



Typical Characteristics ON P2T-100M56G-100-T

PMI MODEL P2T-100M56G-100-T IS AN ABSORPTIVE, SINGLE POLE TWO THROW PIN DIODE SWITCH THAT OPERATES OVER THE 100 MHz TO 56 GHz FREQUENCY RANGE. IT FEATURES LOW INSERTION LOSS AND HIGH ISOLATION IN A SLIMLINE PACKAGE. THIS MODEL ALSO INCORPORATES A TTL COMPATIBLE DRIVER FOR EASE OF SYSTEM INTEGRATION.



October 19, 2020

Designed By: Engineering PMI

Tested and Reported By:

Alfredo Lopez



Typical Characteristics ON P2T-100M56G-100-T

Technical Sheet

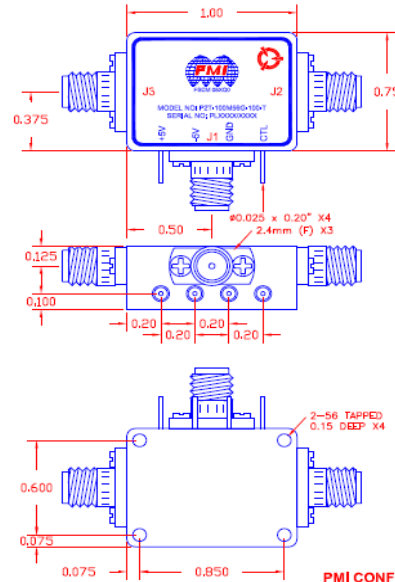
DESCRIPTION

PMI MODEL P2T-100M56G-100-T IS AN ABSORPTIVE, SINGLE POLE TWO THROW PIN DIODE SWITCH THAT OPERATES OVER THE 100 MHz TO 56 GHz FREQUENCY RANGE, IT FEATURES LOW INSERTION LOSS AND HIGH ISOLATION IN A SLIMLINE PACKAGE. THIS MODEL ALSO INCORPORATES A TTL COMPATIBLE DRIVER FOR EASE OF SYSTEM INTEGRATION.

SPECIFICATIONS

- FREQUENCY: 0.1 TO 56 GHz
- INSERTION LOSS: 5.0 dB (0.1 TO 18 GHz) MAX
6.0 dB (18 TO 40 GHz) MAX
9.0 dB (40 TO 52 GHz) MAX
14.0 dB (52 TO 56 GHz) MAX
- VSWR: 2.2:1 (0.1 TO 18GHz) TYP
2.5:1 (18 TO 40 GHz) TYP
3.0:1 (40 TO 52 GHz) TYP
3.0:1 (52 TO 56 GHz) TYP
- ISOLATION: 70 dB (0.1 TO 1 GHz) TYP
100 dB (1 TO 18 GHz) TYP
100 dB (18 TO 40 GHz) TYP
80 dB (40 TO 52 GHz) TYP
80 dB (52 TO 56 GHz) TYP
- INPUT POWER: 20 dBm CW MAX
- VIDEO TRANSIENTS: 800 mV TYP
- AMPLITUDE BALANCE: 0.5 dB (100 MHz TO 18 GHz) MAX
0.8 dB (18 TO 40 GHz) MAX
1.3 dB (40 TO 52 GHz) MAX
1.3 dB (52 TO 56 GHz) MAX
- PHASE BALANCE: 5° (100 MHz TO 18 GHz) MAX
10° (18 TO 40 GHz) MAX
10° (40 TO 52 GHz) MAX
15° (52 TO 56 GHz) MAX
- SWITCHING SPEED: 50 ns MAX
- CONTROL SIGNAL: TTL LOGIC "0" = J1-J2 ON
TTL LOGIC "1" = J1-J3 ON
- DC VOLTAGE: +5 V @ 100 mA MAX
-5 V @ 100 mA MAX
- RF CONNECTORS: 2.4 mm FEMALE
- SIZE: 1.0" X 0.75" X 0.4"
- FINISH: GOLD PLATED

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	05/16/22	
	A2	ECN # 23-0200	10/24/23	



PMI CONFIDENTIAL AND PROPRIETARY

PLANAR MONOLITHICS INDUSTRIES, INC.

7311-F GROVE ROAD

FREDERICK, MARYLAND 21704 USA

TEL: (301)-662-5019, FAX: (301)-662-1731

WEB: www.pmi-rf.com, EMAIL: sales@pmi-rf.com

ISO 9001 CERTIFIED



APPROVALS		DATE	TITLE		
DRAWN <i>M.D.L.</i>		05/16/22	PRODUCT FEATURE P2T-100M56G-100-T		
CHECKED			SIZE	FIG. NO.	DWG. NO.
			A	05XQ0	27041420
ISSUED			SCALE	N:S	SHEET 1 OF 2

