Typical Characteristics
ON
P2T-100M50G-100-512-T

PMI MODEL P2T-100M50G-100-512-T IS AN ABSORPTIVE, SINGLE POLE TWO THROW PIN DIODE SWITCH THAT OPERATES OVER THE 0.1 GHz TO 50 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.

January 30th, 2025

Designed By: Engineering PMI

Tested and Reported By:

Alfredo Lopez & Shane O'Neill

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Typical Characteristics ON P2T-100M50G-100-512-T

Technical Sheet

DESCRIPTION

PMI MODEL P2T-100M50G-100-512-T IS AN ABSORPTIVE, SINGLE POLE TWO THROW PIN DIODE SWITCH THAT OPERATES OVER THE 0.1 GHz TO 50 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 50 GHz
- INSERTION LOSS: 4.5 dB (0.1 TO 18 GHz) MAX.
  6.0 dB (18 TO 40 GHz) MAX.
  8.5 dB (40 TO 50 GHz) MAX.
- VSWR: 2.5:1 (0.1 TO 18GHz) MAX.
  2.6:1 (18 TO 40 GHz) MAX.
  2.8:1 (40 TO 50 GHz) MAX.
- ISOLATION: 85 dB (0.1 TO 18 GHz) MIN.
  85 dB (18 TO 40 GHz) MIN.
  70 dB (40 TO 50 GHz) MIN.
- INPUT POWER: 20 dBm CW 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
  -12 V @ 100 mA MAX
- RF CONNECTORS: 2.4 mm FEMALE
- SIZE: 1.0" X 0.75" X 0.4"
- FINISH: GOLD PLATED

ENVIRONMENTAL RATINGS

- TEMPERATURE: -40 °C TO +85 °C (OPERATING)
  -65 °C TO +125 °C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE

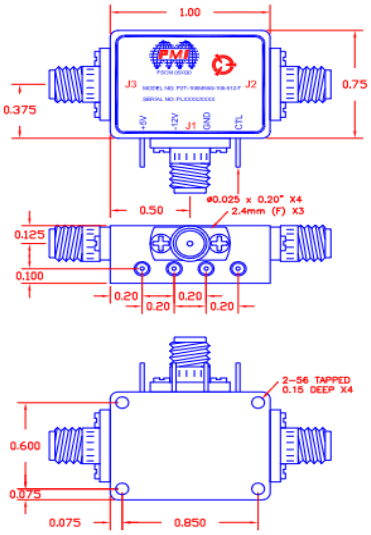
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

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

PMI CONFIDENTIAL AND PROPRIETARY

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	2/26/21	
	B1	ECN # 21- 0116	7/15/21	

MECHANICAL OUTLINE



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ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN ALC	7/15/21
CHECKED	
ISSUED	

TITLE: PRODUCT FEATURE
P2T-100M50G-100-512-T

SIZE	FSCM NO.	DWG NO.	REV.
A	05XQ0	27041160	B1

SCALE N:S SHEET 1 OF 1

Typical Characteristics ON P2T-100M50G-100-512-T

Technical Specifications

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	TEST RESULTS		
			+25°C	-40°C	+85°C
1	Frequency Range:	100 MHz to 50 GHz	Spec 100 MHz to 50 GHz	Spec 100 MHz to 50 GHz	Spec 100 MHz to 50 GHz
2	Insertion Loss:	4.5 dB (100MHz to 18 GHz) Max.	3.25 dB	3.31 dB	3.24 dB
		6.0 dB (18 to 40 GHz) Max.	4.89 dB	5.14 dB	5.67 dB
		8.5 dB (40 to 50 GHz) Max.	6.89 dB	6.57 dB	7.13 dB
			See Graphs	See Graphs	See Graphs
3	VSWR:	2.5:1 (100MHz to 18 GHz) Max.	1.74 :1	1.8 :1	1.74 :1
		2.6:1 (18 to 40 GHz) Max.	1.74 :1	1.85 :1	1.83 :1
		2.8:1 (40 to 50 GHz) Max.	1.72 :1	1.85 :1	1.79 :1
			See Graphs	See Graphs	See Graphs
4	Isolation:	85 dB (100MHz to 1 GHz) Min.	96.9 dB	101.05 dB	96.63 dB
		85 dB (1 to 18 GHz) Min.	94 dB	95.32 dB	93.01 dB
		85 dB (18 to 40 GHz) Min.	86.71 dB	87.01 dB	85.75 dB
		70 dB (40 to 50 GHz) Min.	78.58 dB	77.14 dB	78.95 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.	0.1 dB	0.15 dB	0.22 dB
		0.8 dB (18 to 40 GHz) Max.	0.2 dB	0.49 dB	0.68 dB
		1.3 dB (40 to 50 GHz) Max	0.5 dB	0.77 dB	0.68 dB
			See Graphs	See Graphs	See Graphs
7	Phase Balance	5° (100MHz to 18 GHz) Max.	5.84 °	2.64 °	3.42 °
		10° (18 to 40 GHz) Max.	16.02 °	5.87 °	9.75 °
		10° (40 to 50 GHz) Max	22.84 °	15.59 °	17.88 °
			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. -12 VDC @ 100 mA Max.	+5 VDC @ 88 mA -12 VDC @ 68 mA	+5 VDC @ 87 mA -12 VDC @ 64 mA	+5 VDC @ 90 mA -12 VDC @ 70 mA

