



Mini-Circuits

MMIC SURFACE MOUNT

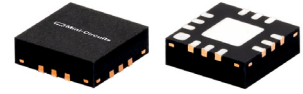
Power Splitter/Combiner

GP2Y+

2 Way-0° 50Ω 1600 to 3300 MHz

FEATURES

- Wide Bandwidth, 1600 to 3300 MHz
- Excellent Isolation, 24 dB Typ.
- Excellent Amplitude Unbalance, Typ. 0.02 dB
- Good Phase Unbalance, Typ. 0.5 deg.
- Small Size, 0.118" x 0.118" x 0.035"
- High ESD Level
- Aqueous Washable



Generic photo used for illustration purposes only

CASE STYLE: DQ1225

+RoHS Compliant

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

APPLICATIONS

- WCDMA
- DCS
- Radar
- Navigation
- Instrumentation

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1600		3300	MHz
Insertion Loss* (Above 3.0 dB)	1600-3300		0.8	1.5	dB
Isolation	1600-3300	17	24		dB
Amplitude Unbalance	1600-3300		0.02	0.2	dB
Phase Unbalance	1600-3300		0.3	4.0	deg.
VSWR (Port S)	1600-3300		1.2		:1
VSWR (Ports 1,2)	1600-3300		1.2		

* De-embedded from demo board loss.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Power Input (as a Splitter)	1.5 W max.
Internal Dissipation	0.75 W max.

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

ELECTRICAL SCHEMATIC

REV. F
ECO-026464
GP2Y+
MCL NY
250806

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SUM PORT	2
PORT 1	7
PORT 2	9
GROUND	1,3,4,5,6,8,10,11,12, Paddle

SEE NOTE 3

PACKAGE OUTLINE

11X $\varnothing$.020 PTH FOR GROUND

R.344

3X $\varnothing$.040

.006

.018

PIN 1

.036

.028, 3 PL.

.044 TRACE WIDTH, 3 PL.

(SEE NOTE BELOW)

.023, TYP

.036, TYP

.004

.016

.009

.064

.021

.096

.047

.043

.124

.196

60°

.028

.012 TYP

.249

 DENOTES PCB COPPER LAYOUT WITH SMOBC
 (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Diagram illustrating the components of a black body label:

- Index:** Points to the white circle in the top left corner.
- Black Body:** Points to the black rectangular area.
- Model Family Designation:** Points to the text "MCL GP2Y XXXX" on the black body.

Figure 1 shows the dimensions of the test specimen. The dimensions are as follows:

- Top View:
 - Overall width: .118 [3.00]
 - Overall height: .118 [3.00]
 - Central square hole: .057 [1.45] (width) x .057 [1.45] (height)
 - Four rectangular paddles: .009 [0.23] (width) x .008 [0.20] (height)
 - Index area: .035 [0.89] (width) x .008 [0.20] (height)
- Front View:
 - Overall width: .118 [3.00]
 - Overall height: .118 [3.00]
 - Central square hole: .057 [1.45] (width) x .057 [1.45] (height)
 - Four rectangular paddles: .009 [0.23] (width) x .008 [0.20] (height)
 - Index area: .035 [0.89] (width) x .008 [0.20] (height)
- Side View:
 - Overall width: .118 [3.00]
 - Overall height: .118 [3.00]
 - Central square hole: .057 [1.45] (width) x .057 [1.45] (height)
 - Four rectangular paddles: .009 [0.23] (width) x .008 [0.20] (height)
 - Index area: .035 [0.89] (width) x .008 [0.20] (height)
- Bottom View:
 - Overall width: .118 [3.00]
 - Overall height: .118 [3.00]
 - Central square hole: .057 [1.45] (width) x .057 [1.45] (height)
 - Four rectangular paddles: .009 [0.23] (width) x .008 [0.20] (height)
 - Index area: .035 [0.89] (width) x .008 [0.20] (height)

