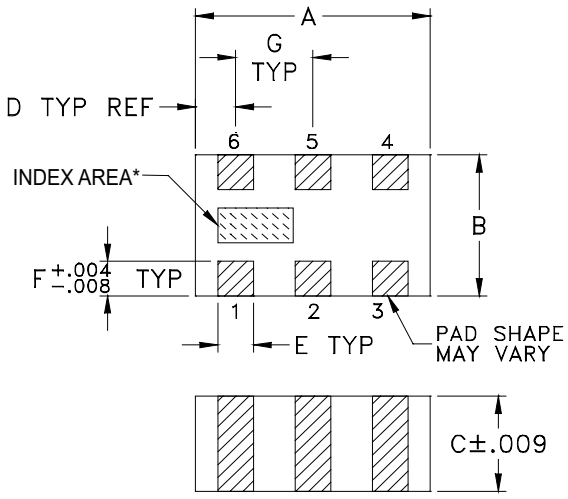


NOTES:
1. LINE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066±.0007. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
2. UNIT FOOT PRINT IS OPTIMIZED FOR PERFORMANCE AND IS DIFFERENT FROM CASE STYLE GE0805C-1 RECOMMENDATIONS.
3. CHIP COMPONENT FOOT PRINT IS SHOWN FOR REFERENCE. FOR COMPONENT VALUE REFER TO TB-1018+.
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 (Inch / mm)

A	B	C	D	E	F	G	wt
.079	.049	.033	.014	.012	.012	.026	grams
2.01	1.24	0.84	0.36	0.30	0.30	0.65	.008