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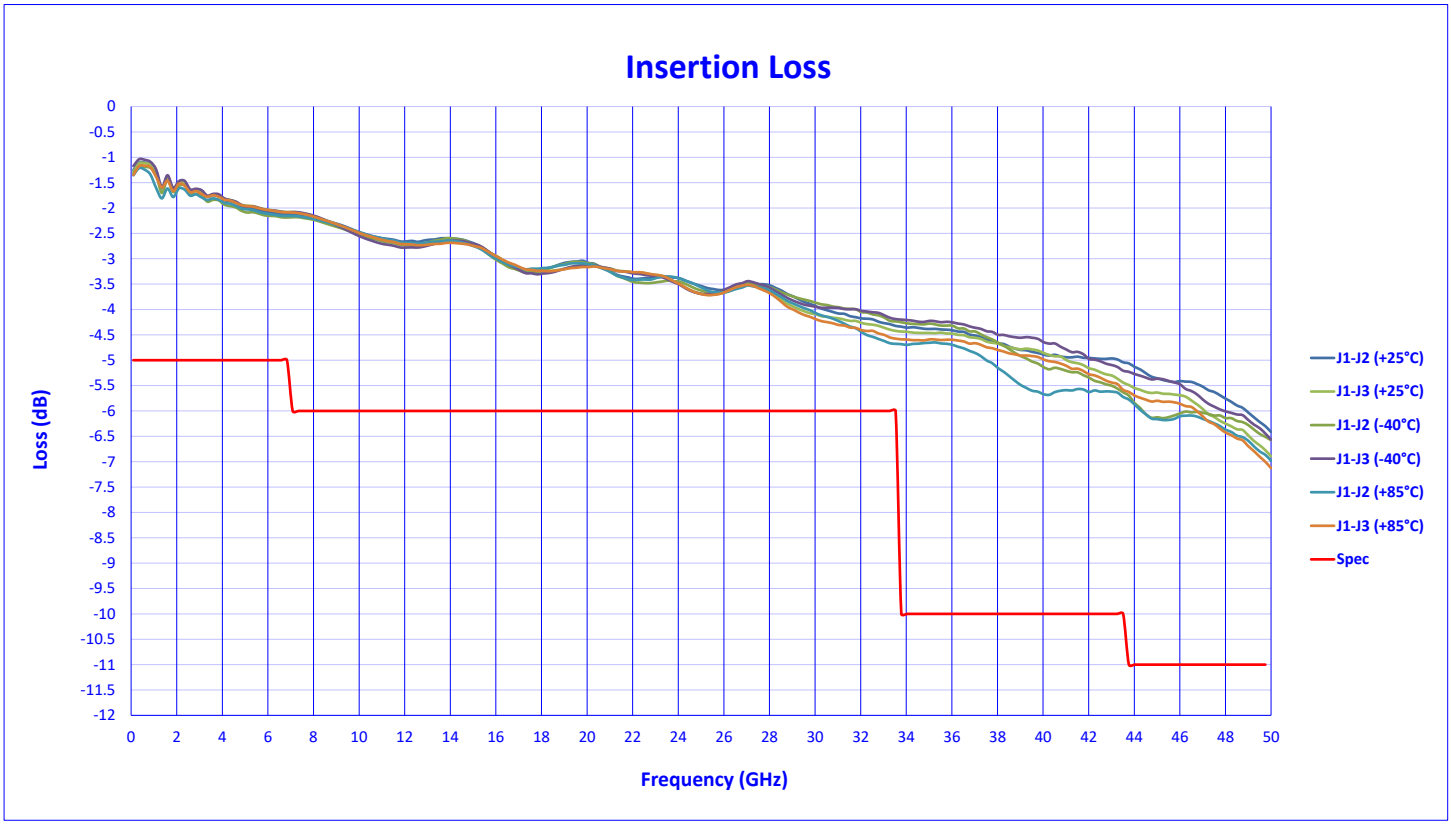
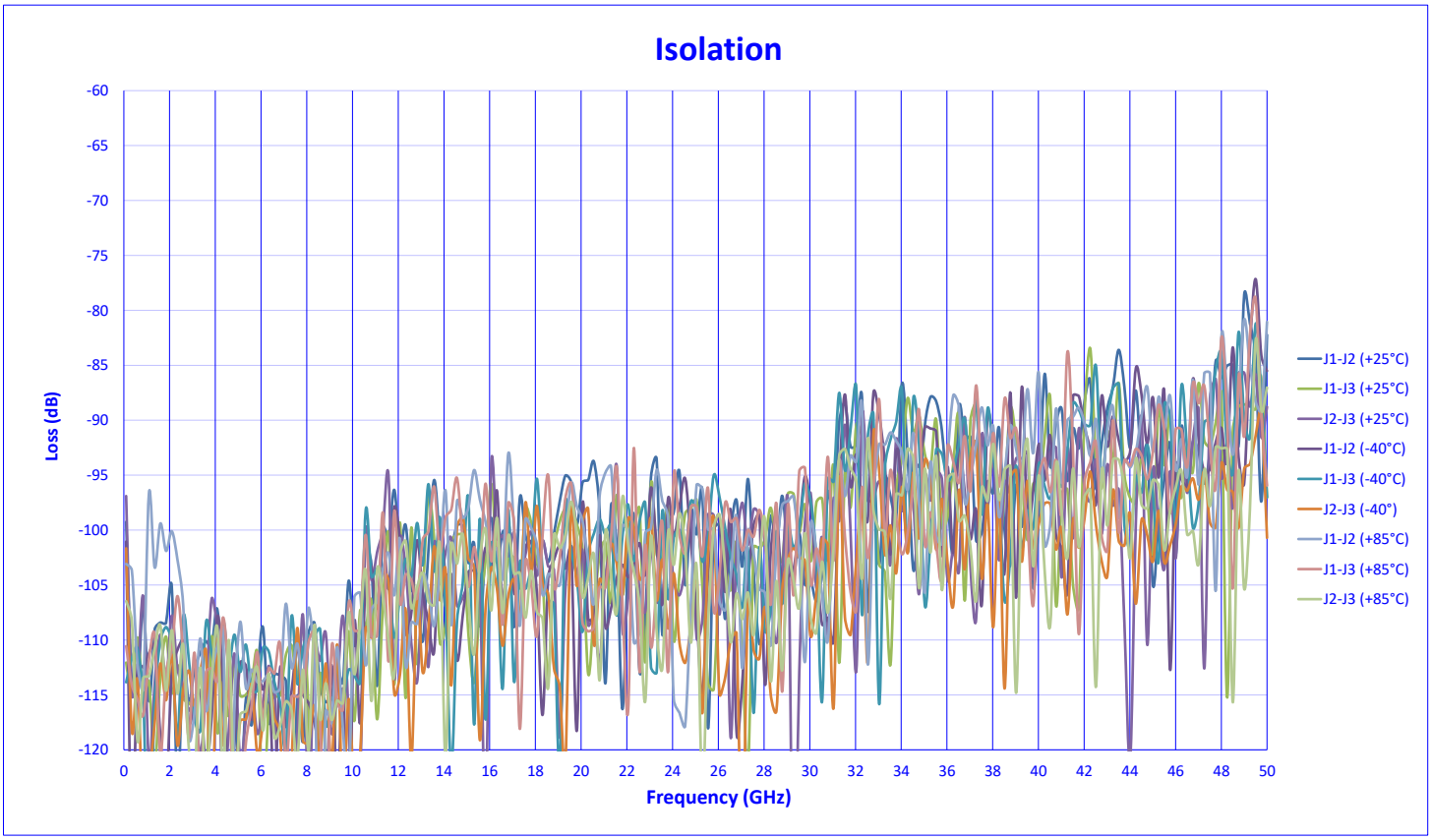
SUMMARY TEST DATA
ON
P2T-100M50G-100-512-T