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.020
X.XXX ±0.010



Typical Characteristics ON P2T-100M56G-100-T

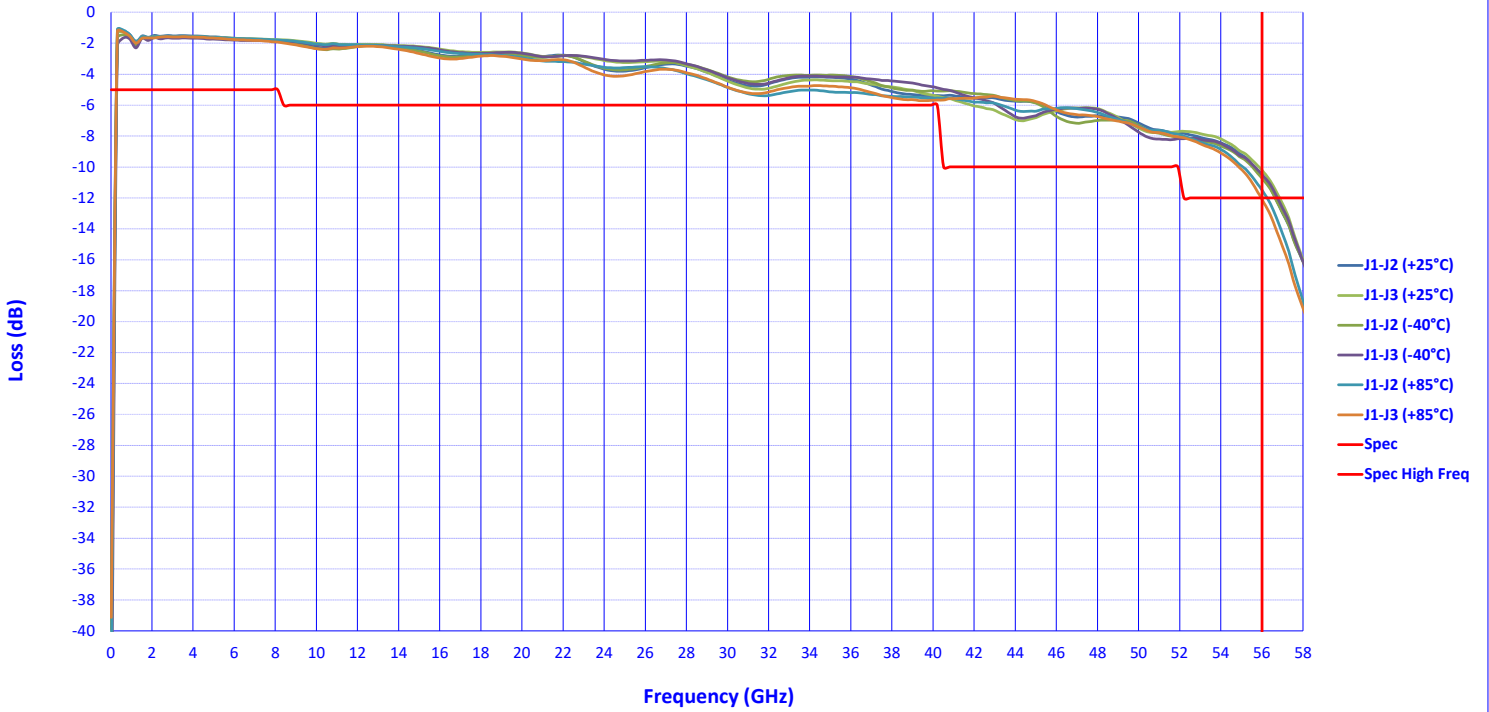
Technical Specifications

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	TEST RESULTS			QA QC
			+25°C	-40°C	+85°C	
1	Frequency Range:	100 MHz to 56 GHz	100 MHz to 56 GHz	100 MHz to 56 GHz	100 MHz to 56 GHz	
2	Insertion Loss:	5.0 dB (100MHz to 18 GHz) Max.	2.85 dB	2.9 dB	3.02 dB	
		6.0 dB (18 to 40 GHz) Max.	5.42 dB	5.1 dB	5.72 dB	
		9.0 dB (40 to 52 GHz) Max.	7.83 dB	8.25 dB	8.12 dB	
		14.0 dB (52 to 56 GHz) Max.	10.83 dB	10.9 dB	12.33 dB	
			See Graphs	See Graphs	See Graphs	
3	VSWR:	2.5:1 (100MHz to 18 GHz) Typ.	2.28 :1	2.54 :1	2.16 :1	
		3.0:1 (18 to 40 GHz) Max.	2.45 :1	2.35 :1	2.39 :1	
		3.0:1 (40 to 52 GHz) Max.	2.5 :1	2.63 :1	2.32 :1	
		3.0:1 (52 to 56 GHz) Max.	2.09 :1	1.9 :1	2.01 :1	
			See Graphs	See Graphs	See Graphs	
4	Isolation:	70 dB (100MHz to 1 GHz) Min.	101.18 dB	97.93 dB	97.51 dB	
		90 dB (1 to 18 GHz) Min.	100.73 dB	99.84 dB	99.81 dB	
		75 dB (18 to 40 GHz) Min.	78.32 dB	81.53 dB	80.41 dB	
		70 dB (40 to 52 GHz) Min.	76.68 dB	77.03 dB	75.92 dB	
		65 dB (52 to 56 GHz) Min.	73.92 dB	75.09 dB	74.53 dB	
			See Graphs	See Graphs	See Graphs	
5	Video Transients	800 mV Typ.	770 mV See Plots	770 mV See Plots	770 mV See Plots	
6	Amplitude Balance:	0.5 dB (100MHz to 18 GHz) Max.	0.38 dB	0.49 dB	0.44 dB	
		0.8 dB (18 to 40 GHz) Max.	0.58 dB	0.59 dB	0.54 dB	
		1.3 dB (40 to 52 GHz) Max	1.25 dB	1.1 dB	0.78 dB	
		1.3 dB (52 to 56 GHz) Max	0.46 dB	0.26 dB	0.64 dB	
			See Graphs	See Graphs	See Graphs	
7	Phase Balance	5° (100MHz to 18 GHz) Max.	2.64 °	2.69 °	2.63 °	
		10° (18 to 40 GHz) Max.	5.49 °	5.07 °	5.65 °	
		10° (40 to 52 GHz) Max	7.7 °	8.28 °	7.53 °	
		15° (52 to 56 GHz) Max	10.51 °	10.74 °	10.84 °	
			See Graphs	See Graphs	See Graphs	
5	Input Power:	20 dBm CW Max.	Pass See Graph	Pass See Graph	Pass See Graph	
6	Switching Speed:	50 ns Max.	Rise Time = 4.80 ns Fall Time = 3.6 ns Speed ON = 33.40 ns Speed OFF = 26.00 ns See Plots	Rise Time = 4.80 ns Fall Time = 3.6 ns Speed ON = 33.40 ns Speed OFF = 26.00 ns See Plots	Rise Time = 4.80 ns Fall Time = 3.6 ns Speed ON = 33.40 ns Speed OFF = 26.00 ns See Plots	
7	Control Signal:	TTL Logic "0" = J1-J2 On TTL Logic "1" = J1-J3 On	Pass	Pass	Pass	
8	DC Voltage:	+5 VDC @ 100 mA Max. -5 VDC @ 100 mA Max.	+5 VDC @ 88 mA -5 VDC @ 78 mA	+5 VDC @ 86 mA -15 VDC @ 74 mA	+5 VDC @ 90 mA -15 VDC @ 80 mA	