TAPE & REEL INFORMATION: F66



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MMIC SURFACE MOUNT

Power Splitter/Combiner

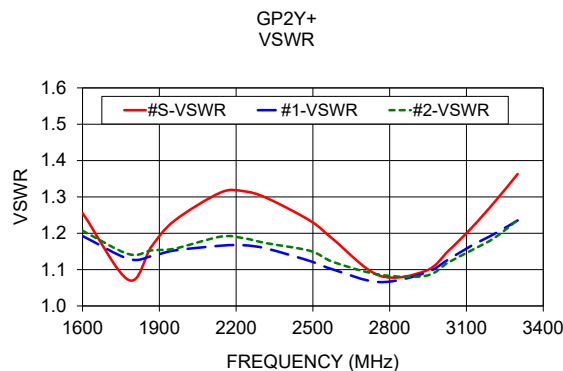
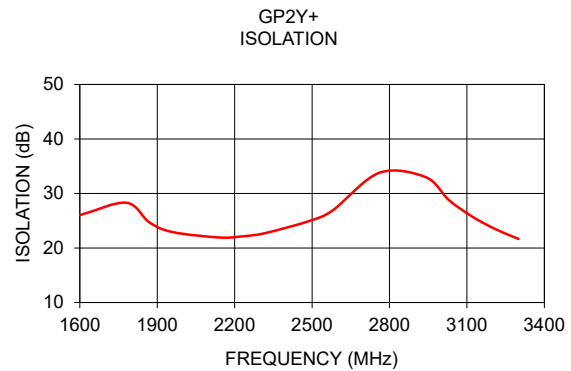
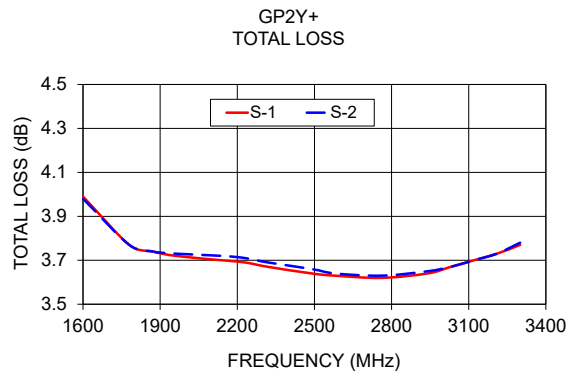
GP2Y+

2 Way-0° 50Ω 1600 to 3300 MHz

TYPICAL PERFORMANCE DATA AND CHARTS

Frequency (MHz)	Total Loss ¹ (dB)		Amplitude Unbalance (dB)	Isolation (dB)	Phase Unbalance (deg.)	VSWR S	VSWR 1	VSWR 2
	S-1	S-2						
1600	3.99	3.98	0.01	26.03	0.38	1.26	1.19	1.21
1780	3.77	3.77	0.00	28.31	0.44	1.07	1.13	1.14
1870	3.74	3.74	0.00	24.68	0.47	1.16	1.14	1.15
1960	3.72	3.73	0.01	22.92	0.47	1.24	1.15	1.16
2140	3.70	3.72	0.02	21.93	0.54	1.31	1.17	1.19
2230	3.69	3.71	0.02	22.14	0.58	1.32	1.17	1.19
2320	3.67	3.69	0.02	22.75	0.57	1.30	1.16	1.17
2490	3.64	3.66	0.02	24.97	0.59	1.23	1.12	1.15
2580	3.63	3.64	0.01	26.91	0.55	1.18	1.10	1.12
2760	3.62	3.63	0.01	33.79	0.51	1.08	1.07	1.09
2940	3.64	3.65	0.00	33.00	0.45	1.10	1.09	1.08
3030	3.67	3.67	0.00	28.80	0.45	1.15	1.13	1.12
3120	3.70	3.70	0.00	25.78	0.45	1.21	1.17	1.15
3210	3.73	3.73	0.00	23.47	0.46	1.29	1.20	1.19
3300	3.77	3.78	0.01	21.67	0.49	1.36	1.24	1.24