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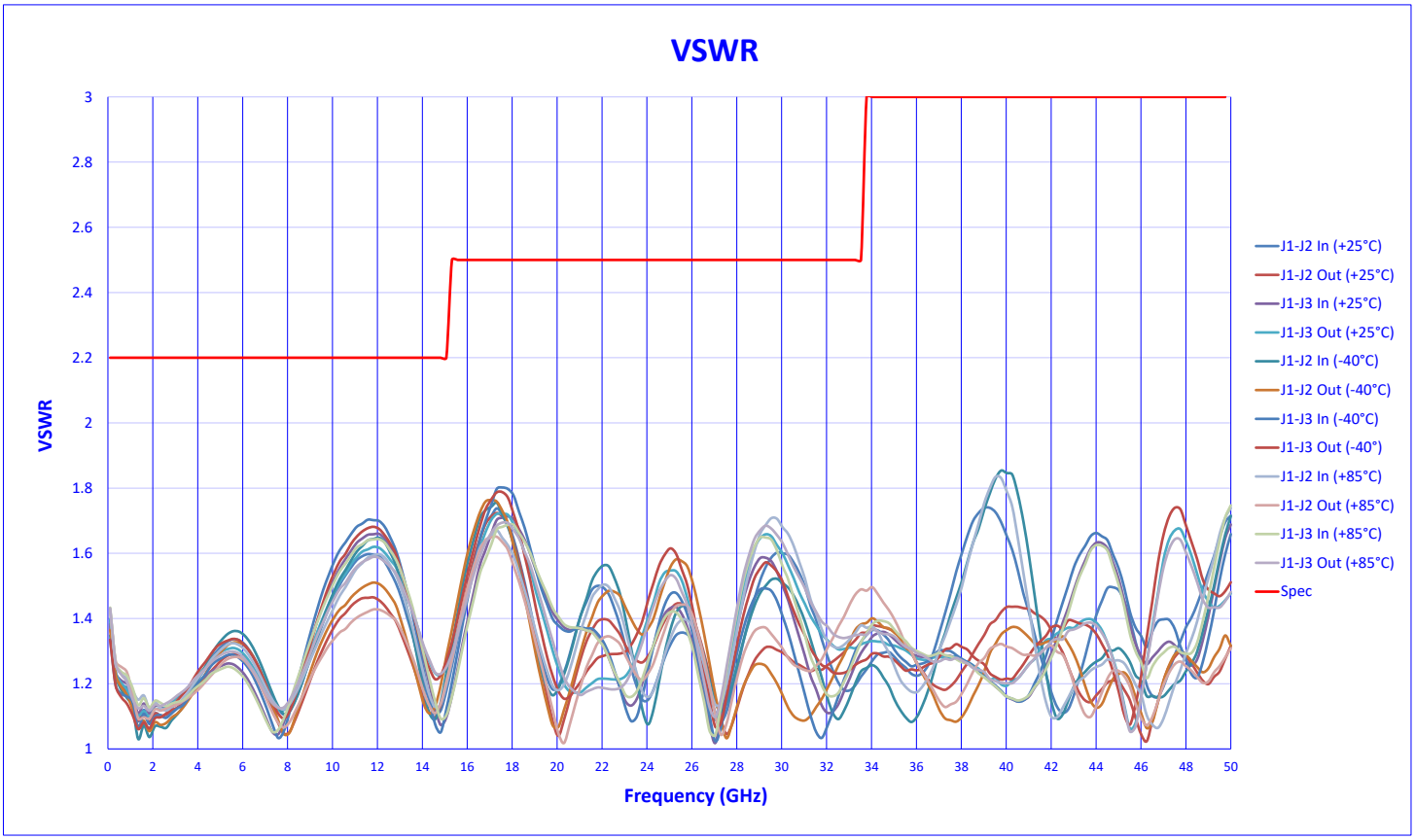