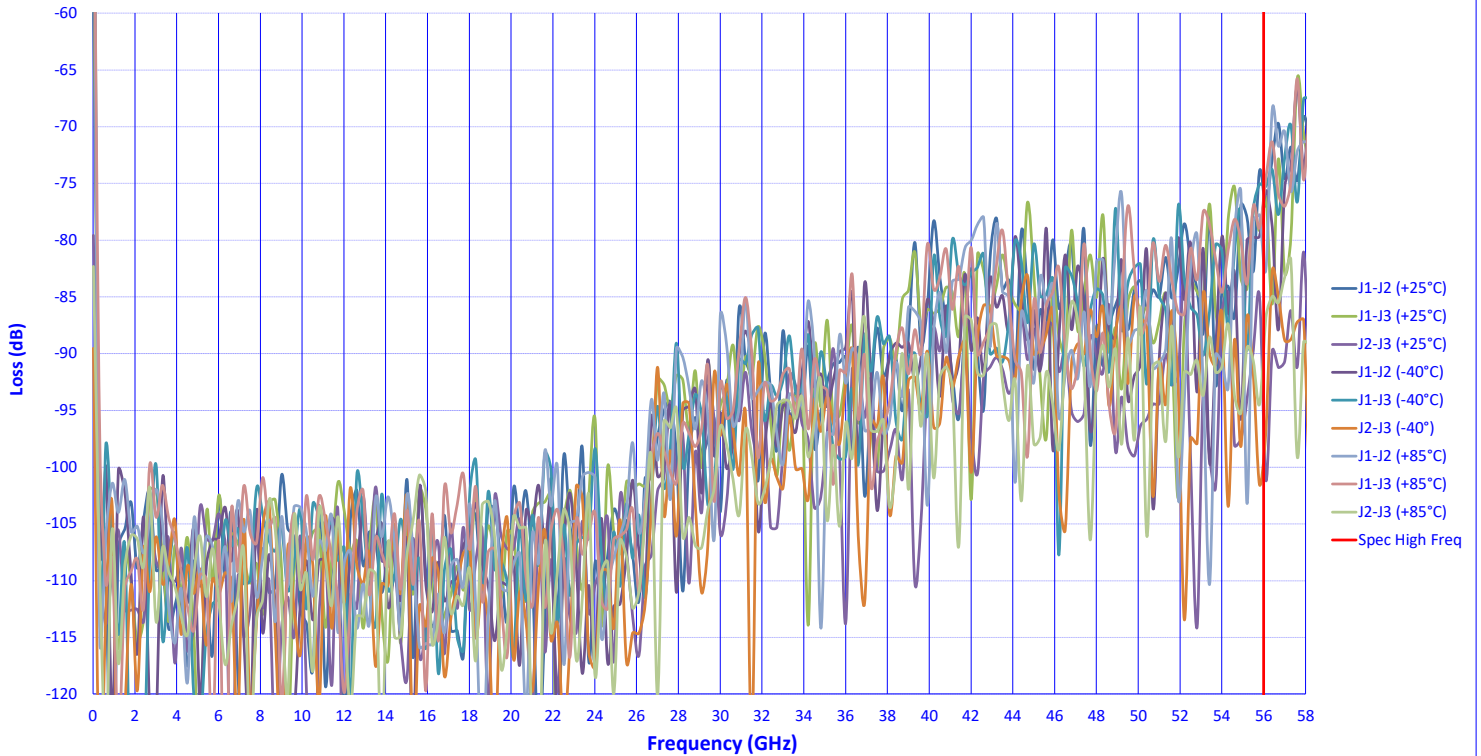


SUMMARY TEST DATA ON P2T-100M56G-100-T

Insertion Loss



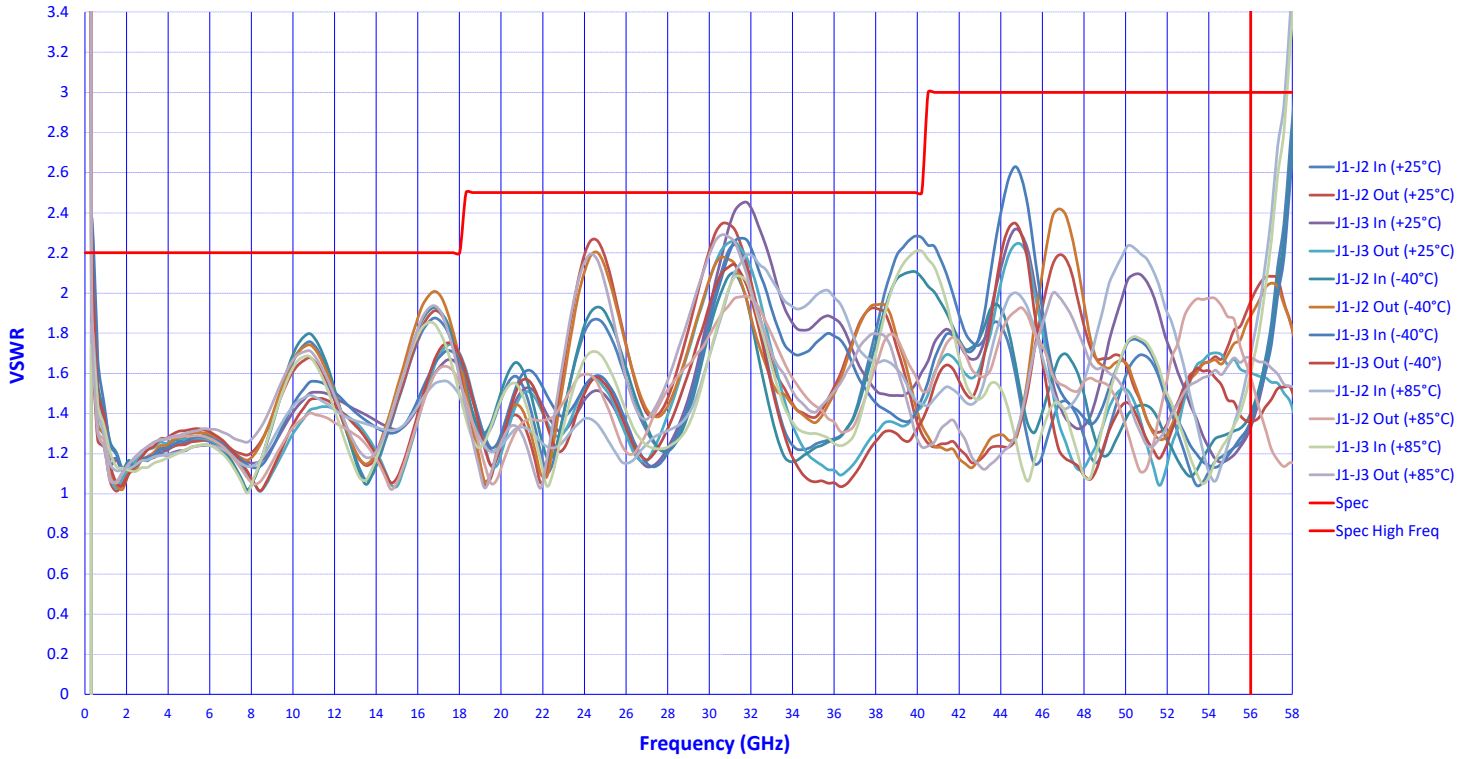
Isolation



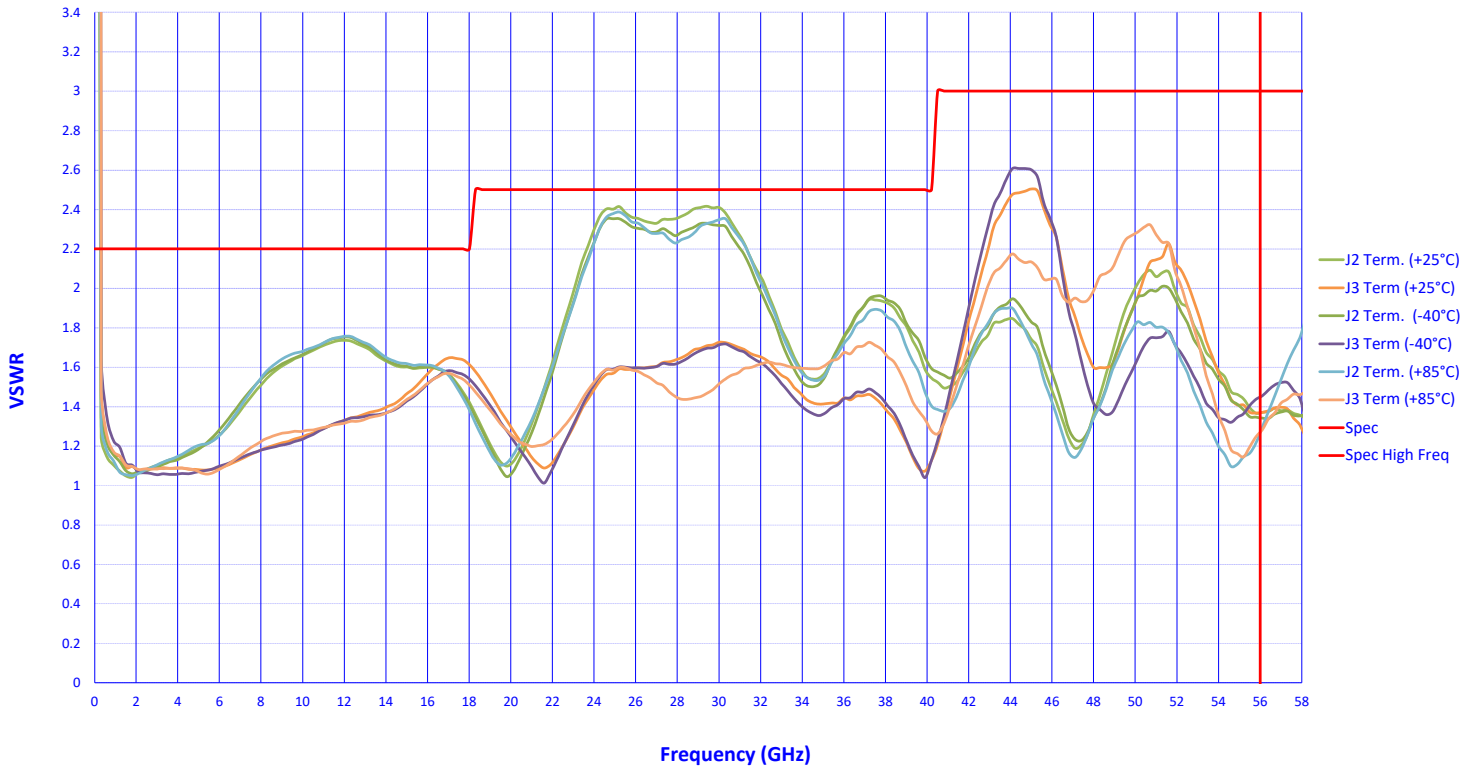


SUMMARY TEST DATA ON P2T-100M56G-100-T

VSWR



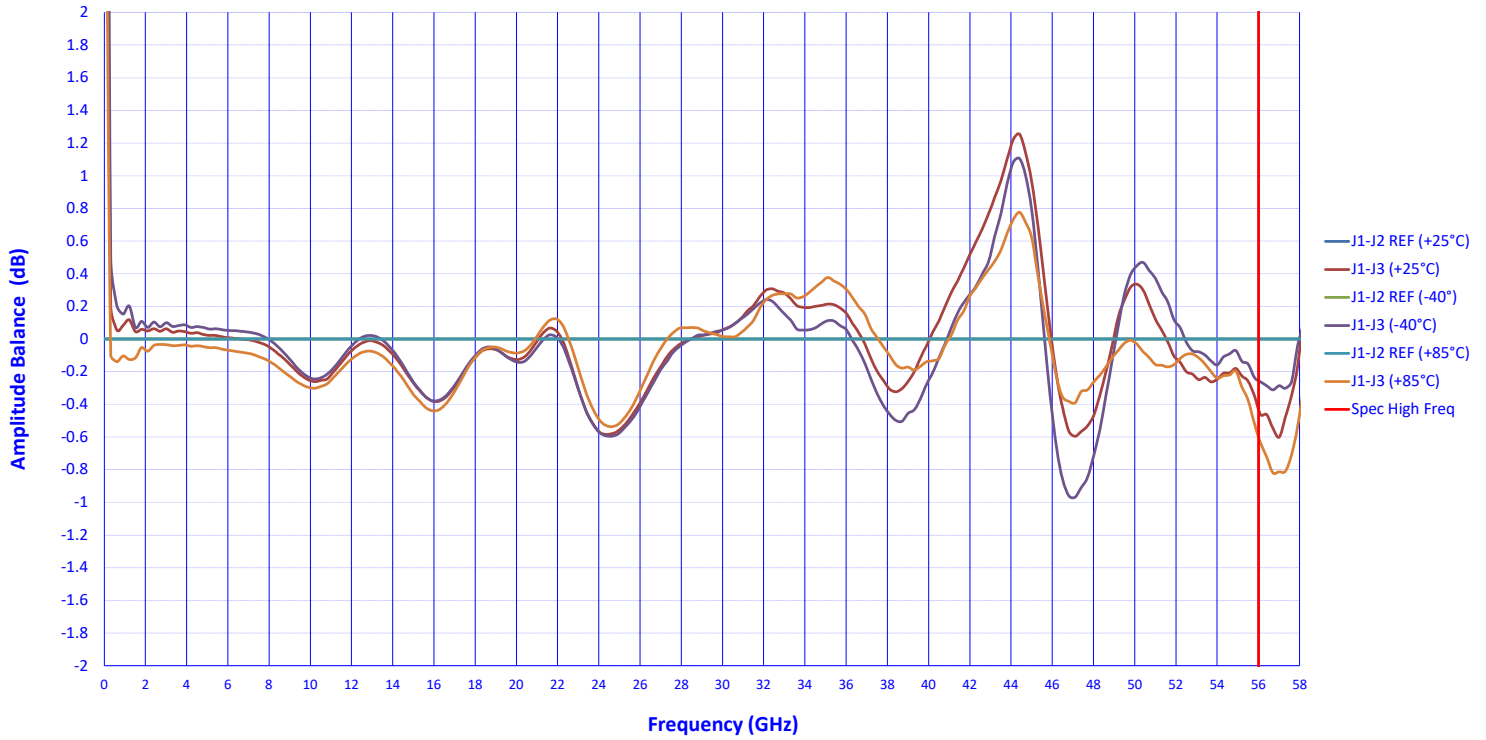