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



ESD RATING

Human Body Model (HBM): Class 1A (250 V to < 500 V) in accordance with ANSI/ESD STM 5.1 - 2001

Machine Model (MM): Class M2 (100V to < 250 V) in accordance with ANSI/ESD STM 5.2 - 1999

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



2 Way-0° Power Splitter/Combiner

GP2Y+

Typical Performance Data

FREQUENCY (MHz)	TOTAL LOSS ¹ (dB)		AMPLITUDE UNBALANCE (dB)	ISOLATION (dB) 1-2	PHASE UNBALANCE (deg.)	FREQUENCY (MHz)	VSWR (:1)		
	S-1	S-2					S	1	2
1600.0	3.99	3.98	0.01	26.03	0.38	1600.0	1.26	1.19	1.21
1610.0	3.97	3.96	0.01	27.08	0.39	1610.0	1.23	1.19	1.20
1690.0	3.84	3.83	0.01	35.04	0.41	1690.0	1.07	1.15	1.15
1780.0	3.77	3.77	0.00	28.31	0.44	1780.0	1.07	1.13	1.14
1870.0	3.74	3.74	0.00	24.68	0.47	1870.0	1.16	1.14	1.15
1960.0	3.72	3.73	0.01	22.92	0.47	1960.0	1.24	1.15	1.16
2050.0	3.71	3.73	0.01	22.14	0.50	2050.0	1.29	1.16	1.18
2140.0	3.70	3.72	0.02	21.93	0.54	2140.0	1.31	1.17	1.19
2230.0	3.69	3.71	0.02	22.14	0.58	2230.0	1.32	1.17	1.19
2320.0	3.67	3.69	0.02	22.75	0.57	2320.0	1.30	1.16	1.17
2410.0	3.66	3.67	0.02	23.75	0.58	2410.0	1.27	1.14	1.16
2490.0	3.64	3.66	0.02	24.97	0.59	2490.0	1.23	1.12	1.15
2580.0	3.63	3.64	0.01	26.91	0.55	2580.0	1.18	1.10	1.12
2670.0	3.62	3.63	0.01	29.75	0.51	2670.0	1.13	1.08	1.10
2760.0	3.62	3.63	0.01	33.79	0.51	2760.0	1.08	1.07	1.09
2850.0	3.63	3.63	0.00	36.64	0.47	2850.0	1.06	1.07	1.07
2940.0	3.64	3.65	0.00	33.00	0.45	2940.0	1.10	1.09	1.08
3030.0	3.67	3.67	0.00	28.80	0.45	3030.0	1.15	1.13	1.12
3120.0	3.70	3.70	0.00	25.78	0.45	3120.0	1.21	1.17	1.15
3210.0	3.73	3.73	0.00	23.47	0.46	3210.0	1.29	1.20	1.19
3300.0	3.77	3.78	0.01	21.67	0.49	3300.0	1.36	1.24	1.24