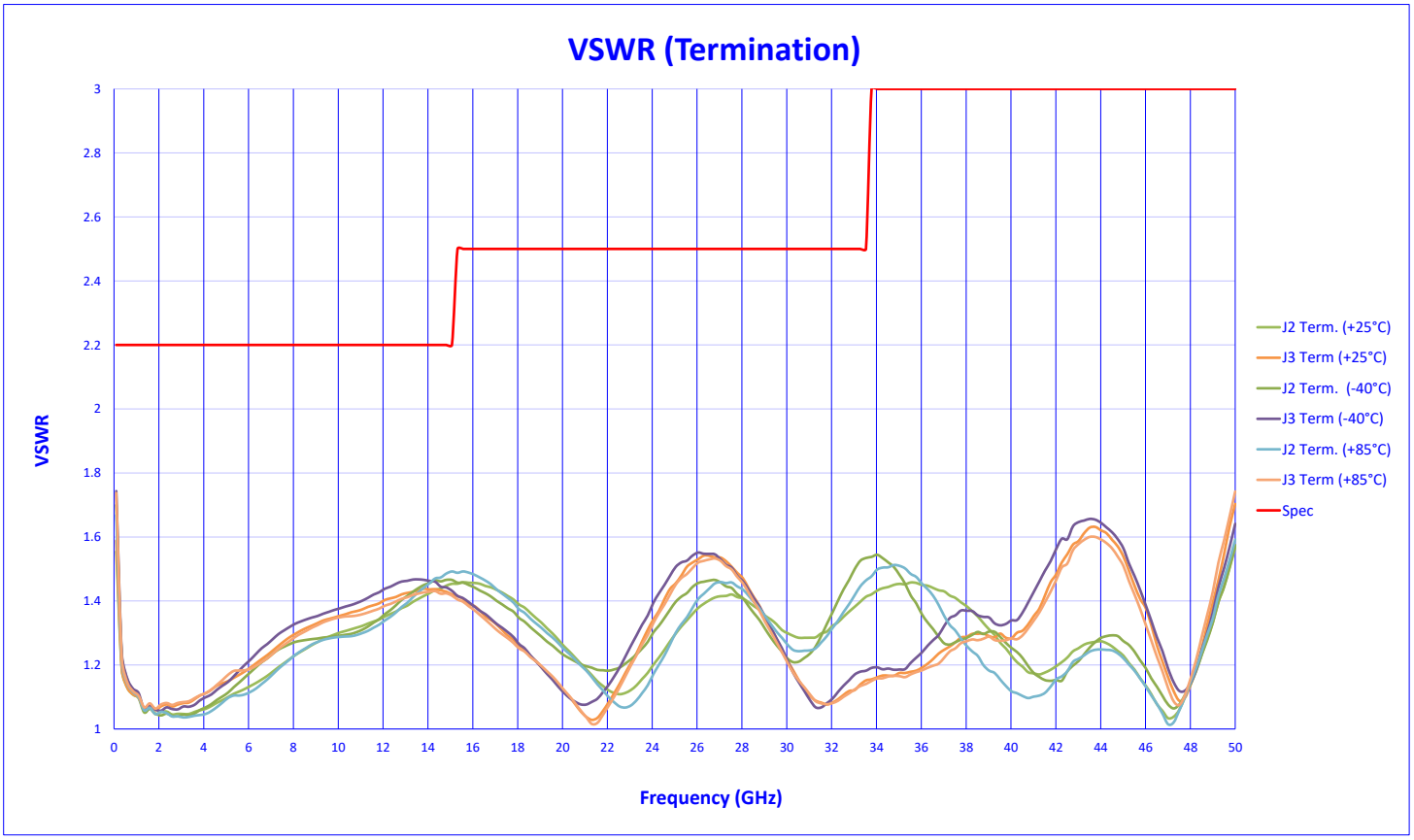

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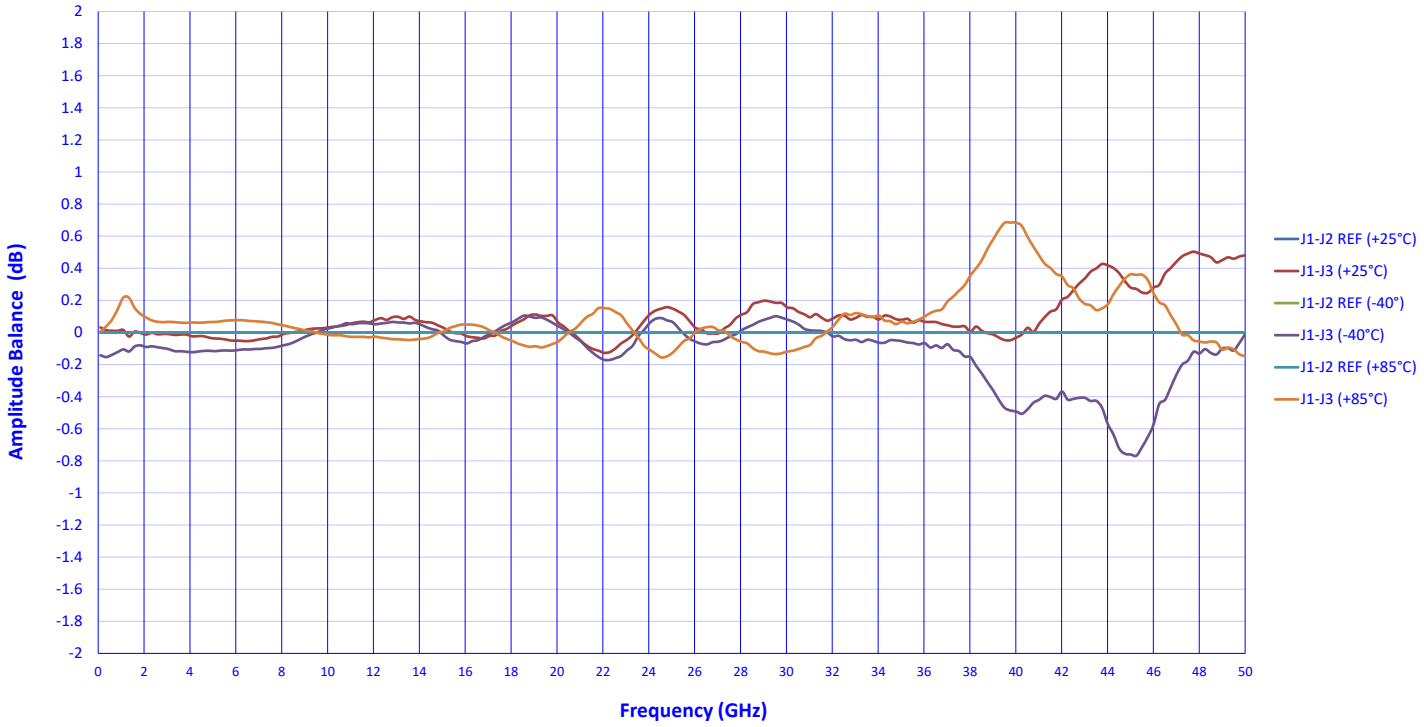
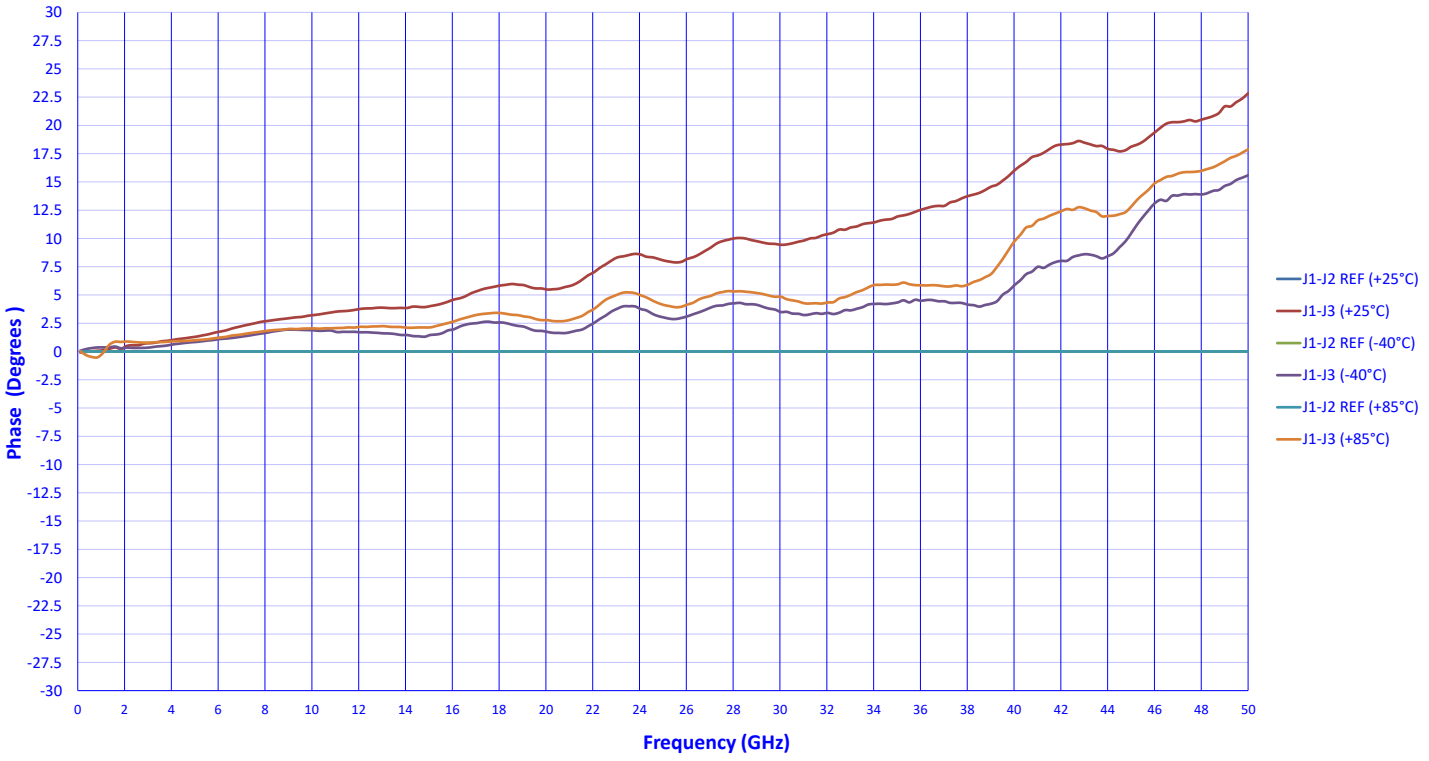
Typical Characteristics ON P2T-100M50G-100-512-T