VSWR (Termination)



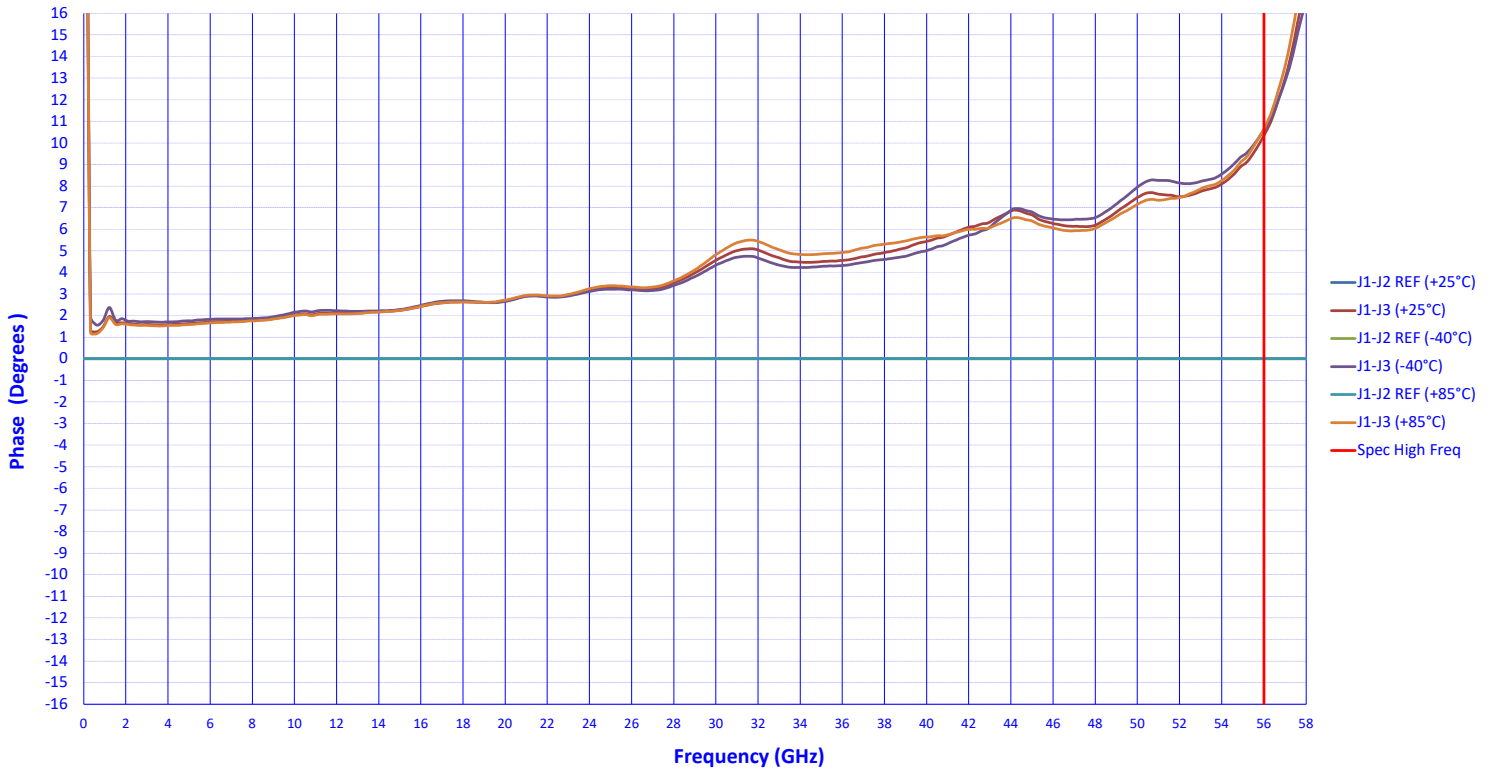


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Amplitude Balance



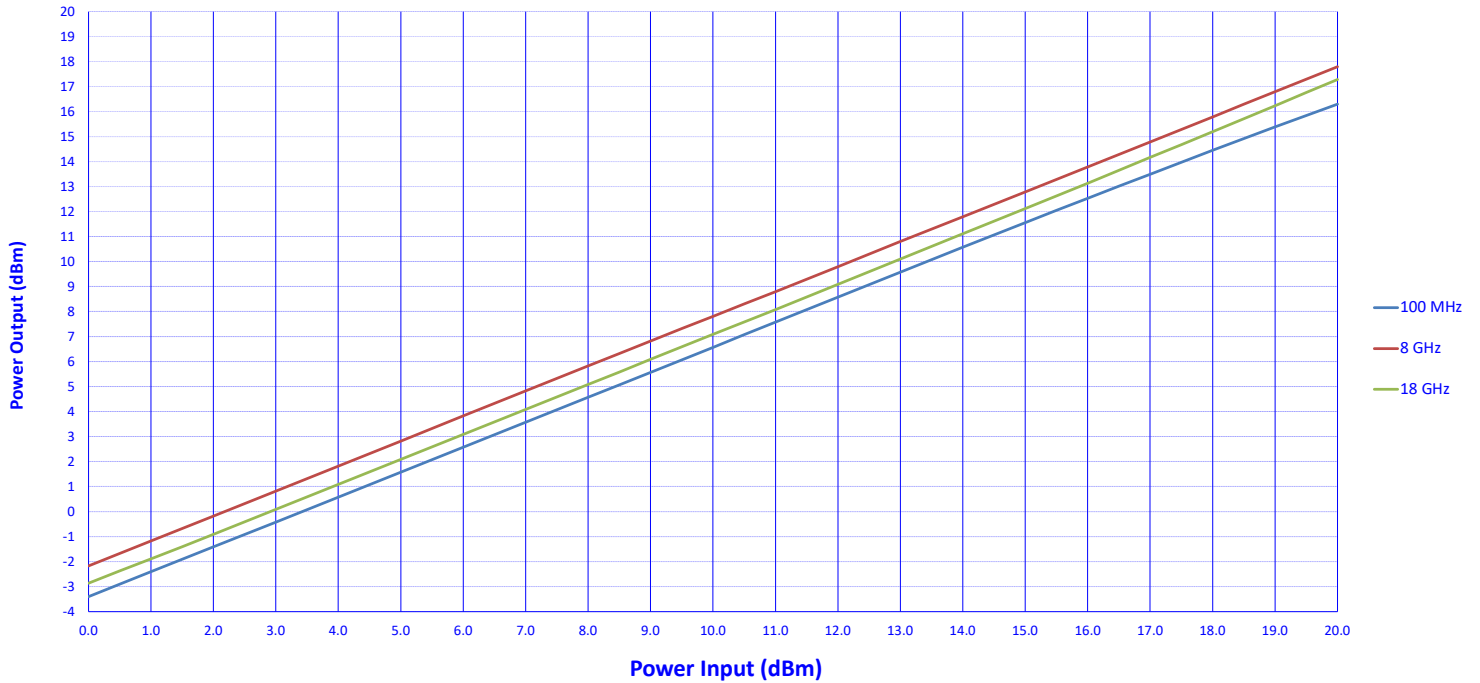
Phase Balance





SUMMARY TEST DATA ON P2T-100M56G-100-T

Power Test Graph (100MHz to 18GHz)