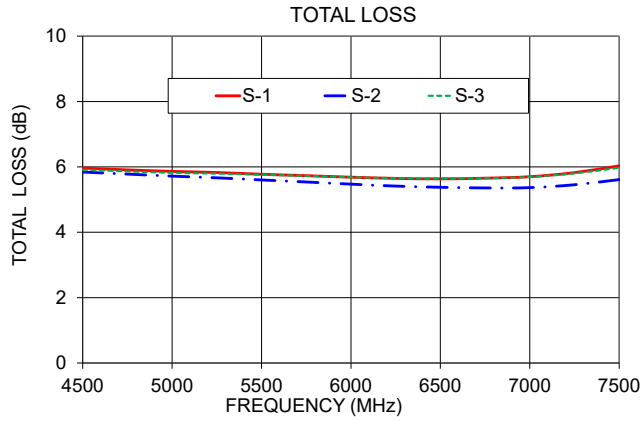
Power Splitter / Combiner SCG-3-752+

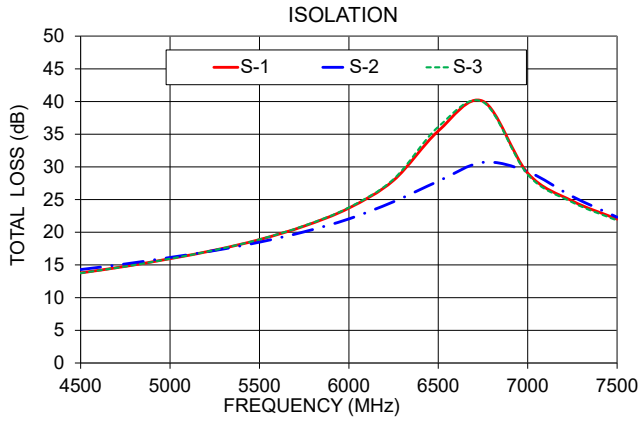
3 Way-0° 50Ω 4500 to 7500 MHz

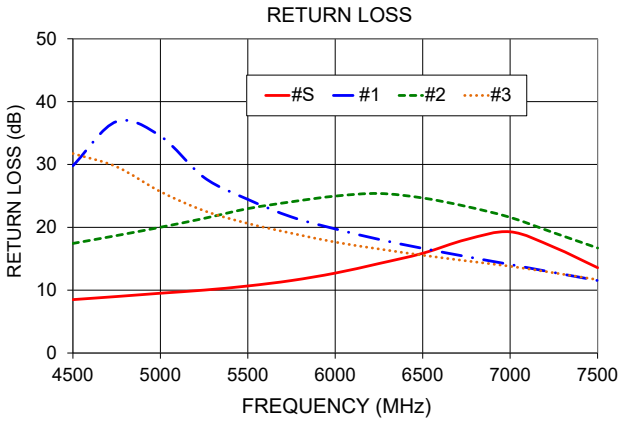
TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Total Loss[3] (dB)			Amplitude Unbalance (dB)	Isolation (dB)			Phase Unbalance (deg.)	Return Loss (dB)			
	S-1	S-2	S-3		1-2	1-3	2-3		S	1	2	3
4500	5.96	5.84	5.91	0.12	13.78	14.30	13.75	2.77	8.50	29.80	17.44	31.74
4750	5.91	5.78	5.86	0.13	14.78	15.15	14.76	2.89	8.99	36.84	18.69	29.64
5000	5.86	5.72	5.82	0.15	15.96	16.14	15.95	2.95	9.51	34.52	20.01	25.68
5250	5.83	5.67	5.80	0.16	17.27	17.21	17.28	3.18	10.01	27.93	21.42	22.64
5500	5.77	5.60	5.76	0.17	18.88	18.49	18.90	3.40	10.67	24.45	22.98	20.62
5750	5.73	5.54	5.72	0.19	20.94	20.07	21.00	3.59	11.54	21.65	24.06	19.06
6000	5.68	5.47	5.68	0.21	23.70	22.04	23.79	3.85	12.72	19.75	24.97	17.65
6250	5.65	5.41	5.66	0.24	27.94	24.67	28.13	4.13	14.24	18.08	25.38	16.56
6500	5.63	5.38	5.65	0.27	35.49	27.81	36.13	4.38	15.87	16.65	24.67	15.56
6750	5.65	5.36	5.65	0.30	40.04	30.69	39.93	4.61	18.07	15.34	23.32	14.66
7000	5.70	5.37	5.69	0.33	29.04	29.26	28.83	4.85	19.29	14.08	21.59	13.81
7250	5.82	5.45	5.80	0.37	24.78	25.47	24.58	4.95	16.84	12.81	19.13	12.76
7500	6.03	5.61	5.97	0.42	22.01	22.30	21.80	5.11	13.58	11.54	16.71	11.67

3. Total Loss = Insertion Loss + 4.8 dB splitter 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/terms/viewterm.html

3 Way-0° Power Splitter/Combiner SCG-3-752+

Typical Performance Data

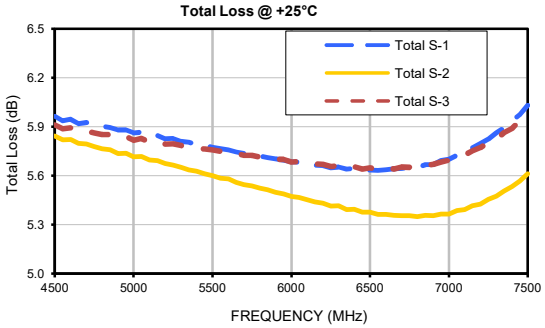
TEST CONDITIONS: Input Power = -10dBm @Temperature = +25°C