¹Total Loss = Insertion Loss + 3dB Splitter Loss



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IF/RF MICROWAVE COMPONENTS



REV. X2

GP2Y+

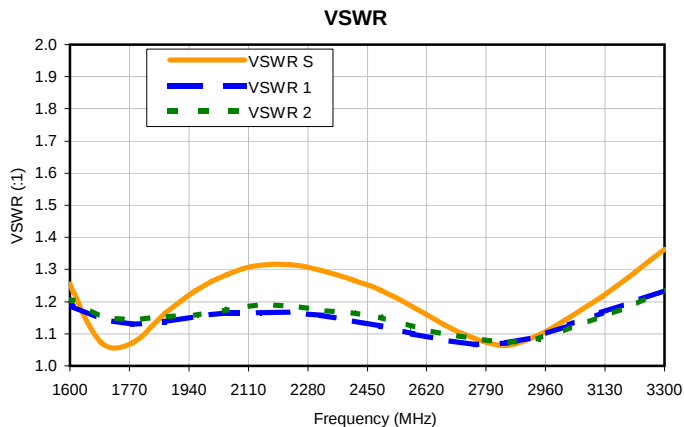
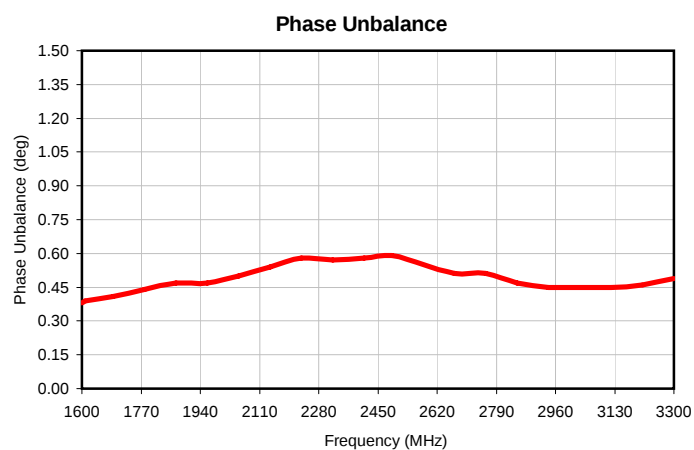
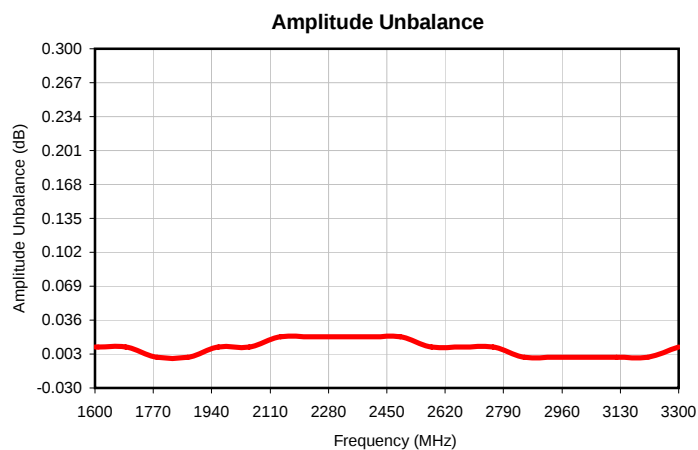
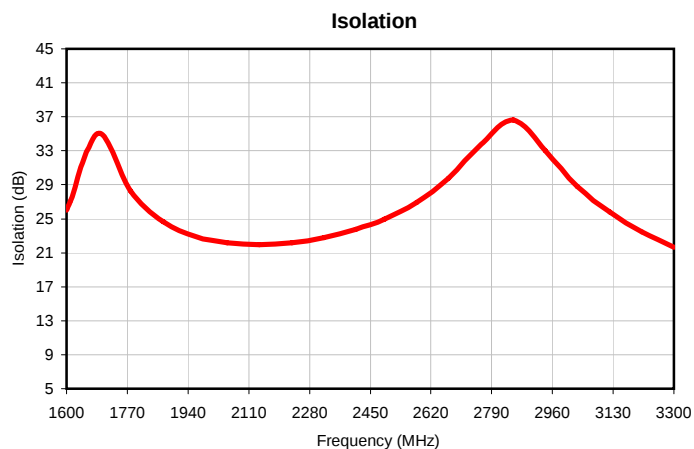
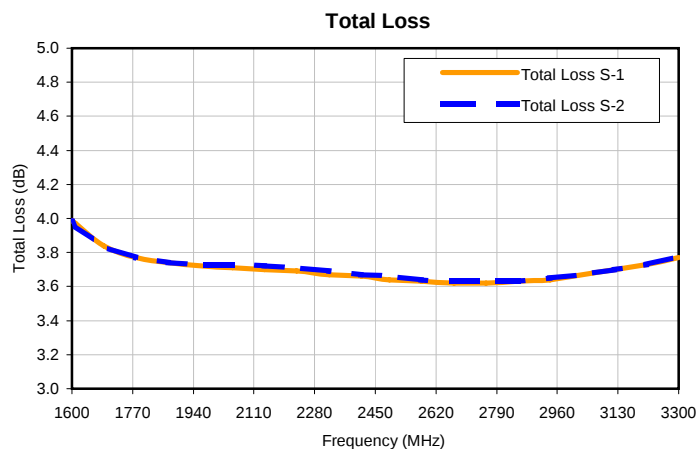
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2 Way-0° Power Splitter/Combiner

