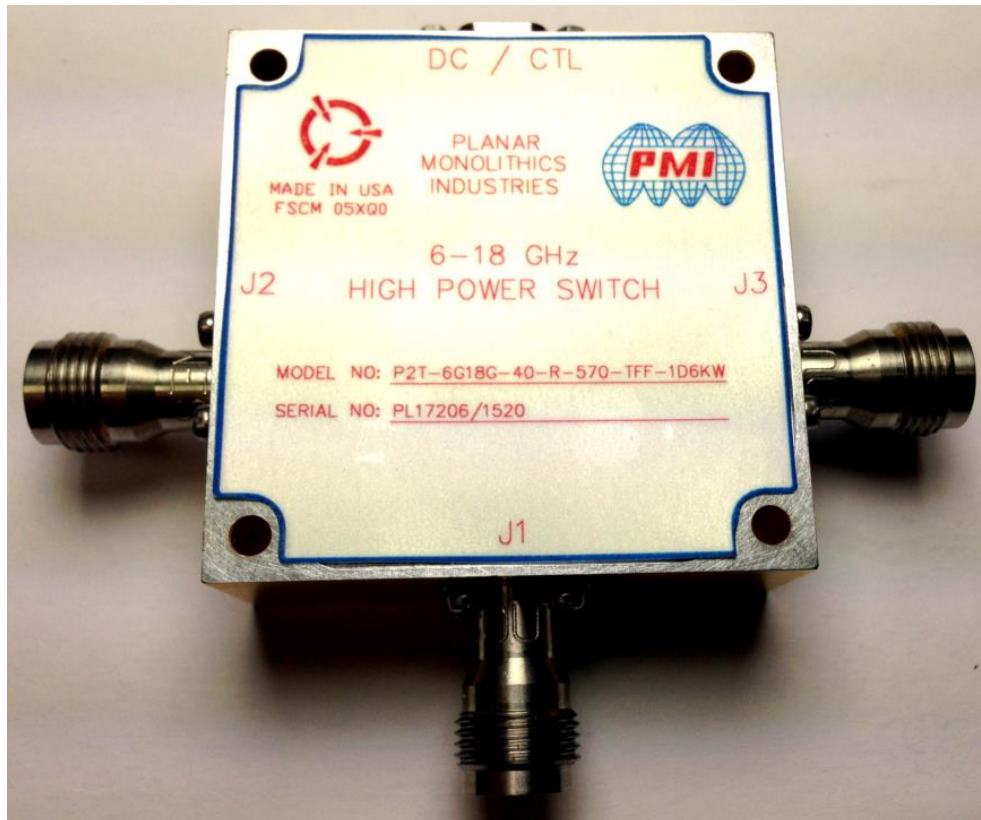




## Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

PMI MODEL P2T-6G18G-40-R-570-TFF-1D6KW IS A 6.0 GHz TO 18.0 GHz SINGLE-POLE, DOUBLE THROW SOLID-STATE SWITCH CAPABLE OF HANDLING INPUT POWER LEVELS UP TO 1.6kW PEAK HAVING A DUTY CYCLE OF 8% AND A PULSE WIDTH OF 250 us. THIS SWITCH OFFERS LOW LOSS OF 2.2 dB MAXIMUM AND 40 dB OF ISOLATION WITH A SWITCHING SPEED OF 200 ns MAXIMUM. DC OPERATING VOLTAGES ARE +5VDC & -70VDC. THE HOUSING IS HERMETICALLY SEALED, MEASURES 2.0" x 2.0" x 0.75" AND IS SUPPLIED WITH TNC FEMALE CONNECTORS.



Revised on June 10, 2015  
Designed by: Kevin Mason & Chuck Newton  
Reported by: Kevin Mason

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# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

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# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## Product Feature Drawing

### DESCRIPTION

PMI MODEL P2T-6G18G-40-R-570-TFF-1D6KW IS A REFLECTIVE 1.6 KILOWATT HIGH-POWER COLD SWITCHING SINGLE POLE DOUBLE THROW SWITCH OPERATING IN THE 6-18 GHz FREQUENCY RANGE.