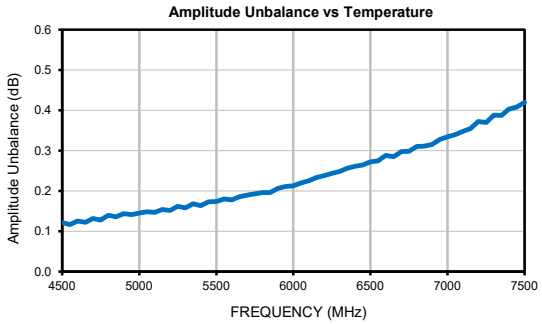
FREQ.	TOTAL LOSS[1]			AMP. UNBAL.	PHASE UNBAL.	ISOLATION			VSWR			
(MHz)	(dB) S-1	(dB) S-2	(dB) S-3	(dB)	(deg.)	(dB) 1-2	(dB) 1-3	(dB) 2-3	(:1) S	1	2	3
4500	5.96	5.84	5.91	0.12	2.77	13.78	14.30	13.75	2.20	1.07	1.31	1.05
4550	5.94	5.82	5.89	0.12	2.76	13.98	14.47	13.96	2.16	1.06	1.30	1.05
4600	5.95	5.82	5.89	0.13	2.83	14.17	14.63	14.14	2.17	1.05	1.29	1.05
4650	5.92	5.80	5.87	0.12	2.83	14.38	14.81	14.35	2.13	1.04	1.28	1.06
4700	5.93	5.79	5.87	0.13	2.85	14.58	14.98	14.55	2.13	1.04	1.27	1.06
4750	5.91	5.78	5.86	0.13	2.89	14.78	15.15	14.76	2.10	1.03	1.26	1.07
4800	5.90	5.76	5.85	0.14	2.89	15.03	15.37	15.01	2.08	1.02	1.25	1.07
4850	5.90	5.76	5.85	0.14	2.95	15.20	15.50	15.18	2.07	1.03	1.25	1.08
4900	5.88	5.74	5.83	0.14	2.90	15.49	15.75	15.47	2.04	1.03	1.24	1.09
4950	5.88	5.74	5.84	0.14	2.98	15.66	15.88	15.64	2.04	1.03	1.23	1.10
5000	5.86	5.72	5.82	0.15	2.95	15.96	16.14	15.95	2.00	1.04	1.22	1.11
5050	5.87	5.72	5.83	0.15	3.04	16.15	16.29	16.14	2.01	1.05	1.21	1.12
5100	5.84	5.70	5.81	0.15	3.04	16.47	16.56	16.47	1.97	1.06	1.21	1.13
5150	5.85	5.69	5.81	0.15	3.11	16.68	16.73	16.68	1.97	1.06	1.20	1.14
5200	5.83	5.67	5.79	0.15	3.13	17.02	17.02	17.02	1.93	1.07	1.19	1.15
5250	5.83	5.67	5.80	0.16	3.18	17.27	17.21	17.28	1.92	1.08	1.19	1.16
5300	5.81	5.65	5.78	0.16	3.22	17.58	17.46	17.59	1.90	1.09	1.18	1.17
5350	5.80	5.64	5.78	0.17	3.25	17.91	17.73	17.92	1.88	1.10	1.17	1.18
5400	5.79	5.63	5.77	0.16	3.30	18.18	17.94	18.20	1.87	1.11	1.16	1.18
5450	5.78	5.61	5.76	0.17	3.34	18.56	18.25	18.59	1.84	1.12	1.16	1.20
5500	5.77	5.60	5.76	0.17	3.40	18.88	18.49	18.90	1.83	1.13	1.15	1.21
5550	5.76	5.58	5.75	0.18	3.42	19.28	18.81	19.31	1.80	1.14	1.15	1.21
5600	5.76	5.58	5.75	0.18	3.47	19.62	19.06	19.65	1.79	1.15	1.15	1.23
5650	5.75	5.56	5.73	0.19	3.51	20.09	19.43	20.13	1.76	1.15	1.14	1.23
5700	5.74	5.55	5.73	0.19	3.57	20.50	19.74	20.54	1.74	1.17	1.13	1.24
5750	5.73	5.54	5.72	0.19	3.59	20.94	20.07	21.00	1.72	1.18	1.13	1.25
5800	5.72	5.52	5.71	0.20	3.67	21.42	20.42	21.47	1.70	1.19	1.13	1.26
5850	5.71	5.51	5.71	0.20	3.67	21.93	20.80	22.00	1.68	1.20	1.13	1.27
5900	5.70	5.50	5.70	0.21	3.76	22.50	21.20	22.57	1.65	1.21	1.12	1.28