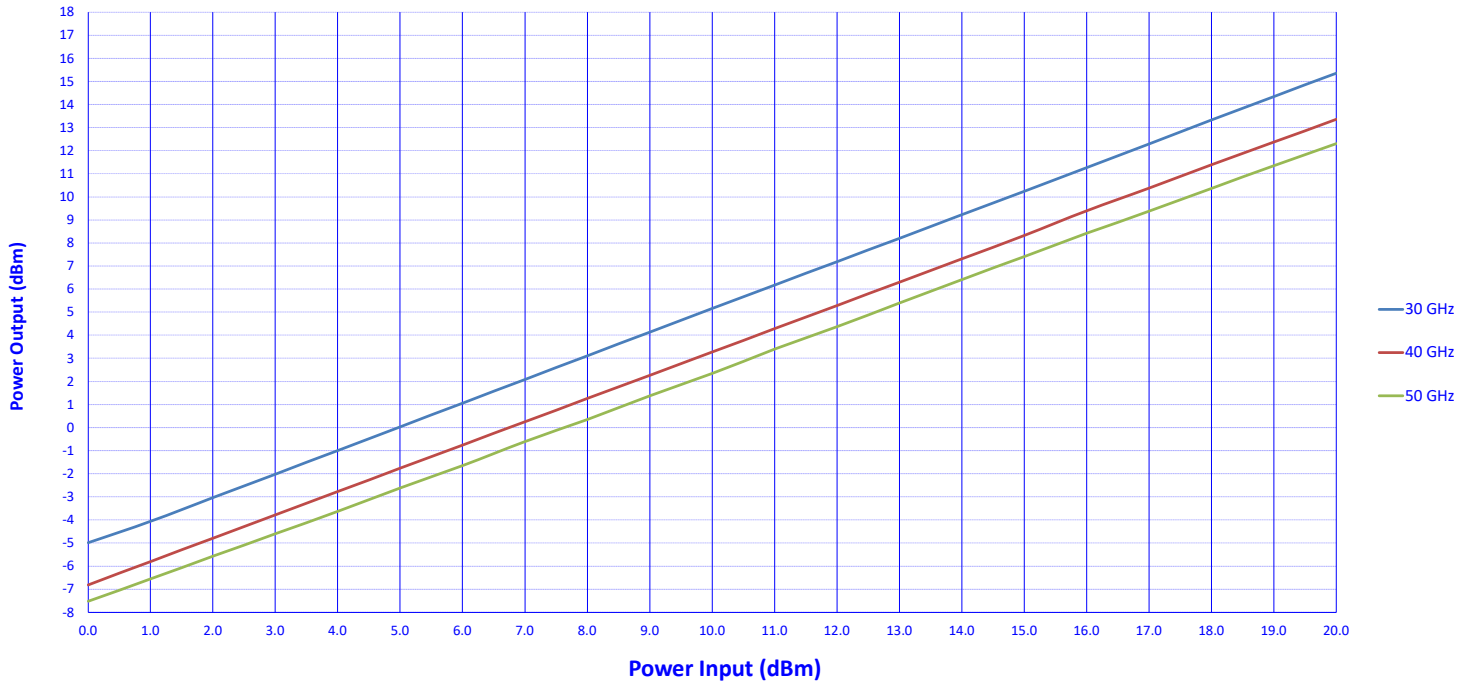
Power Test Data 100MHz to 18GHz (CW)

Power Input (dBm)	100 MHz			8 GHz			18 GHz		
	Power Output	Loss	Compression (dBm)	Power Output	Loss	Compression (dBm)	Power Output	Loss	Compression (dBm)
0.0	-3.40	3.40	0.000	-2.17	2.17	0.000	-2.85	2.85	0.000
1.0	-2.40	3.40	0.002	-1.17	2.17	0.002	-1.89	2.89	0.033
2.0	-1.40	3.40	0.003	-0.17	2.17	0.002	-0.90	2.90	0.044
3.0	-0.41	3.41	0.010	0.83	2.17	0.002	0.10	2.90	0.048
4.0	0.58	3.42	0.016	1.83	2.17	0.002	1.10	2.90	0.050
5.0	1.58	3.42	0.018	2.83	2.17	0.001	2.09	2.91	0.051
6.0	2.58	3.42	0.020	3.83	2.17	0.000	3.09	2.91	0.051
7.0	3.58	3.42	0.021	4.83	2.17	0.001	4.09	2.91	0.051
8.0	4.58	3.42	0.021	5.83	2.17	0.002	5.09	2.91	0.053
9.0	5.58	3.42	0.022	6.83	2.17	0.001	6.09	2.91	0.053
10.0	6.58	3.42	0.021	7.82	2.18	0.010	7.09	2.91	0.051
11.0	7.58	3.42	0.017	8.81	2.20	0.024	8.08	2.92	0.064
12.0	8.58	3.42	0.022	9.80	2.20	0.027	9.10	2.90	0.050
13.0	9.58	3.42	0.023	10.81	2.20	0.024	10.11	2.90	0.040
14.0	10.58	3.43	0.023	11.80	2.20	0.033	11.11	2.89	0.031
15.0	11.56	3.44	0.034	12.79	2.21	0.037	12.13	2.87	0.018
16.0	12.54	3.46	0.059	13.79	2.21	0.041	13.14	2.86	0.005
17.0	13.50	3.50	0.096	14.79	2.21	0.037	14.17	2.83	0.023
18.0	14.45	3.55	0.145	15.79	2.21	0.037	15.20	2.80	0.054
19.0	15.39	3.61	0.208	16.80	2.20	0.031	16.24	2.76	0.094
20.0	16.30	3.70	0.299	17.80	2.20	0.031	17.29	2.71	0.145



Typical Characteristics ON P2T-100M56G-100-T

Power Test Graph (30GHz to 50 GHz)



Power Test Data 30 GHz to 50 GHz (CW)