Amplitude Balance



Phase Balance



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SUMMARY TEST DATA
ON
P2T-100M50G-100-512-T

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

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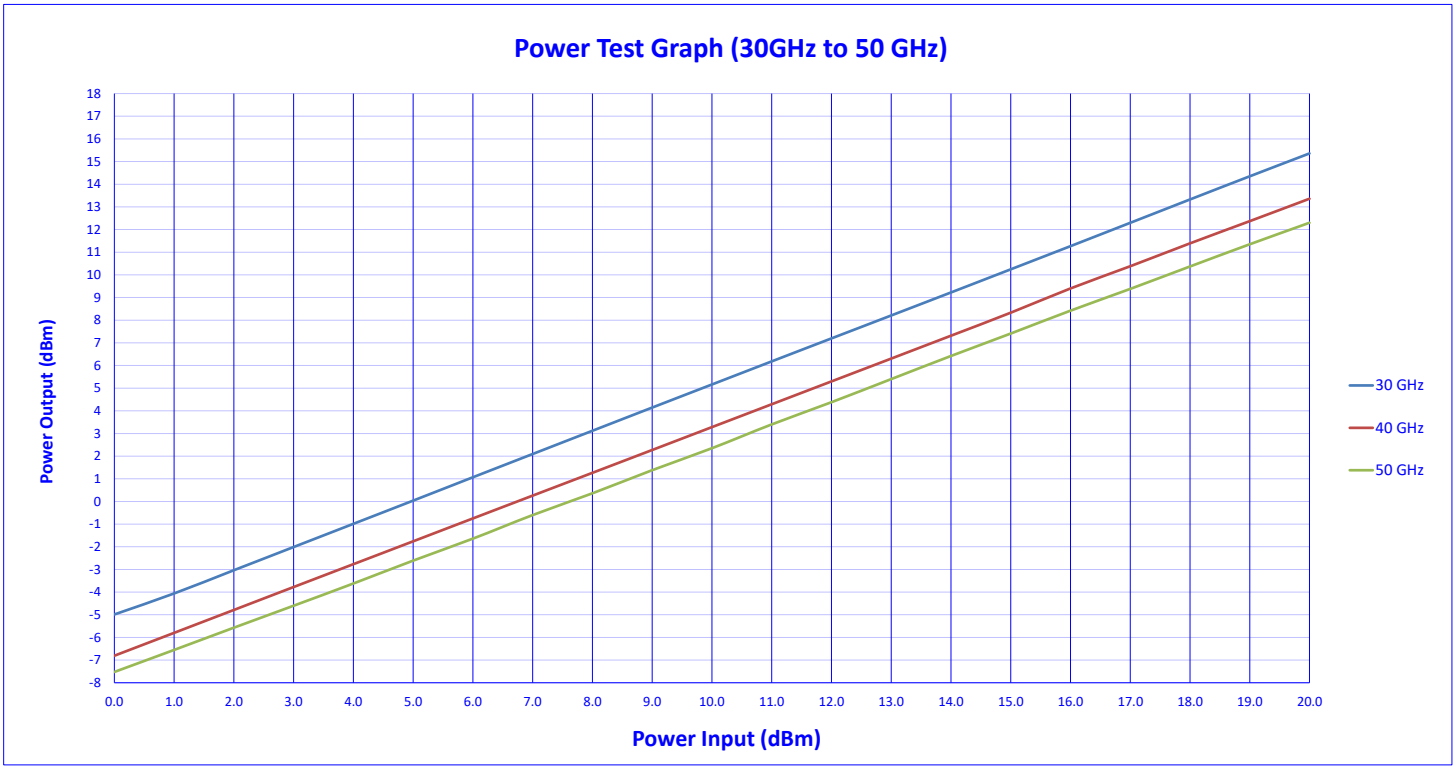

Power Test Data 30 GHz to 50 GHz (CW)									
Power Input (dBm)	30 GHz			40 GHz			50 GHz		
	Power Output	Loss	Compression (dBm)	Power Output	Loss	Compression (dBm)	Power Output	Loss	Compression (dBm)
0.0	-4.99	4.99	0.000	-6.81	6.81	0.000	-7.52	7.52	0.000
1.0	-4.06	5.06	0.073	-5.80	6.80	0.009	-6.55	7.55	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