5950	5.70	5.49	5.70	0.21	3.80	23.04	21.58	23.11	1.64	1.22	1.12	1.29
6000	5.68	5.47	5.68	0.21	3.85	23.70	22.04	23.79	1.60	1.23	1.12	1.30
6050	5.68	5.47	5.69	0.22	3.92	24.31	22.45	24.40	1.59	1.24	1.12	1.31
6100	5.67	5.45	5.68	0.23	3.96	25.04	22.94	25.17	1.56	1.25	1.12	1.32
6150	5.66	5.44	5.67	0.23	4.04	25.92	23.49	26.04	1.54	1.27	1.11	1.33
6200	5.66	5.43	5.67	0.24	4.05	26.68	23.97	26.83	1.52	1.28	1.12	1.34
6250	5.65	5.41	5.66	0.24	4.13	27.94	24.67	28.13	1.48	1.28	1.11	1.35
6300	5.65	5.41	5.66	0.25	4.16	28.69	25.07	28.90	1.48	1.30	1.12	1.36
6350	5.64	5.39	5.65	0.26	4.25	30.39	25.93	30.66	1.43	1.31	1.12	1.37
6400	5.64	5.39	5.65	0.26	4.28	31.48	26.38	31.80	1.43	1.33	1.12	1.38
6450	5.64	5.38	5.64	0.26	4.34	33.74	27.28	34.18	1.39	1.33	1.12	1.39
6500	5.63	5.38	5.65	0.27	4.38	35.49	27.81	36.13	1.38	1.34	1.12	1.40
6550	5.63	5.36	5.64	0.27	4.44	38.93	28.67	40.01	1.35	1.36	1.13	1.41
6600	5.64	5.36	5.65	0.29	4.47	42.29	29.29	44.50	1.34	1.37	1.13	1.42
6650	5.64	5.36	5.64	0.29	4.52	46.24	29.97	50.12	1.31	1.39	1.13	1.43
6700	5.64	5.36	5.65	0.30	4.56	43.12	30.62	43.75	1.30	1.40	1.14	1.44
6750	5.65	5.36	5.65	0.30	4.61	40.04	30.69	39.93	1.29	1.41	1.15	1.45
6800	5.65	5.35	5.66	0.31	4.65	35.86	31.22	35.69	1.26	1.42	1.15	1.46
6850	5.67	5.36	5.66	0.31	4.69	34.29	30.67	34.00	1.26	1.44	1.16	1.48
6900	5.67	5.35	5.67	0.32	4.77	31.76	30.61	31.54	1.25	1.45	1.16	1.48
6950	5.69	5.37	5.68	0.33	4.79	30.80	29.76	30.56	1.25	1.47	1.18	1.51
7000	5.70	5.37	5.69	0.33	4.85	29.04	29.26	28.83	1.24	1.49	1.18	1.51
7050	5.73	5.39	5.71	0.34	4.83	28.25	28.35	28.04	1.26	1.51	1.20	1.54
7100	5.74	5.39	5.73	0.35	4.92	27.02	27.69	26.81	1.26	1.52	1.20	1.54
7150	5.77	5.42	5.75	0.36	4.93	26.29	26.83	26.10	1.29	1.55	1.22	1.57
7200	5.80	5.43	5.77	0.37	4.96	25.44	26.12	25.25	1.30	1.57	1.23	1.58
7250	5.82	5.45	5.80	0.37	4.95	24.78	25.47	24.58	1.34	1.59	1.25	1.60
7300	5.86	5.47	5.82	0.39	5.02	24.10	24.69	23.90	1.36	1.62	1.26	1.62
7350	5.89	5.51	5.86	0.39	5.04	23.49	24.16	23.30	1.40	1.64	1.28	1.64
7400	5.94	5.53	5.89	0.40	5.07	22.96	23.41	22.76	1.44	1.67	1.30	1.66
7450	5.97	5.57	5.94	0.41	5.10	22.41	22.97	22.22	1.48	1.69	1.32	1.68
7500	6.03	5.61	5.97	0.42	5.11	22.01	22.30	21.80	1.53	1.72	1.34	1.71