### SPECIFICATIONS

- FREQUENCY RANGE: 6-18 GHz
- POWER: 1.6kW PEAK
- DUTY CYCLE: 8%
- INSERTION LOSS: 2.2dB MAX. AT BAND EDGES FOR 20% BANDWIDTH AND TYPICALLY 1.75 dB GOAL FOR MID-BAND OF 80% OF THE BANDWIDTH 2.0 dB MAX., AND TYPICALLY 1.5dB GOAL.
- ISOLATION: 40dB
- PULSE WIDTH: 250 uSEC MAX.
- SWITCHING SPEED: 200 nS MAX. (50% TTL TO 90% RF & 50% TTL TO 10% RF).
- VSWR IN/OUT: 2:1 MAX.
- LOAD VSWR: BETTER THAN 1.5:1
- DC VOLTAGE & CURRENT: +5V @ 300mA AND -70V @ 60mA
- CONTROL: SINGLE TTL (TTL "0" J1-J3 " LOW LOSS)
- CONNECTOR FOR RF PORT: TNC FEMALE
- CONNECTOR FOR CONTROL: 9 PIN MICRO D TYPE FEMALE, MATING WITH M83513/03A/03C (SEE CONNECTION TABLE BELOW)
- SIZE (NOT INCL. CONNECTORS): (L) 2.00" X (W) 2.00" X (H) 0.75"
- FINISH: PAINTED BLUE - NO PAINT ON MOUNTING SURFACE
- J4 CONNECTIONS

J4 PIN	CONNECT TO
1	U1 -70V
2	GROUND
3	U1 IN2, 2 (CTRL J8)
4	U1 +5V
5	U1 IN1, (CTRL J2)
6	U1 GROUND
7	U1 GROUND
8	U1 GROUND
9	U1 GROUND

### ENVIRONMENTAL RATINGS

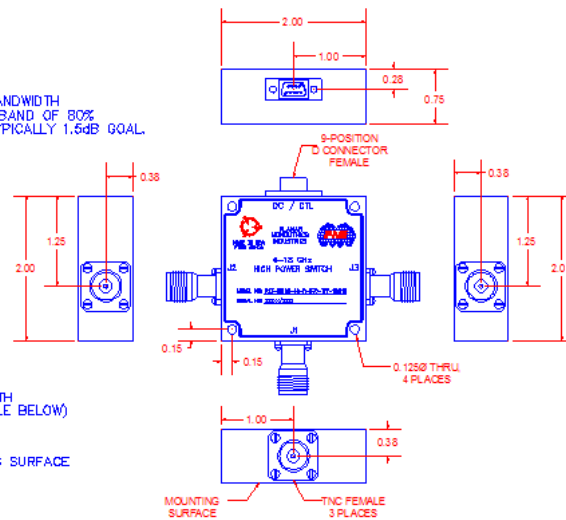
- TEMPERATURE: -40°C TO +85°C
- ENVIRONMENTAL: MIL-STD-810E
- EMI/EMC: MIL-STD-461

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE  
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES  
TOLERANCES:  
X.000 +0.002  
X.000 ±0.010

DATE	REV.	DESCRIPTION	DATE	APPROVED
	1	ORIGINAL RELEASE	02/07/13	
	A1	ECN # 15-0070	06/11/14	

### MECHANICAL OUTLINE



PMI CONFIDENTIAL AND PROPRIETARY

### PLANAR MONOLITHICS INDUSTRIES, INC.

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ISO 9001 CERTIFIED



APPROVALS	DATE	TITLE
DRAWN: NJA	04/01/14	PRODUCT FEATURE P2T-6G18G-40-R-570-TFF-1D6KW
DRAWN:		SIZE: FROM NO. A 05XQ0
DRAWN:		ENG. NO. 27021771
DRAWN:		SCALE: N:S
		SHEET: 1 OF 1



# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## Summary Data Sheet

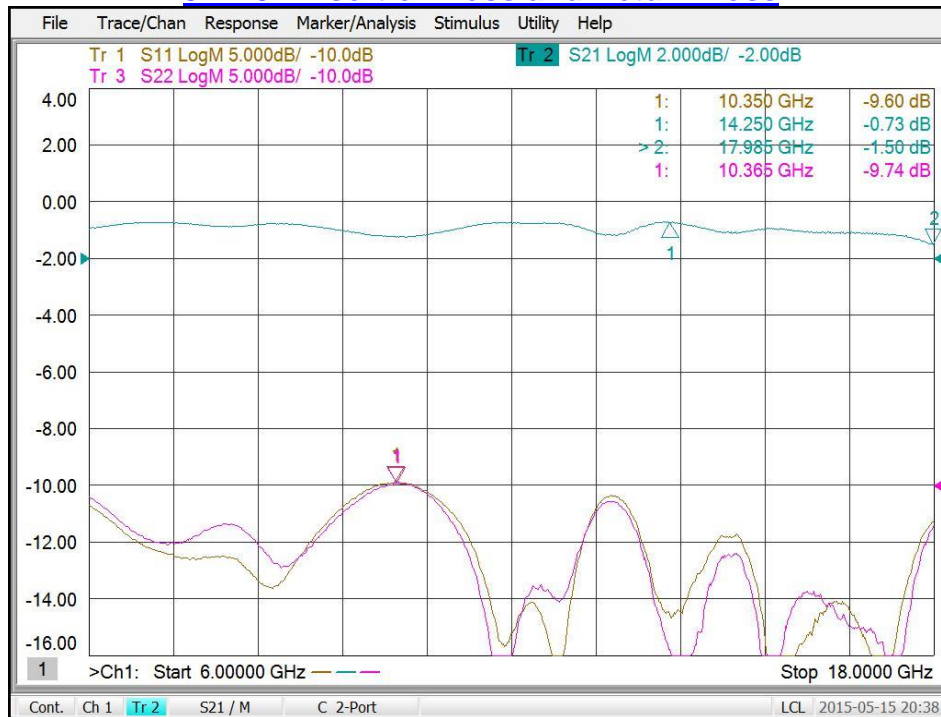
TEST ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS	QA QC
1	Frequency Range:	6.0 to 18.0 GHz	<b>6.0 to 18.0 GHz</b>	
2	Input Power:	1.6KW Peak 8% Duty Cycle 250 $\mu$ Sec. Max. Pulse Width	<b>Tested to 130 Watts CW (See Plot)</b>	
3	Insertion Loss:	2.2dB Max. at band edges for 20% bandwidth and typically 1.75 dB goal. For mid-band of 80% of the bandwidth 2.0dB Max., and typically 1.5 dB goal	<b>2.04dB Max. 1.0dB Typical (Mid-Band)</b>	
4	Isolation:	40 dB Min.	<b>40 dB</b>	
5	Switching Speed:	200 ns Max. (50% TTL to 90% RF and 50% TTL to 10% RF)	<b>165 ns "On" 95 ns "Off"</b>	
6	Logic Control	TTL "1" = J1-J2 "Low Loss" TTL "0" = J1-J3 "Low Loss"	<b>Pass</b>	
7	VSWR In / Out:	2.0:1 Max.	<b>1.99:1</b>	
8	Power Supply:	+5V @ 300 mA Max. -70V @ 60 mA Max.	<b>265 mA 1 mA</b>	