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Typical Characteristics
ON
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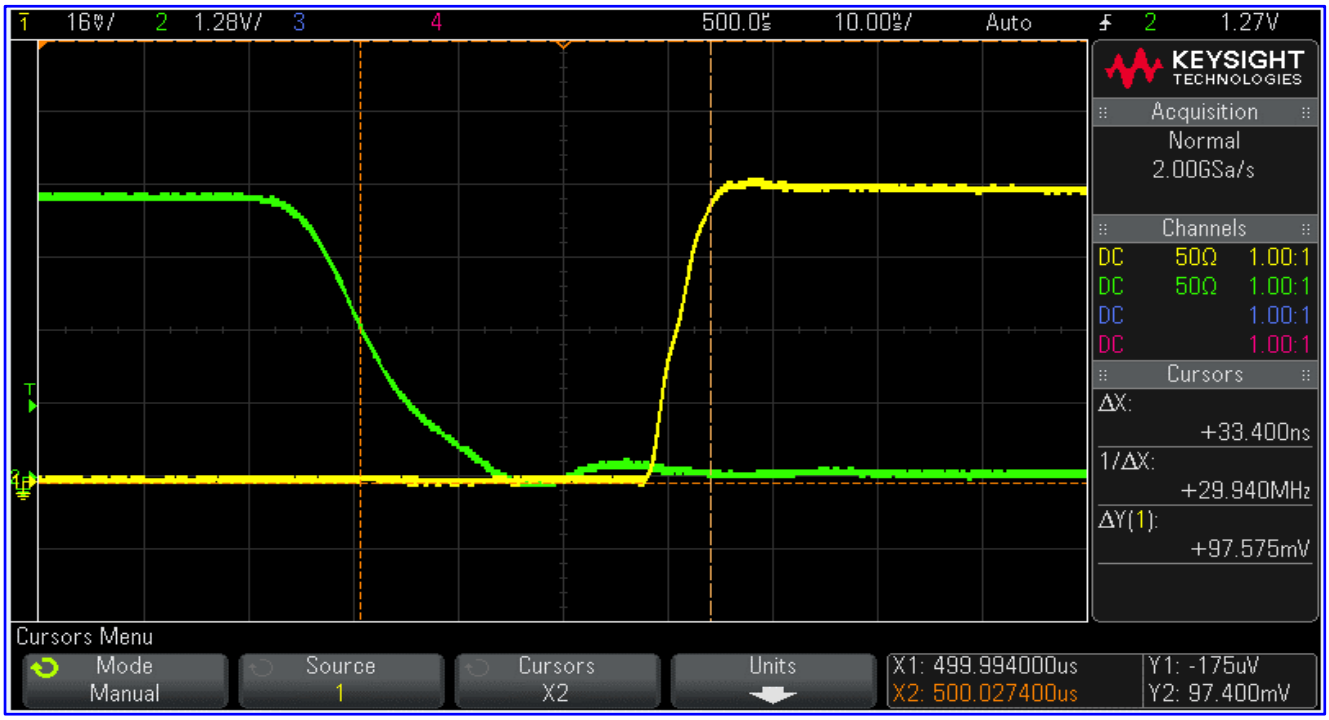
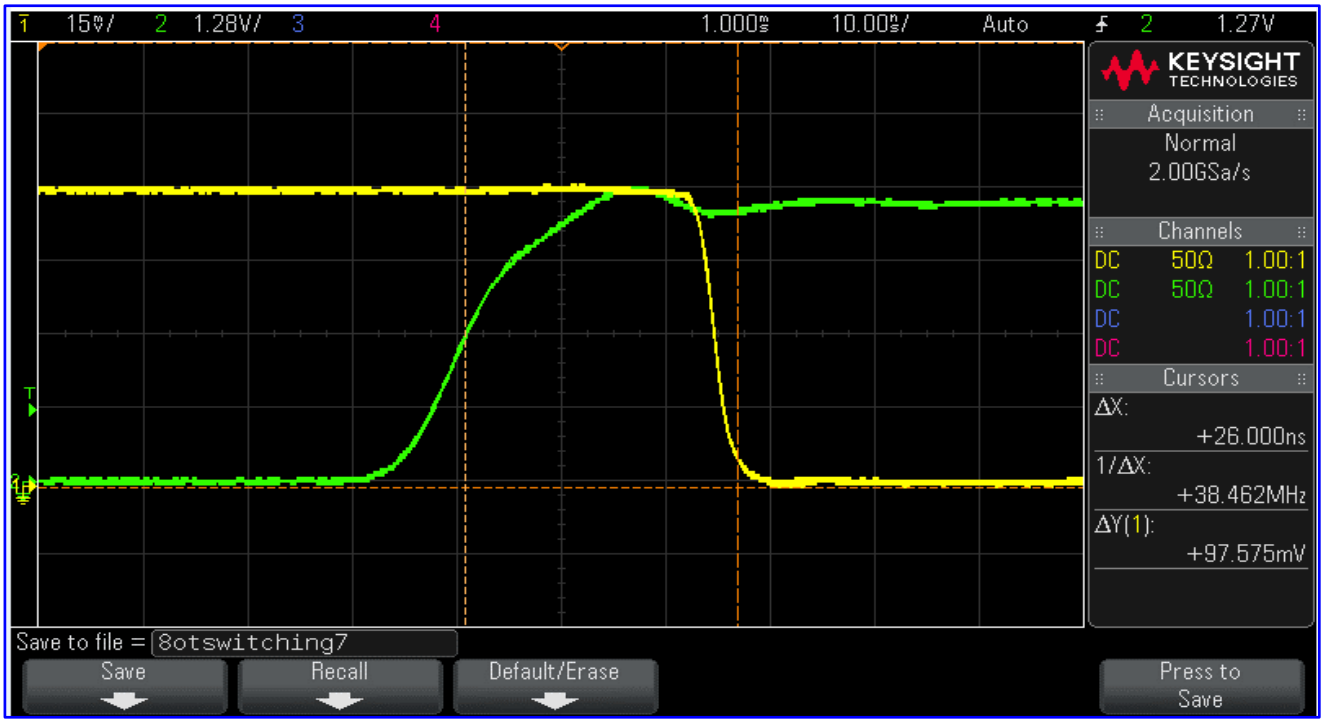
Switching Speed ON