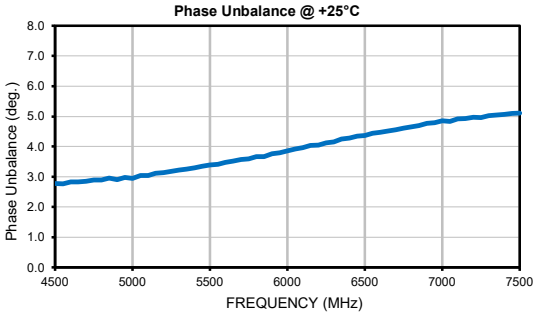
[1] Total Loss = Insertion Loss + 4.8dB Splitter Loss

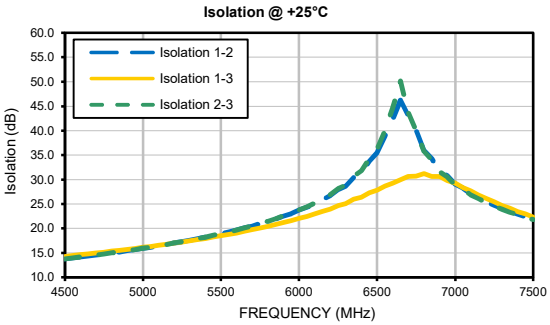
3 Way-0° Power Splitter/Combiner SCG-3-752+

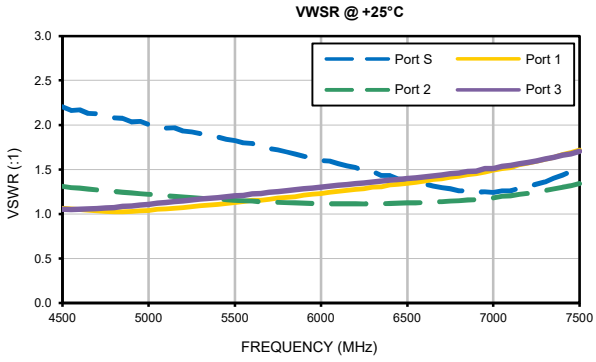
Typical Performance Curves





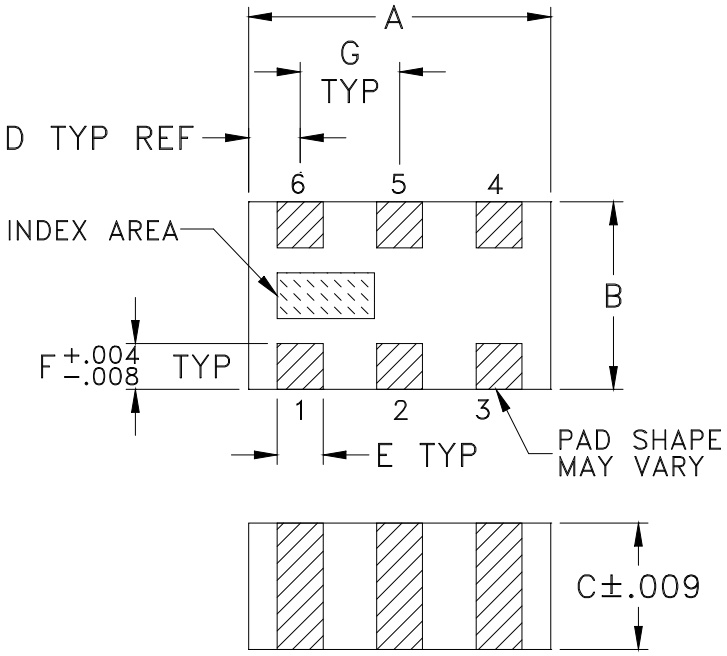




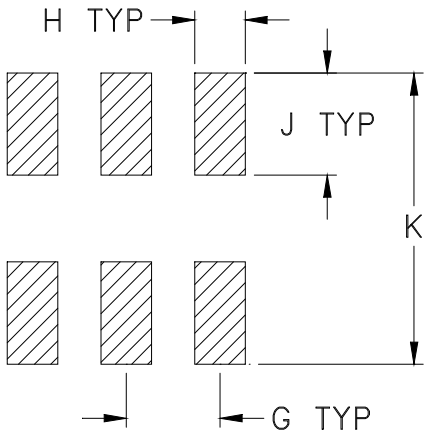


GE0805C-1

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	WT. GRAM
GE0805C-1	.079 (2.00)	.049 (1.25)	.033 (0.84)	.014 (0.35)	.012 (0.30)	.012 (0.30)	.026 (0.65)	.014 (0.35)	.039 (1.00)	.110 (2.80)	.008

Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3 Pl. ± .005

Notes:

1. Open style, ceramic base.
2. Termination finish: For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Style: Tin-lead plate. All models, no (+) suffix.