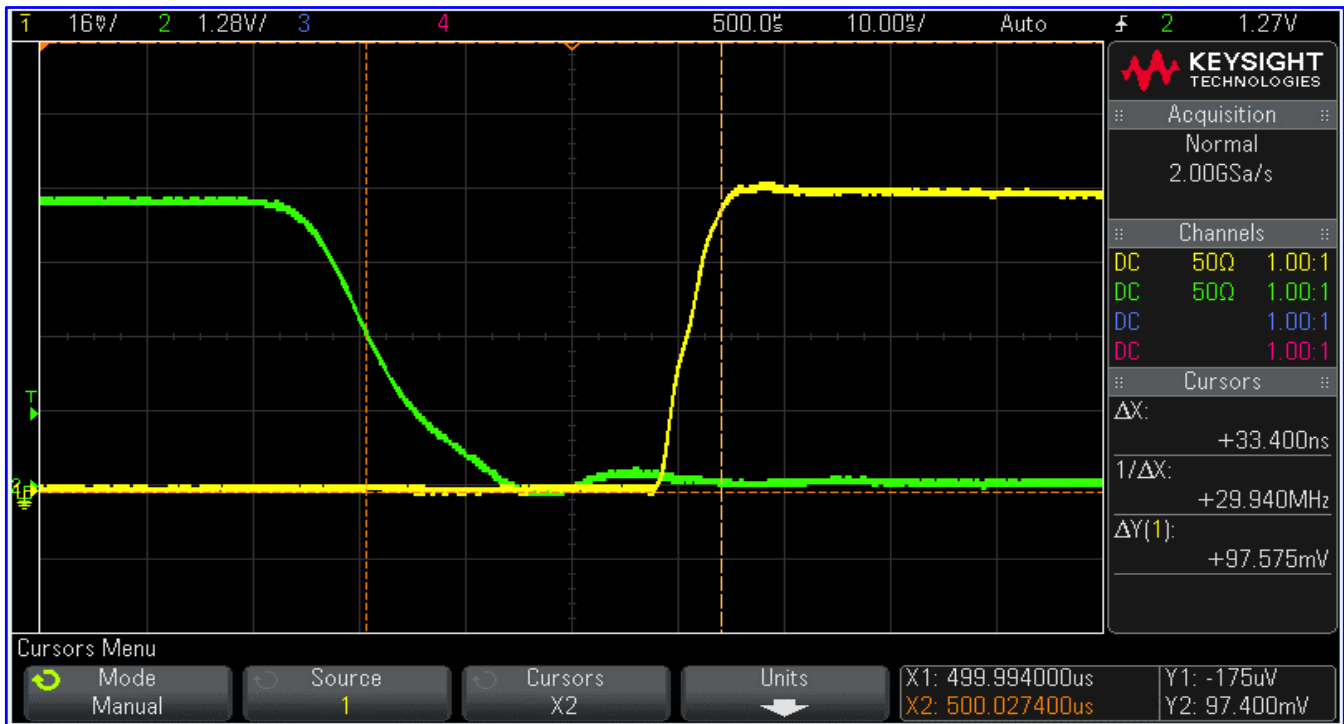
Power Input (dBm)	30 GHz			40 GHz			50 GHz		
	Power Output	Loss	Compression (dBm)	Power Output	Loss	Compression (dBm)	Power Output	Loss	Compression (dBm)
0.0	-4.99	4.99	0.000	-6.81	6.81	0.000	-7.52	7.52	0.000
1.0	-4.06	5.06	0.073	-5.80	6.80	0.009	-6.55	7.55	0.029
2.0	-3.03	5.03	0.047	-4.79	6.79	0.020	-5.57	7.57	0.047
3.0	-2.01	5.01	0.024	-3.78	6.78	0.032	-4.60	7.60	0.077
4.0	-0.99	4.99	0.001	-2.77	6.77	0.040	-3.62	7.62	0.097
5.0	0.04	4.96	0.024	-1.76	6.76	0.049	-2.61	7.61	0.087
6.0	1.07	4.93	0.055	-0.75	6.75	0.059	-1.64	7.64	0.117
7.0	2.09	4.91	0.082	0.26	6.74	0.066	-0.60	7.60	0.077
8.0	3.12	4.88	0.106	1.26	6.74	0.071	0.36	7.64	0.117
9.0	4.14	4.86	0.131	2.27	6.73	0.078	1.38	7.62	0.097
10.0	5.16	4.84	0.149	3.28	6.72	0.087	2.35	7.65	0.127
11.0	6.18	4.82	0.168	4.29	6.71	0.096	3.40	7.60	0.077
12.0	7.20	4.80	0.183	5.30	6.70	0.105	4.38	7.62	0.097
13.0	8.21	4.79	0.195	6.31	6.69	0.112	5.40	7.60	0.077
14.0	9.22	4.78	0.211	7.32	6.68	0.122	6.42	7.58	0.057
15.0	10.24	4.76	0.231	8.33	6.67	0.137	7.41	7.59	0.067
16.0	11.27	4.73	0.254	9.40	6.60	0.207	8.42	7.58	0.057
17.0	12.30	4.70	0.283	10.38	6.62	0.187	9.38	7.62	0.097
18.0	13.33	4.67	0.314	11.39	6.61	0.197	10.37	7.63	0.107
19.0	14.35	4.65	0.337	12.37	6.63	0.177	11.35	7.65	0.127
20.0	15.36	4.64	0.347	13.36	6.64	0.167	12.3	7.70	0.177



Typical Characteristics ON P2T-100M56G-100-T

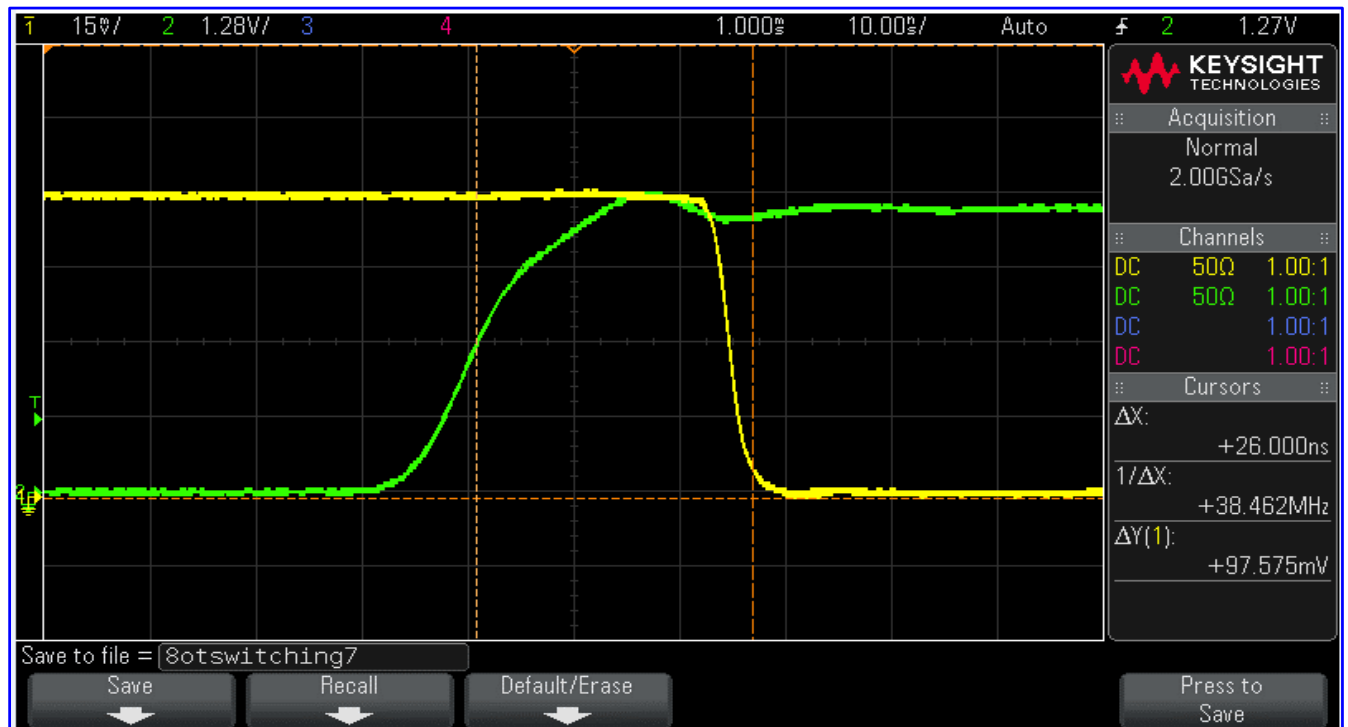
Switching Speed ON

10 ns Per Div = Measured value (33.40ns)



Switching Speed OFF

10 ns Per Div = Measured value (26.00ns)