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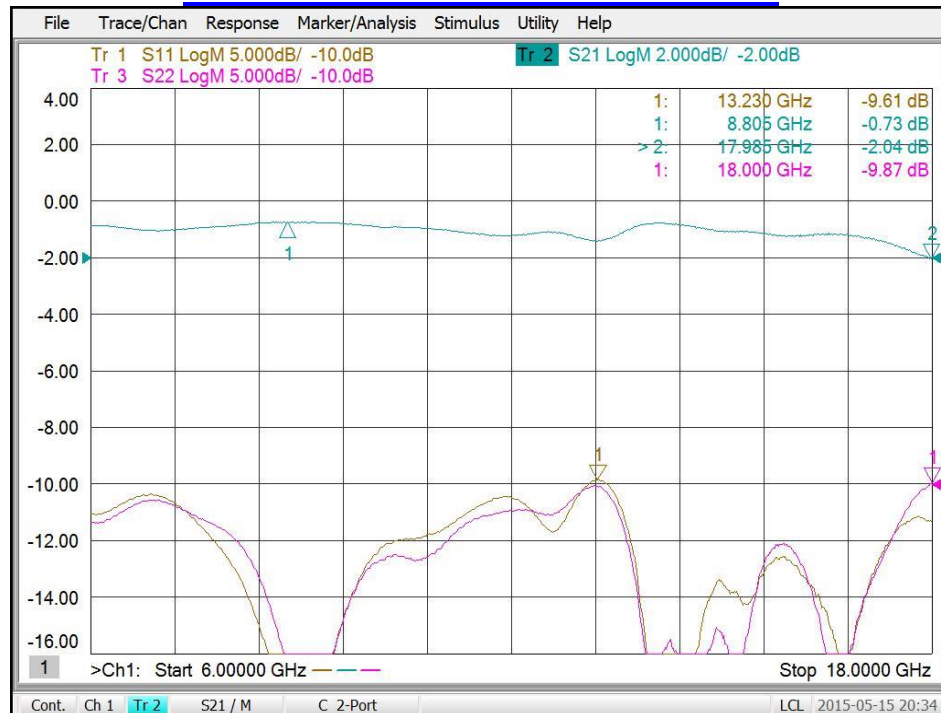


# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## J1 – J2 Insertion Loss and Return Loss