GP2Y+

Typical Performance Curves



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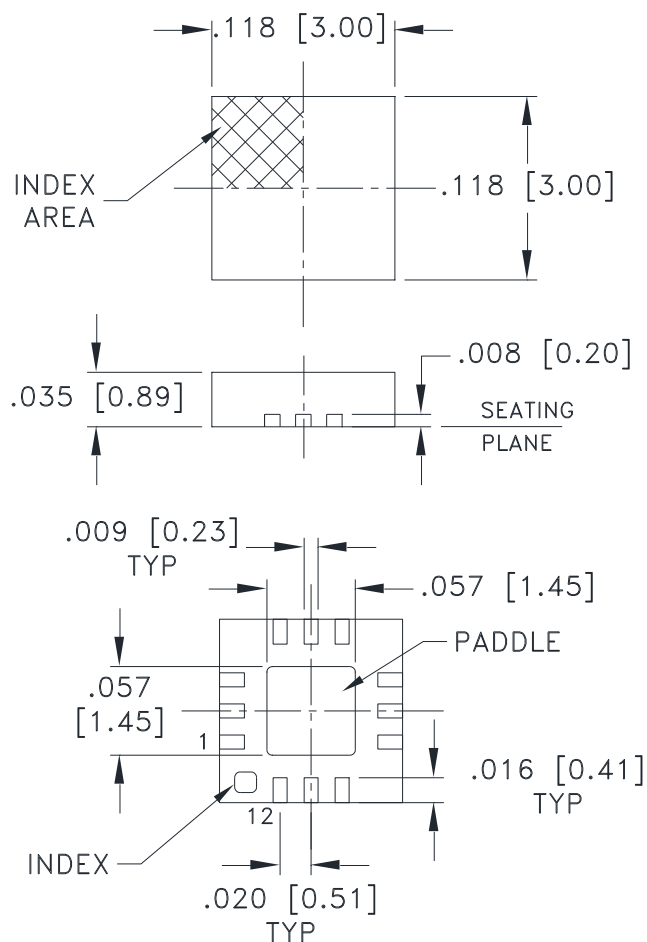
REV. X2

GP2Y+

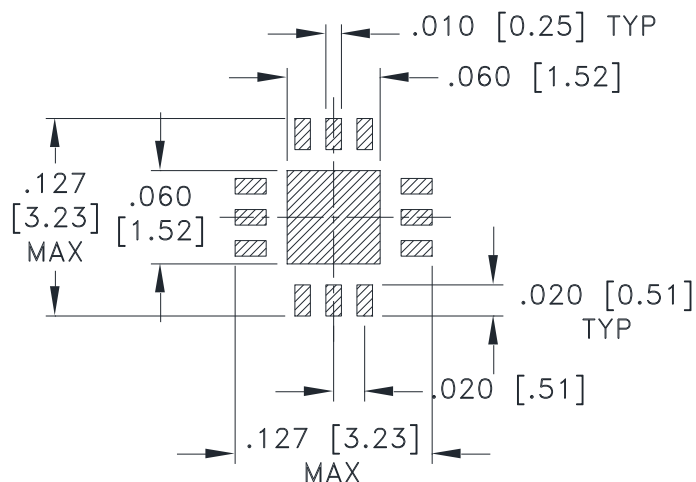
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Outline Dimensions