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

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SUMMARY TEST DATA
ON
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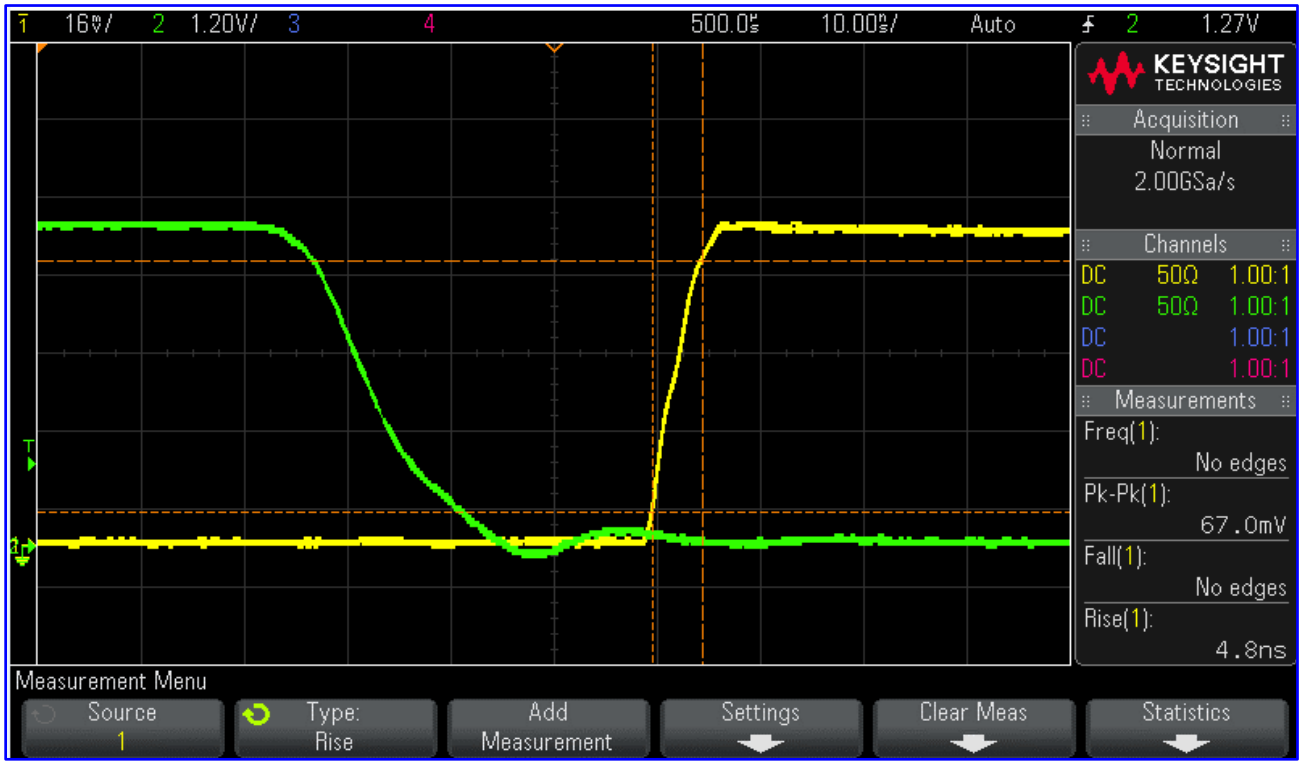
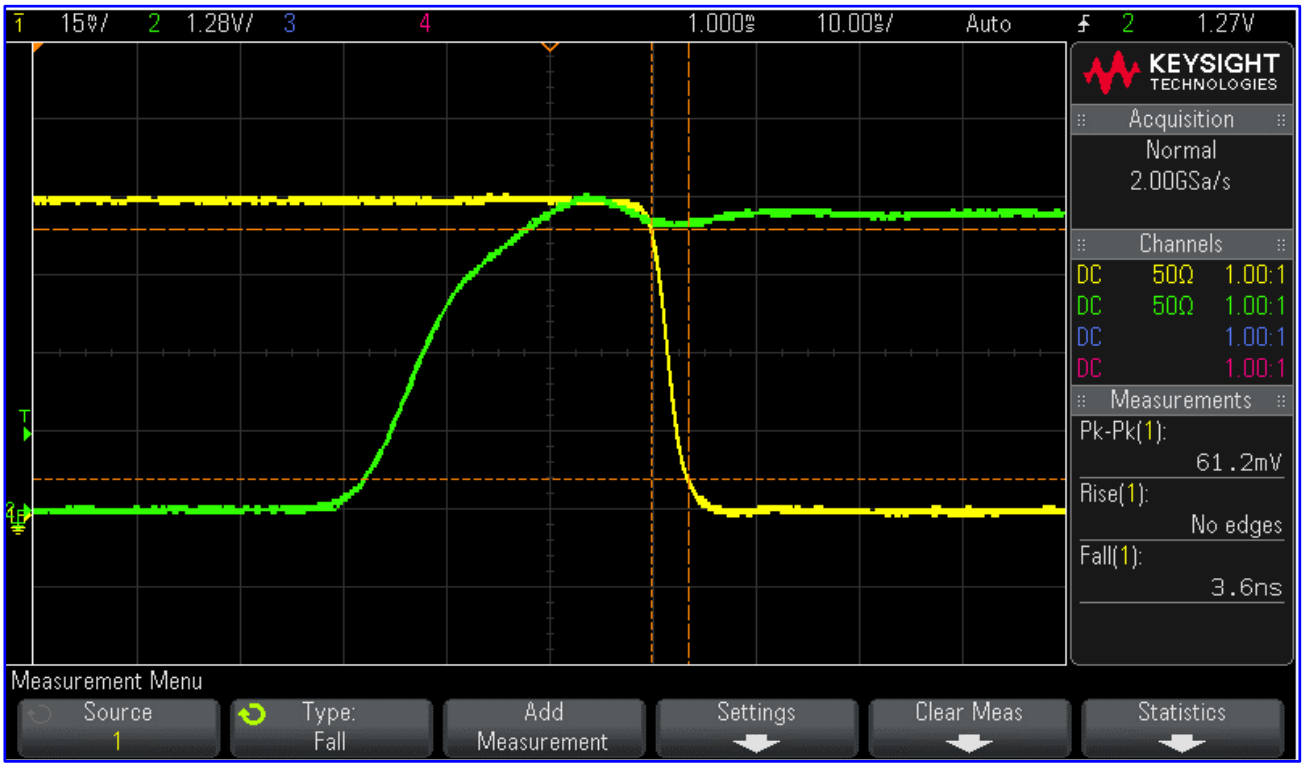
Rise Time

10 ns Per Div = Measured value (4.80ns)



Rise Time

10 ns Per Div = Measured value (3.60ns)



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Typical Characteristics
ON
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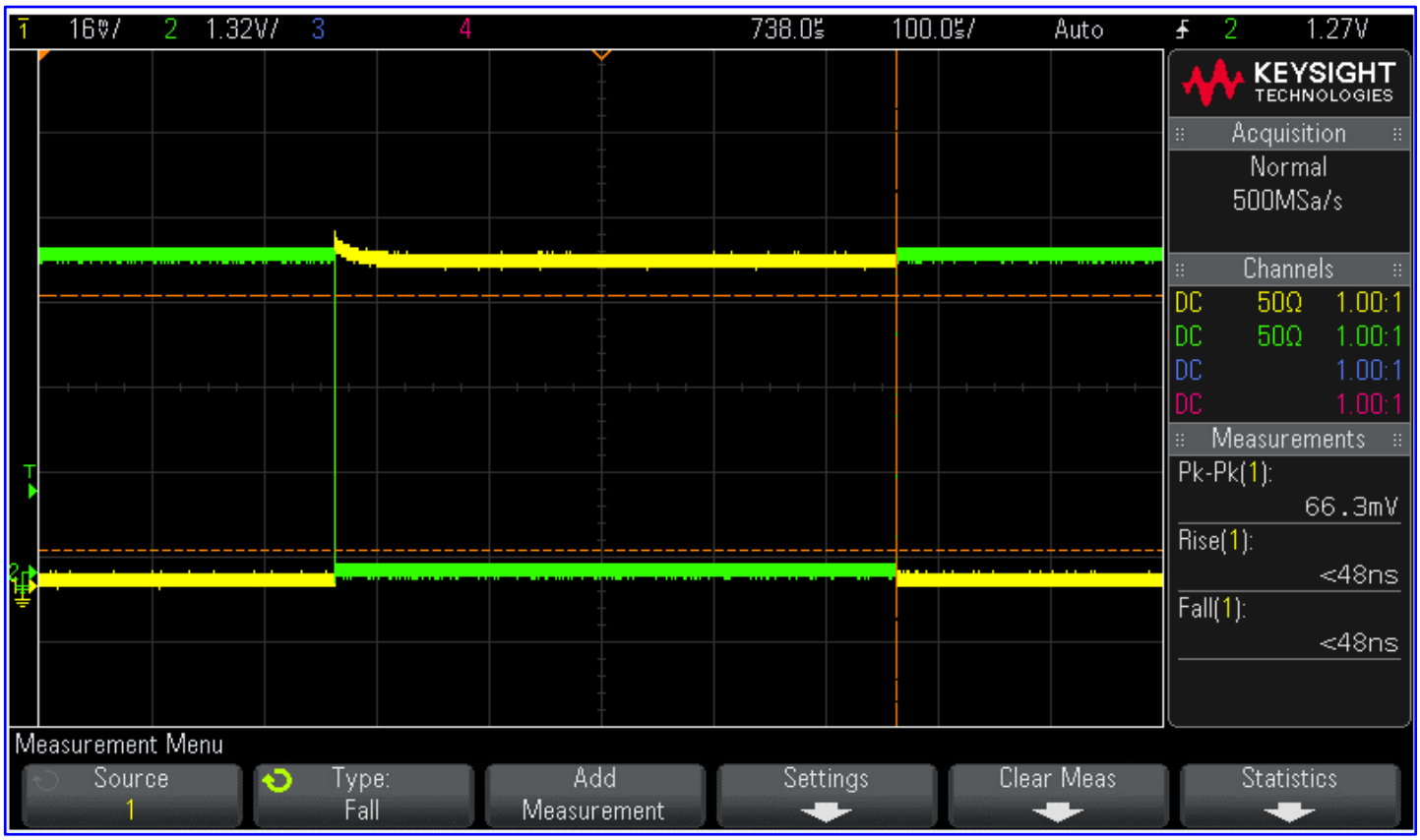
Full Pulse
100 µs Per Div