## J1 – J3 Insertion Loss and Return Loss

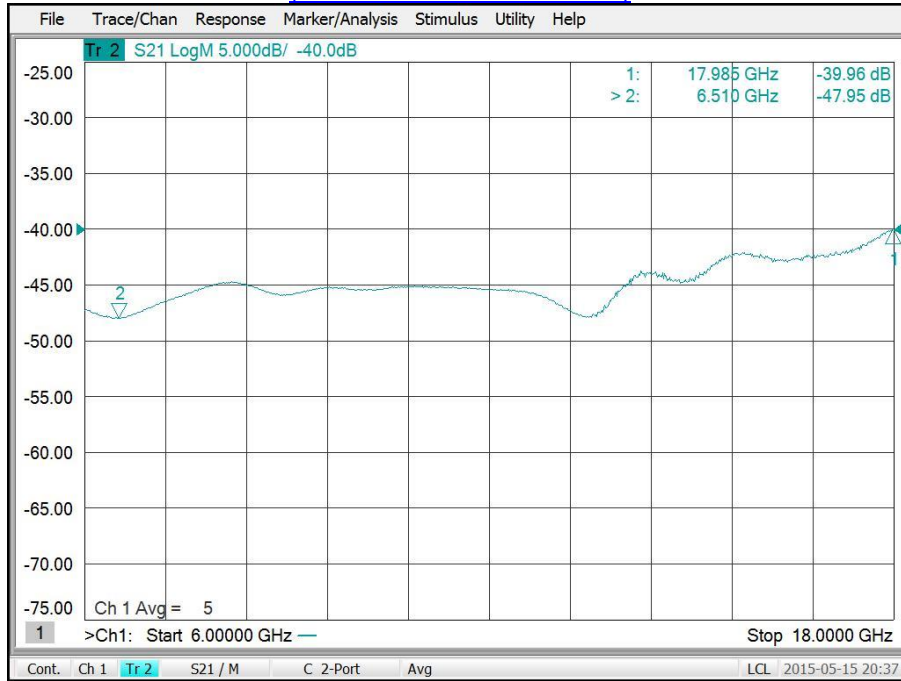


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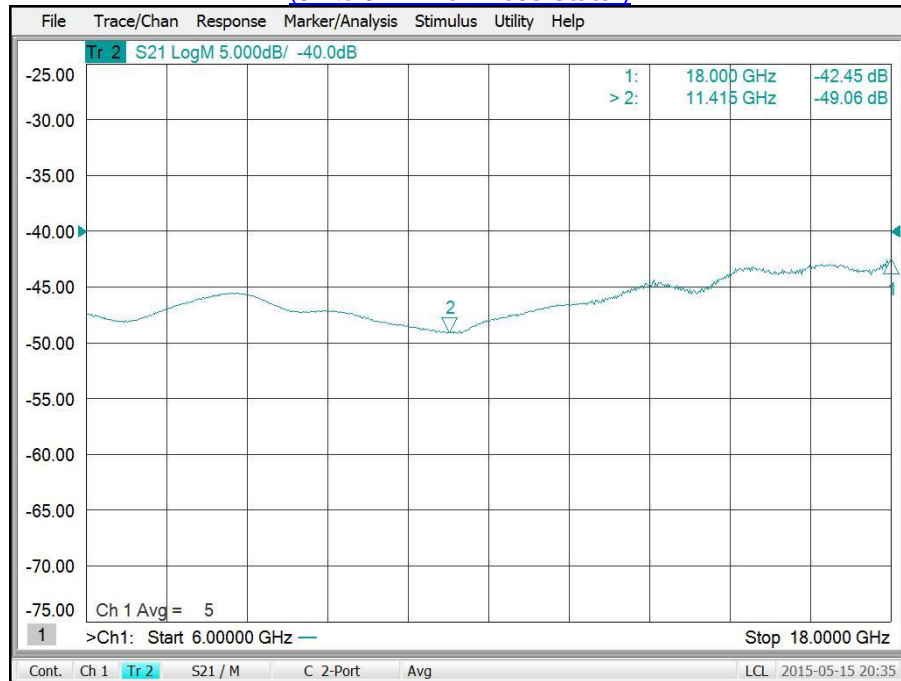


# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## J1 to J2 Isolation Plot (J1 to J3 = "Low Loss State")