PCB Land Pattern



SUGGESTED LAYOUT,
TOLERANCE TO BE WITHIN ± 0.002

Weight: .02 Grams

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .01$; 3 Pl. $\pm .004$

Notes:

- Case material: Plastic.
- Termination finish:
 - For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin. All models, (+) suffix. See Data sheet.
 - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



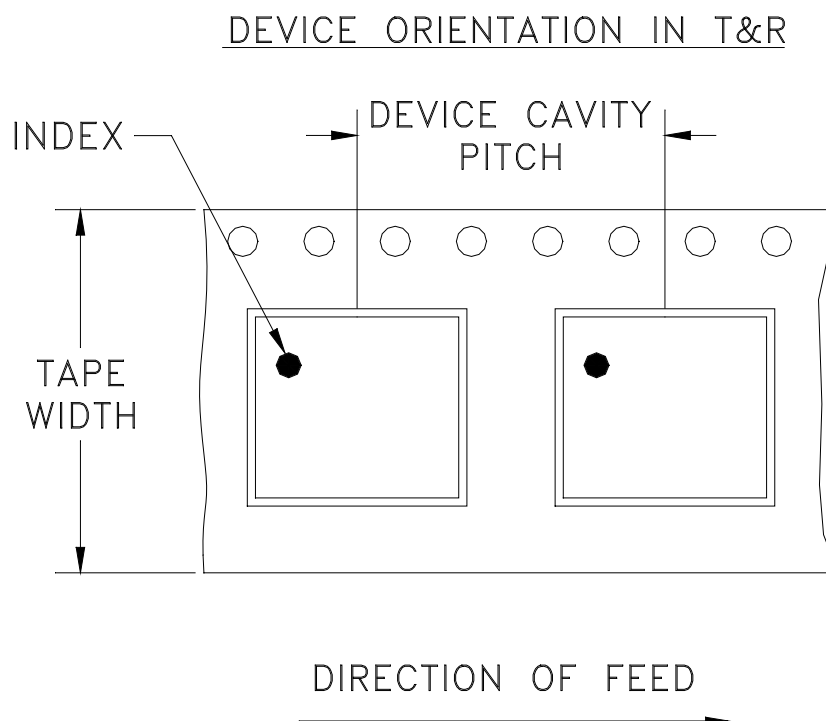
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Tape & Reel Packaging TR-F66



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel see note	
8	4	7	Small quantity standard	20
				50
				100
				200
				500
		7	Standard	1000, 2000, 3000

Note: Please consult individual model data sheet to determine device per reel availability.