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Tape & Reel Packaging TR-F74

DEVICE ORIENTATION IN T&R

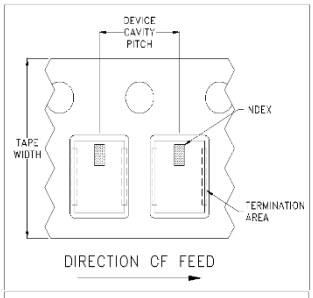


ILLUSTRATION 1

Applicable Case Styles
GE0805C-1
GE0805C-1AP
JV1210C-1
GU2939

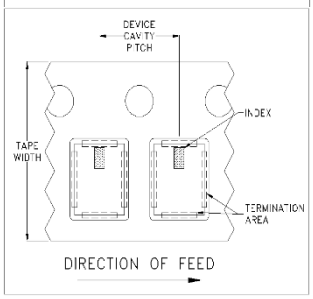


ILLUSTRATION 2

Applicable Case Styles
JV1210C
JV1210C-2
JV1210C-3
JV1210C-4
JV1210C-5
JV1210C-6
JV1210C-11

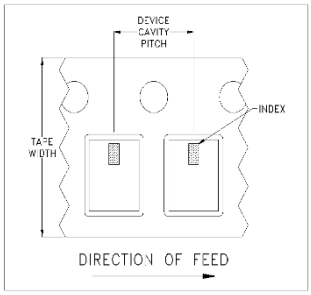


ILLUSTRATION 3

Applicable Case Styles
JC0603C-8
JC0603C-9
JV1210C-7
JV1210C-8
JV1210C-9
JV1210C-10
JV1210C-13
GE0805C-13
GE0805C-19
GE0805C-20

Tape Width, mm	Device Cavity Pitch, mm	Real Size, inches	Devices per Reel	
8	4	7	Small quantity standards **(see note)**	20
				50
				100
				200
				500
				1000
			Standard	2000
				4000

Note: Small reel availability varies by model. Refer to pricing and availability on individual model dashboard.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.
Go to: www.minicircuits.com/pages/pdfs/tape.pdf

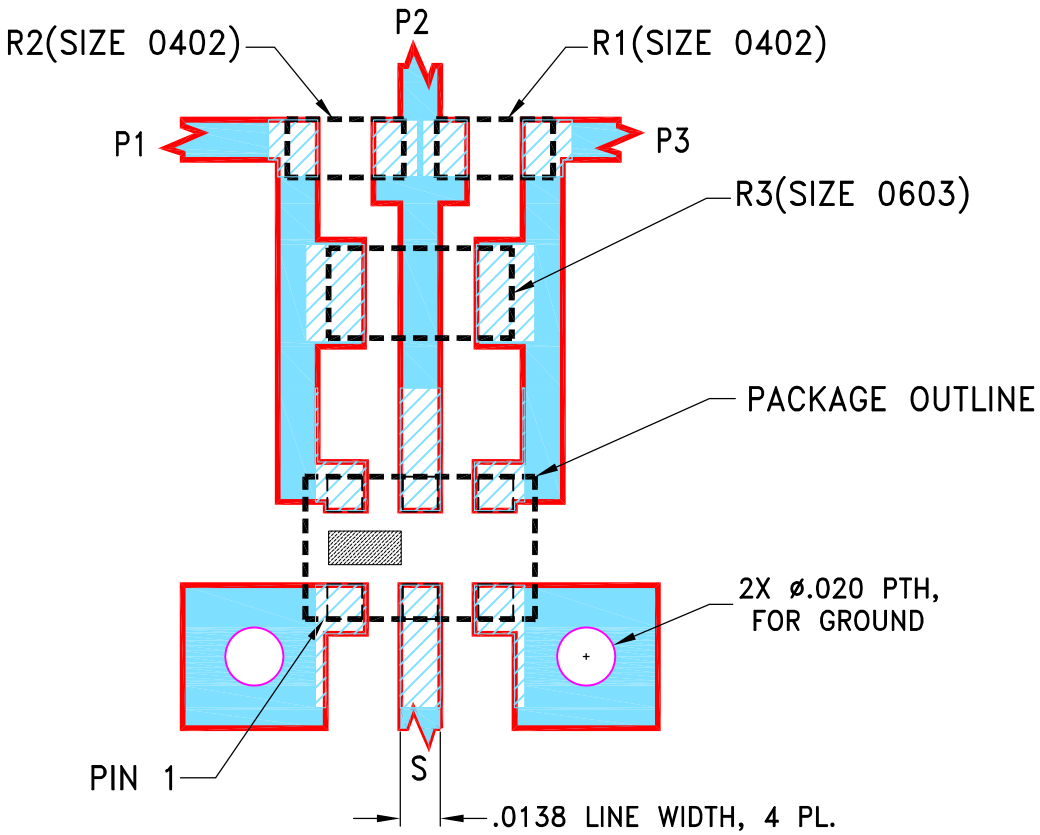
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THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
0R	M173097	NEW RELEASE	03/12/19	ITG	SL