## J1 to J3 Isolation Plot (J1 to J2 = "Low Loss State")

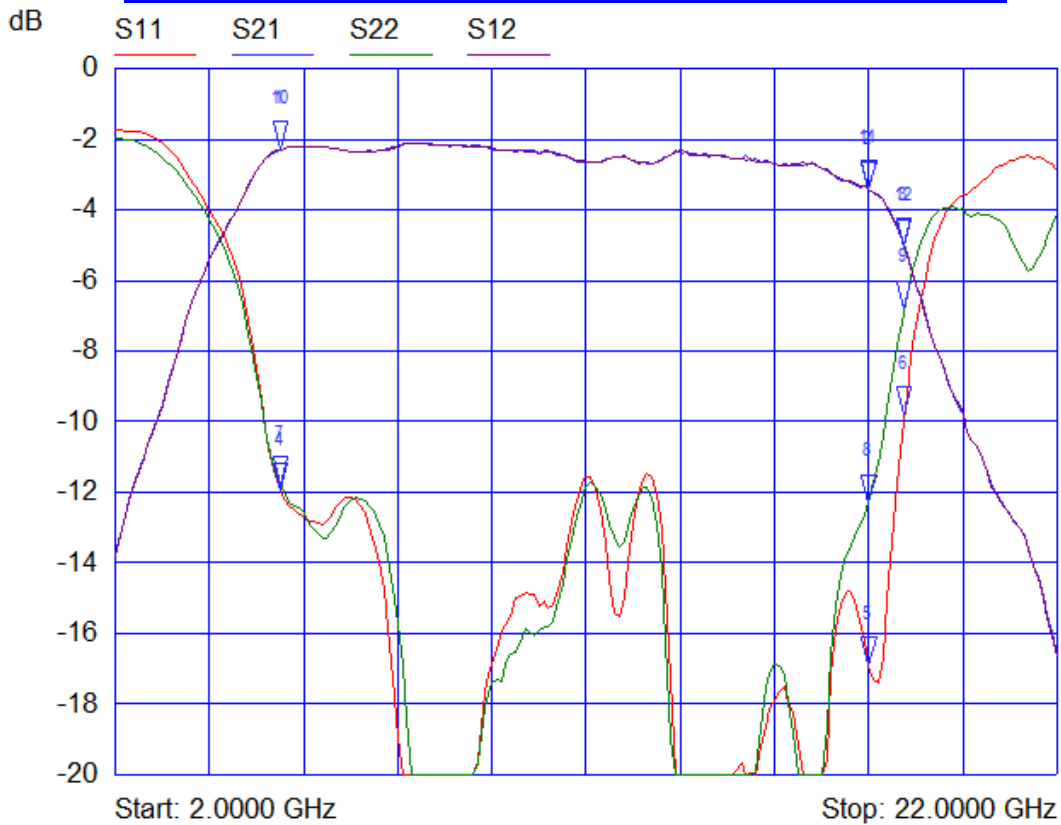






# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

**J1-J3 Broadband Insertion Loss and VSWR Plot, 2-22 GHz**



Mkr	Trace	X-Axis	Value	Notes
1 ▾	S21	5.5000 GHz	-2.30 dB	
2 ▾	S21	18.0000 GHz	-3.45 dB	
3 ▾	S21	18.7500 GHz	-5.03 dB	
4 ▾	S11	5.5000 GHz	-11.97 dB	
5 ▾	S11	18.0000 GHz	-16.88 dB	
6 ▾	S11	18.7500 GHz	-9.83 dB	
7 ▾	S22	5.5000 GHz	-11.81 dB	
8 ▾	S22	18.0000 GHz	-12.29 dB	
9 ▾	S22	18.7500 GHz	-6.81 dB	
10 ▾	S12	5.5000 GHz	-2.30 dB	
11 ▾	S12	18.0000 GHz	-3.41 dB	
12 ▾	S12	18.7500 GHz	-5.08 dB	



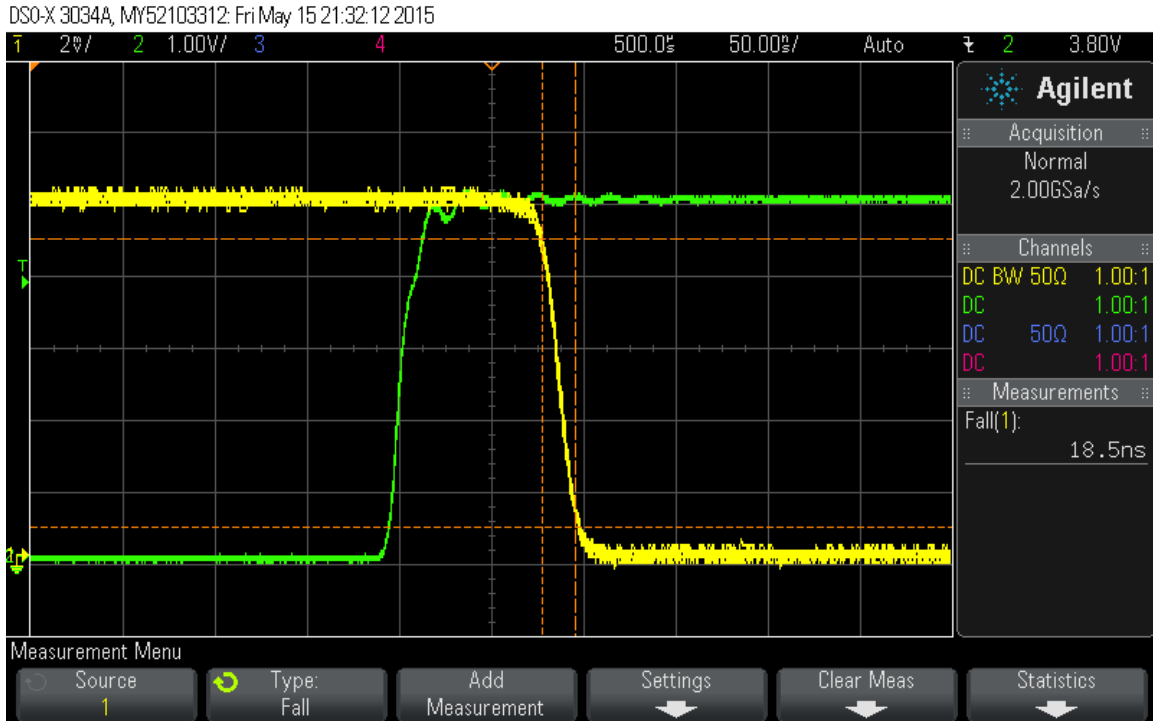






# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## Switching Speed Off and Fall Time 50 ns per Division