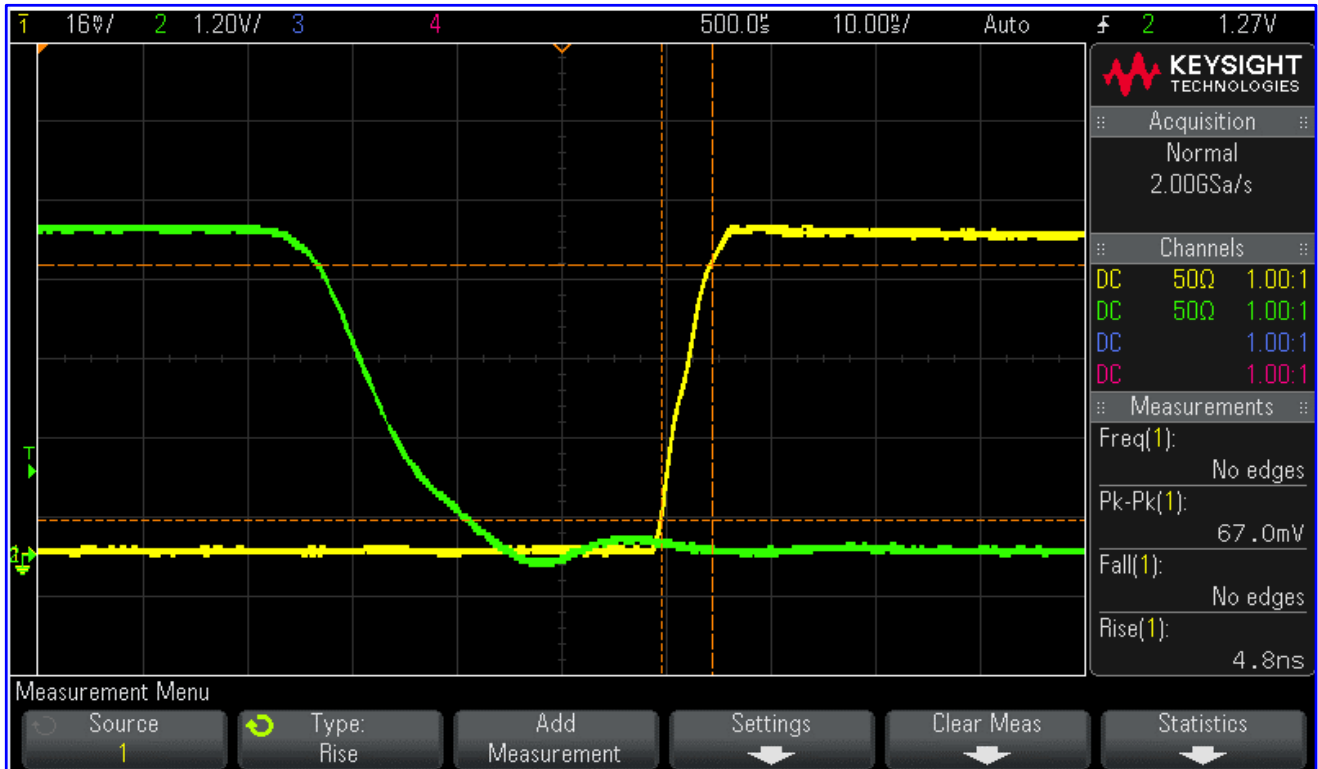
Green Trace = TTL Signal
Yellow Trace = RF Signal



SUMMARY TEST DATA ON P2T-100M56G-100-T

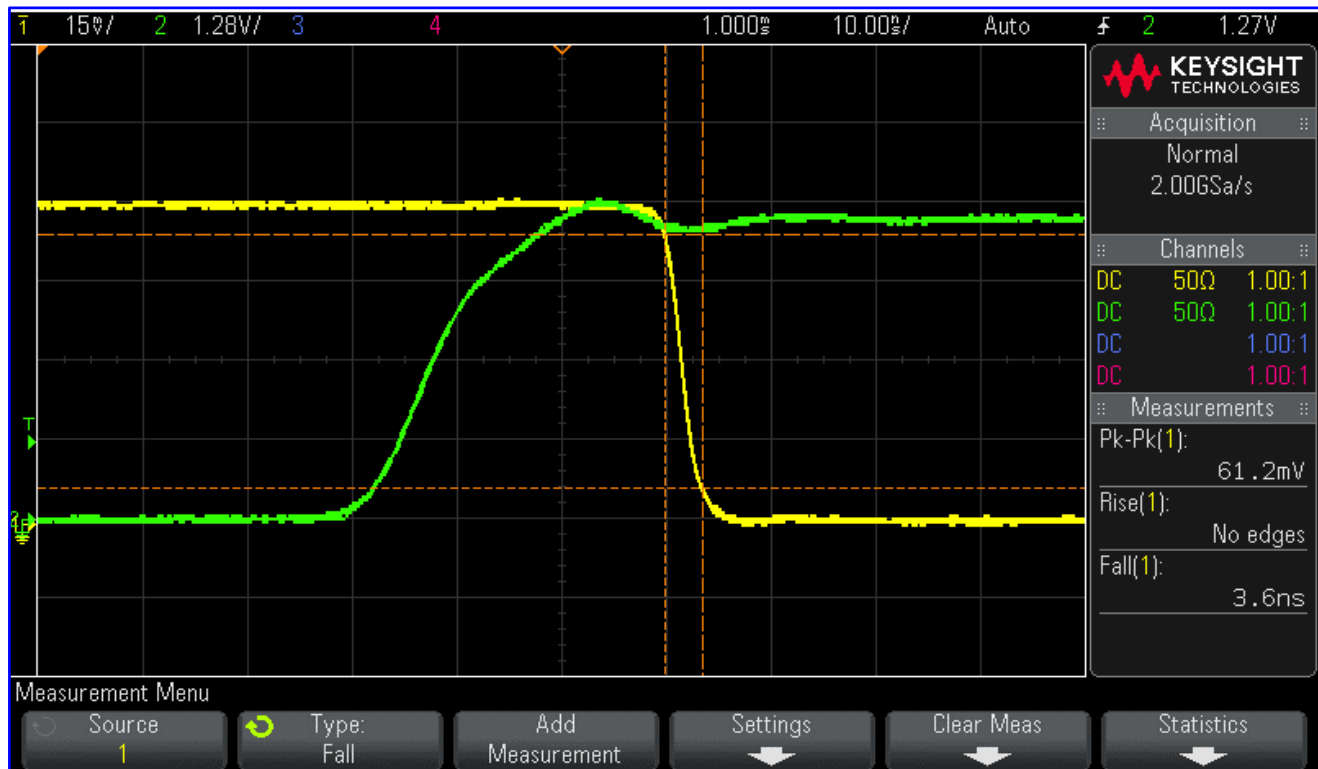
Rise Time

10 ns Per Div = Measured value (4.80ns)



Rise Time

10 ns Per Div = Measured value (3.60ns)