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



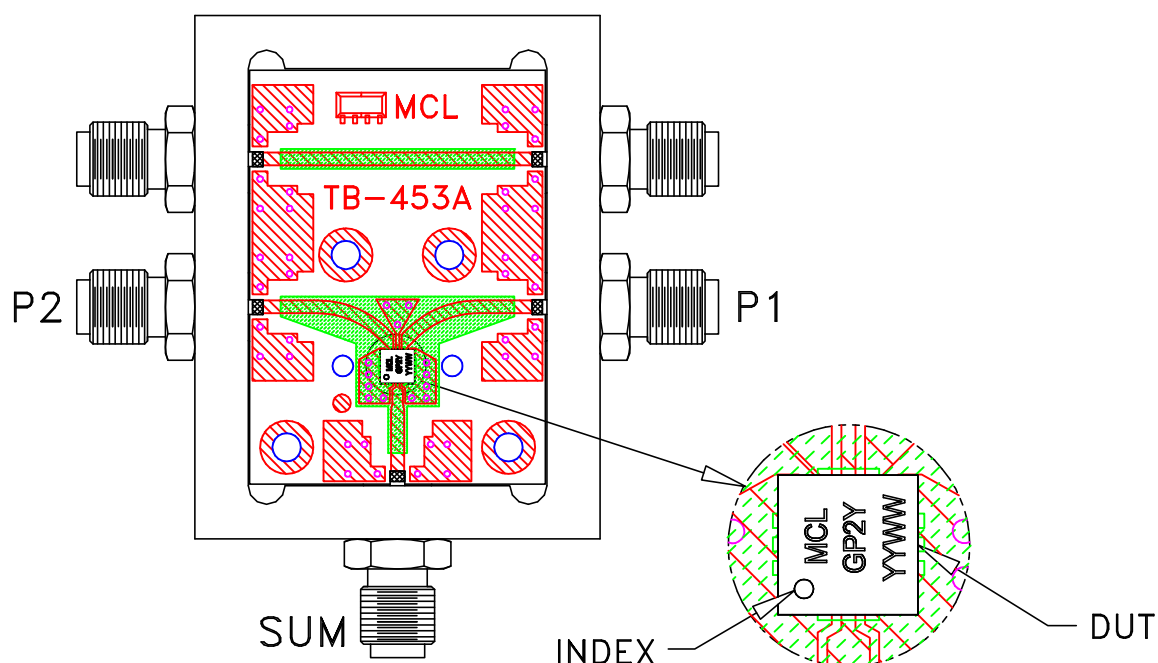
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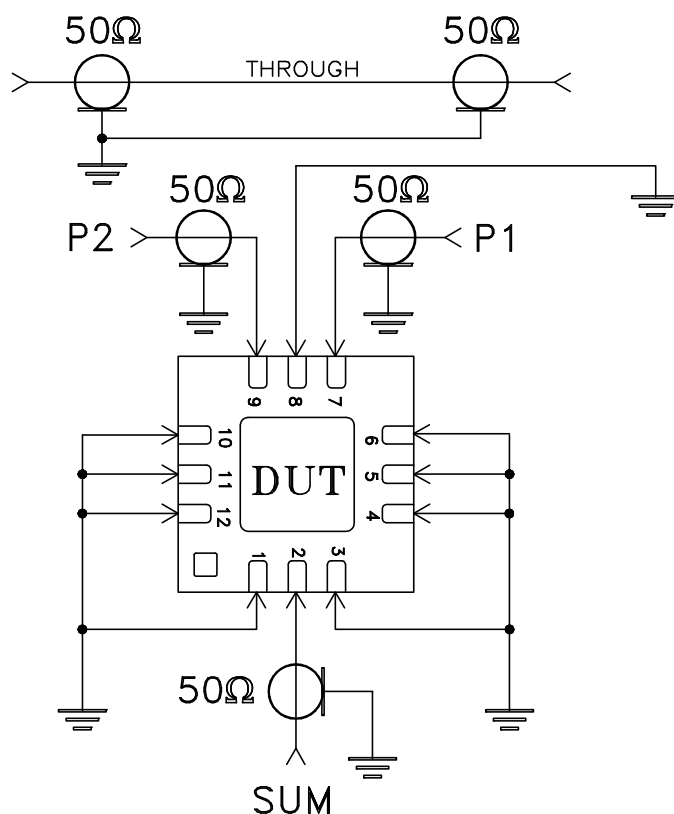
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Evaluation Board and Circuit



TB-453-GP2Y+



Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.020 inch.

Schematic Diagram

 **Mini-Circuits®**



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 85° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-65° to 150° C Ambient Environment	Individual Model Data Sheet
Autoclave	15 psig, 100% RH, 121°C, 96 hours	JESD22-A102-C, Condition C
Temperature Cycling	-65° to 150°C, 100 cycles	JESD22-A104
Temperature Humidity	85°C/ 85% RH, 168 hours	JESD22-113
Solder Reflow Heat	Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak	J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1
Moisture Sensitivity: Level 1	Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 240°C peak (Non-RoHS) or 260°C (RoHS)	J-STD-020
Solderability	10X magnification, 95% coverage	JESD22-B102, Method 1: Dip and Look Test
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
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