Yellow Trace: RF Signal  
Green Trace: TTL Signal

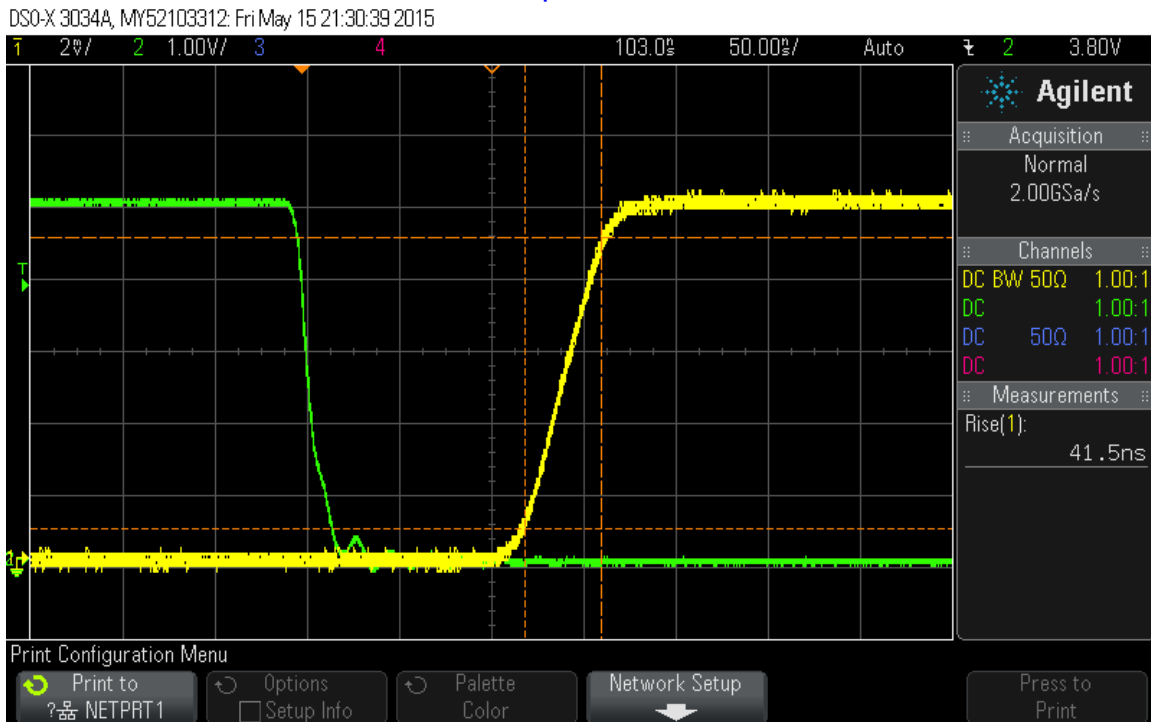
### Measured Values:

Fall Time (90% RF to 10% RF) = 18.5 ns  
Switching Speed Off (50% TTL to 10% RF) = 95 ns



# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## Switching Speed On and Rise Time 50 ns per Division