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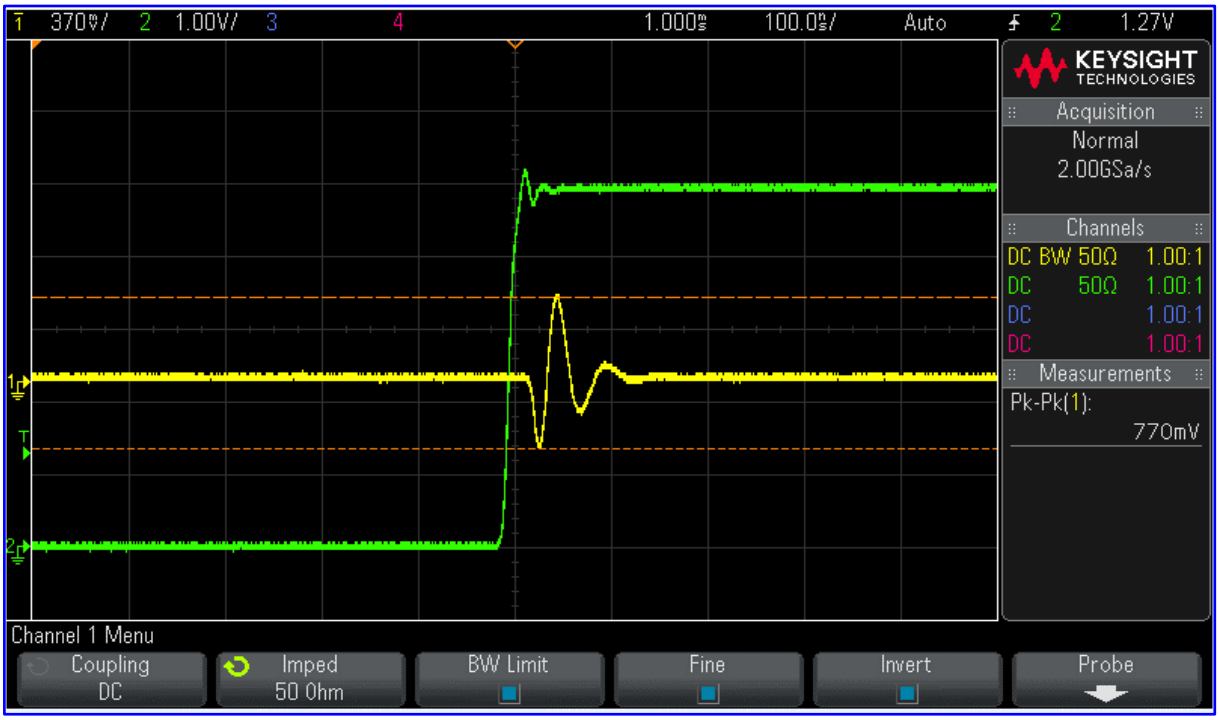
Typical Characteristics
ON
P2T-100M50G-100-512-T

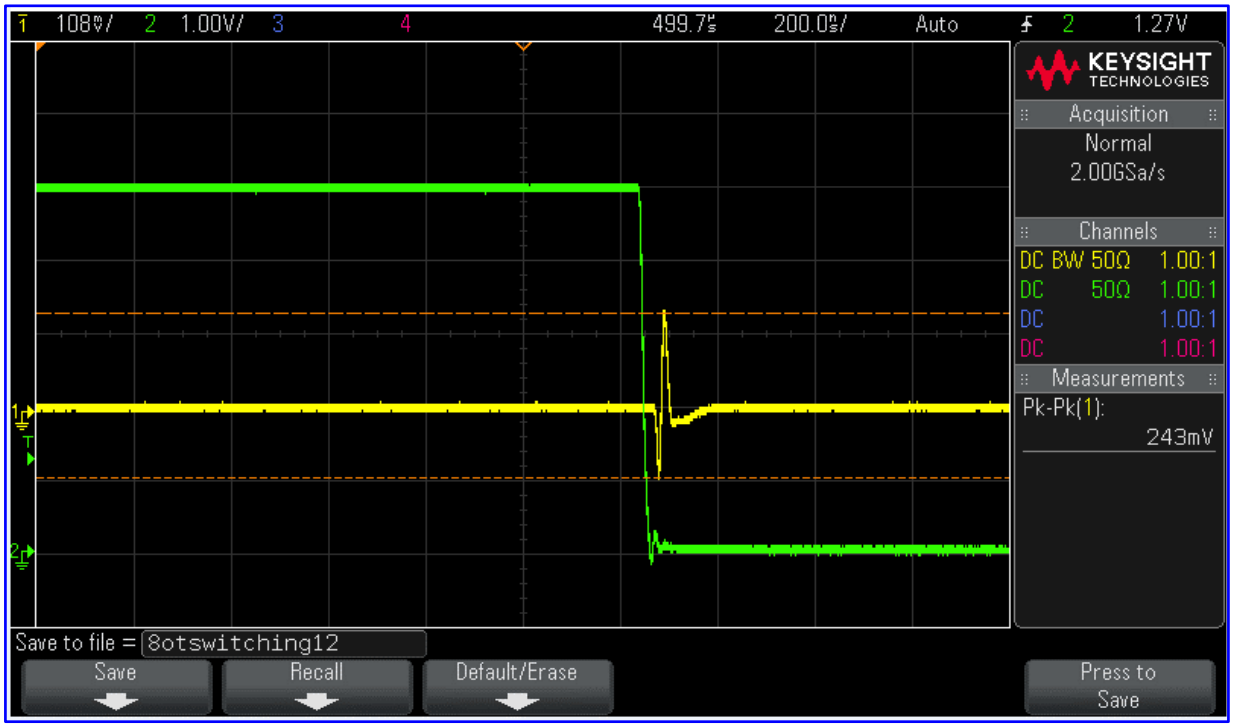
Output Video Transients TTL Off to ON (BW 350 MHz)

Measured value (770mV)



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

Measured value (243mV)



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