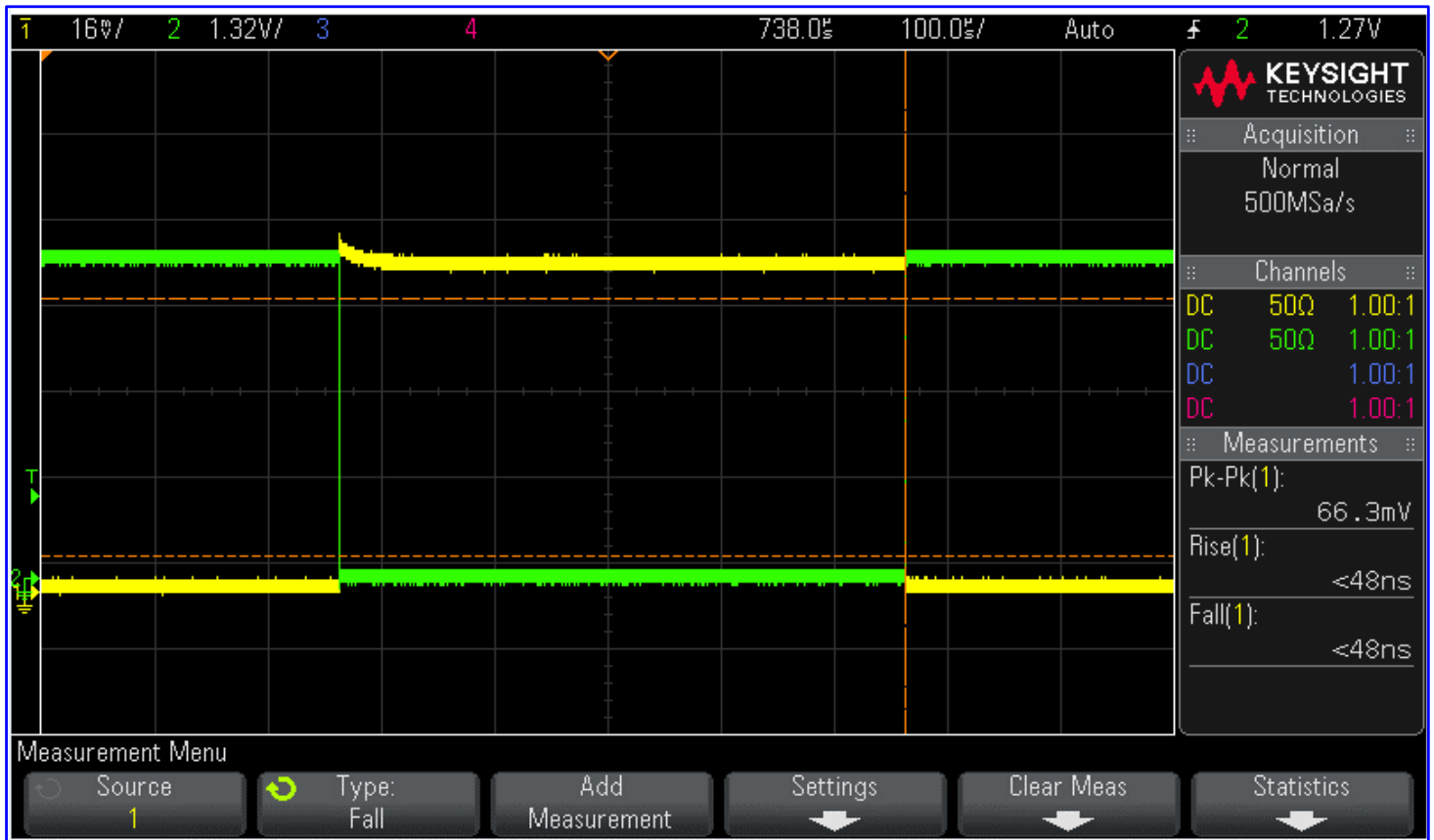


Green Trace = TTL Signal
Yellow Trace = RF Signal



Typical Characteristics ON P2T-100M56G-100-T

Full Pulse
100 μ s Per Div



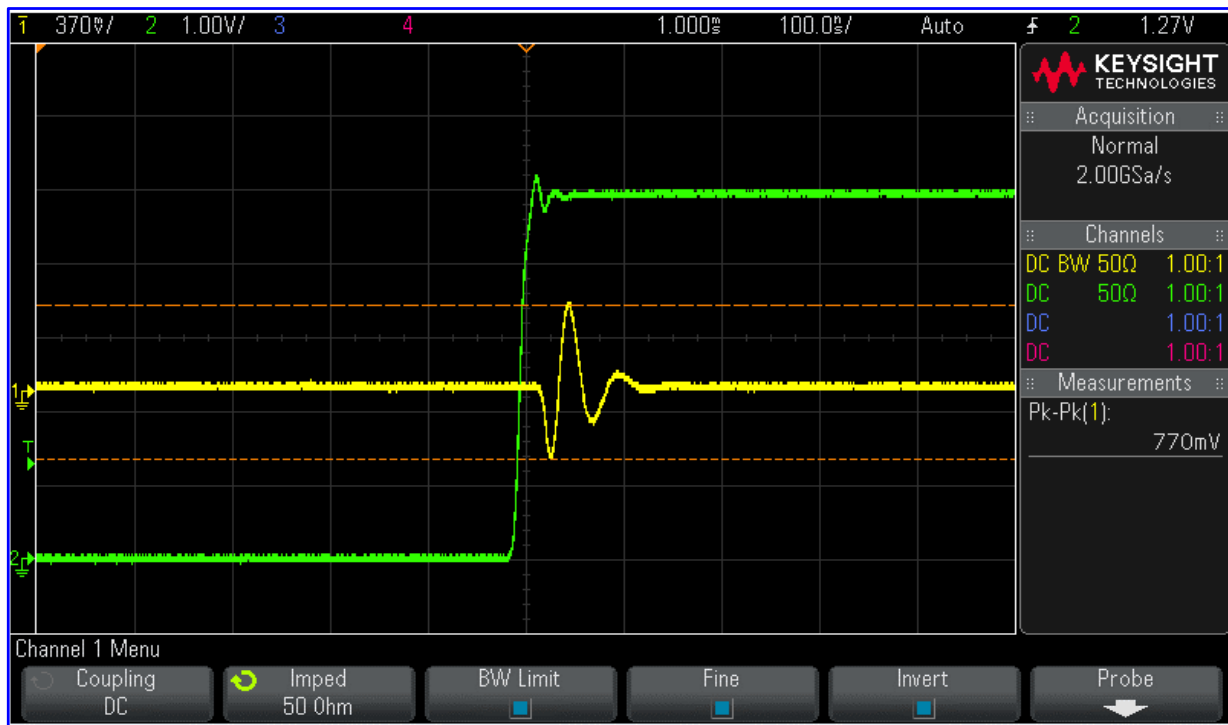
Green Trace = TTL Signal
Yellow Trace = RF Signal



Typical Characteristics ON P2T-100M56G-100-T

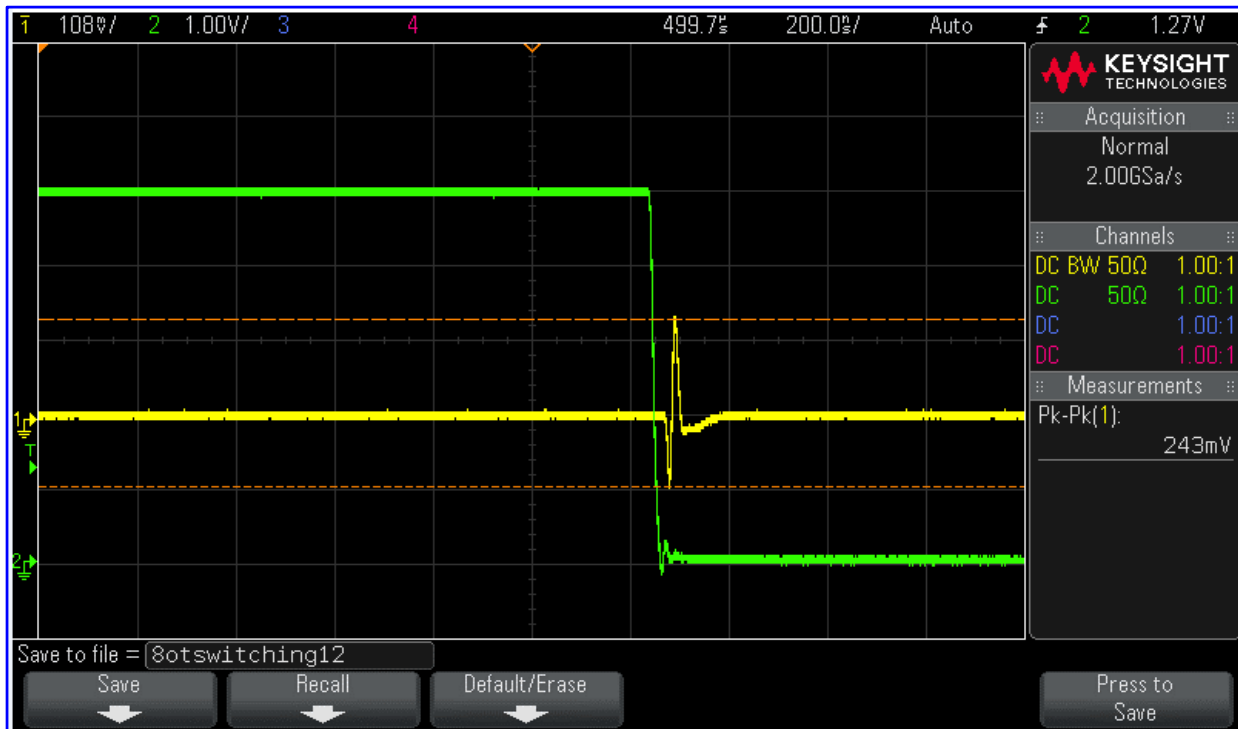
Output Video Transients TTL Off to ON (BW 350 MHz)

Measured value (770mV)



Output Video Transients TTL On to Off (BW 350 MHz)

Measured value (243mV)



Green Trace = TTL Signal
Yellow Trace = RF Signal