SUGGESTED MOUNTING CONFIGURATION
FOR GE0805C-1 CASE STYLE, "06SP17" PIN CODE



NOTES:

1. LINE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0066±.0007. 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-1018+.
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.

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	ITG	03/06/19
TOLERANCES ON:	CHECKED	GF	03/07/19
2 PL DECIMALS ±	APPROVED	SL	03/12/19
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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ASHEETA1.DWG REV:A DATE:01/12/95

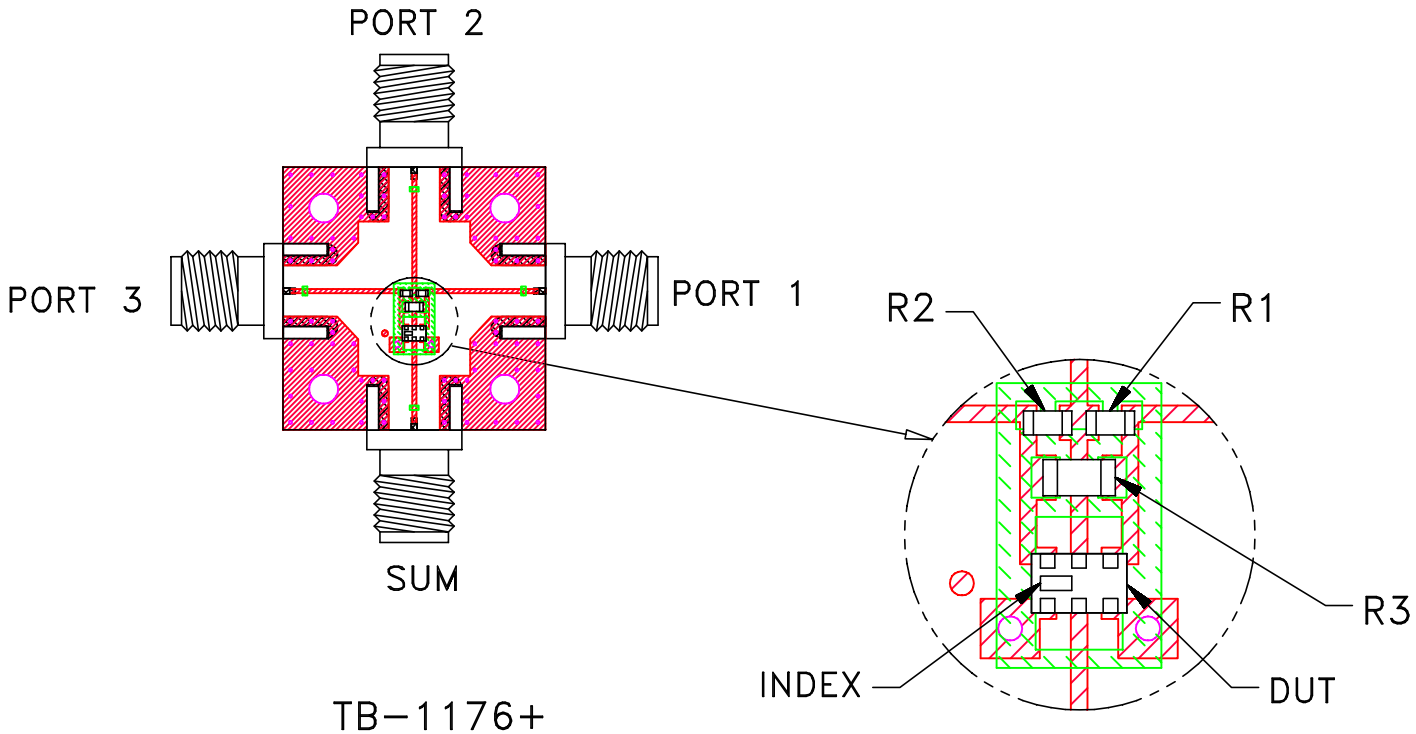
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, 06SP17, GE0805C-1, TB-1018+

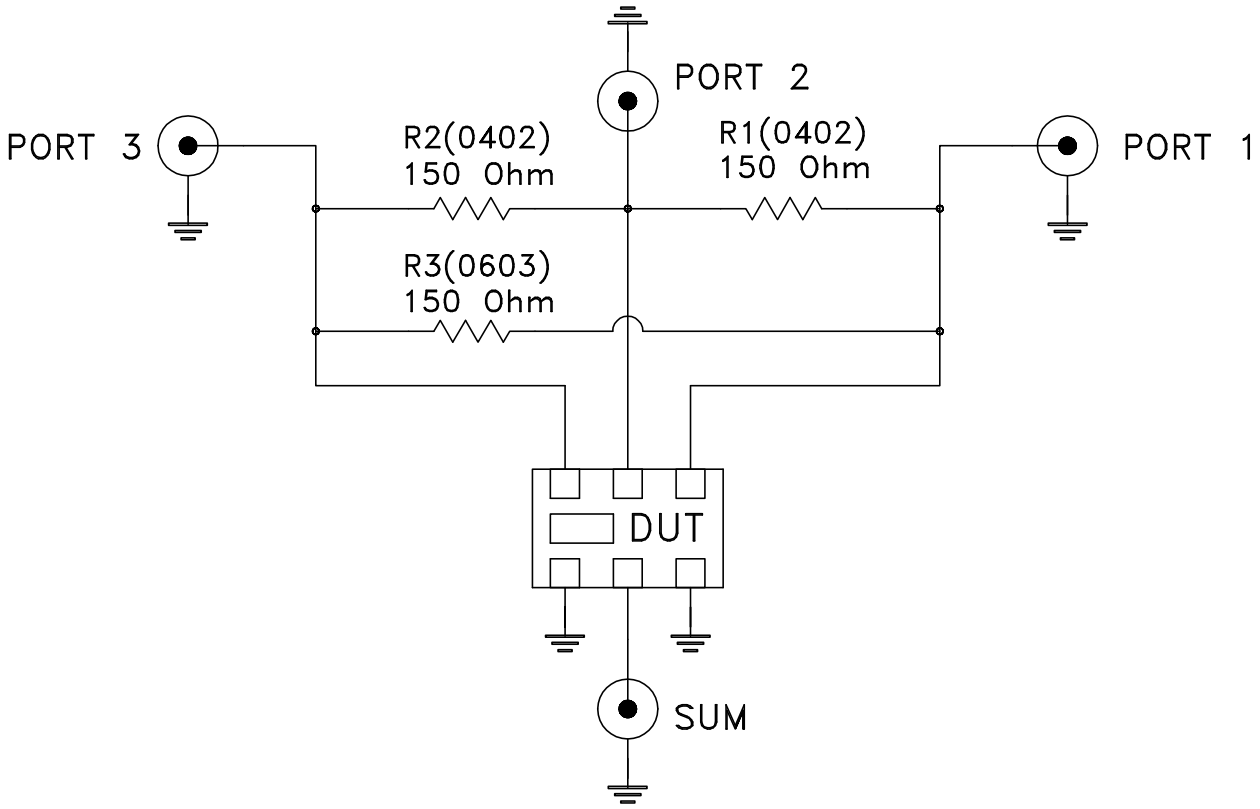
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-621	0R

FILE:	SCALE:	SHEET:
98PL621	15:1	1 OF 1

Evaluation Board and Circuit



TB-1176+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.0066 inch.

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Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process: 250°C peak	J-STD-020C, Table 4-1, 4-2 and 5-2; Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A

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