Yellow Trace: RF Signal  
Green Trace: TTL Signal

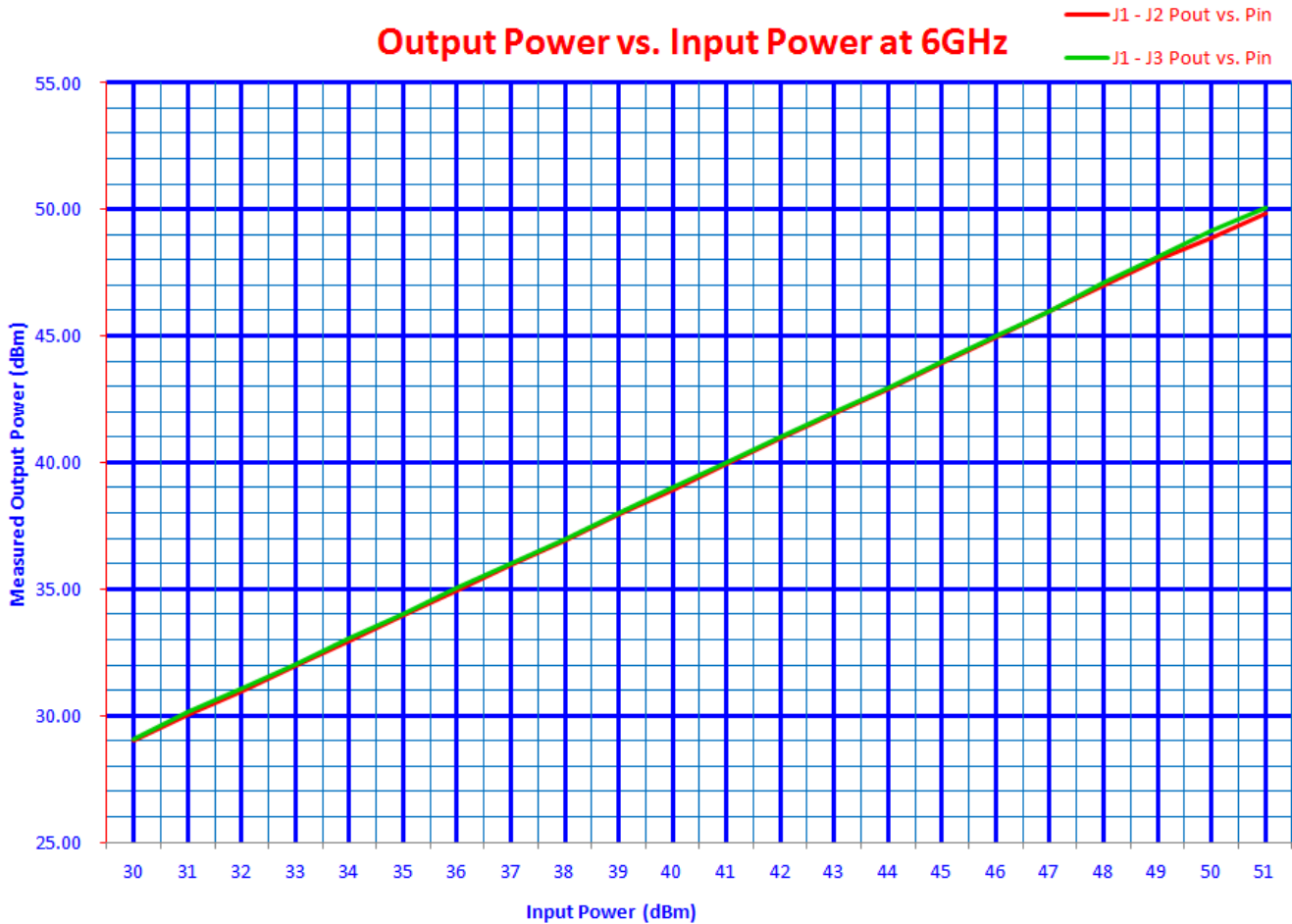
### Measured Values:

Rise Time (10% RF to 90% RF) = 41.5 ns  
Switching Speed On (50% TTL to 90% RF) = 165 ns



# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

High Power CW Output Power Vs. Input Power Graph  
Frequency = 6 GHz





# Typical Characteristics For P2T-6G18G-40-R-570-TFF-1D6KW

## High Power CW Output Power Vs. Input Power Table

Frequency = 6 GHz

Input Power to Switch (dBm)	Input Power to Switch (W)	Output Power of Switch (J1 - J2) (dBm)	Output Power of Switch (J1 - J2) (W)	Switch Loss (J1 - J2) (dB)	Output Power of Switch (J1 - J3) (dBm)	Output Power of Switch (J1 - J3) (W)	Switch Loss (J1 - J3) (dB)
30	1.000	29.00	0.794	-1.00	29.05	0.804	-0.95
31	1.259	30.04	1.009	-0.96	30.14	1.033	-0.86
32	1.585	30.96	1.247	-1.04	31.08	1.282	-0.92
33	1.995	31.95	1.567	-1.05	32.05	1.603	-0.95
34	2.512	32.93	1.963	-1.07	33.03	2.009	-0.97
35	3.162	33.94	2.477	-1.06	34.03	2.529	-0.97
36	3.981	34.95	3.126	-1.05	35.03	3.184	-0.97
37	5.012	35.95	3.936	-1.05	36.02	3.999	-0.98
38	6.310	36.94	4.943	-1.06	37.00	5.012	-1.00
39	7.943	37.93	6.209	-1.07	38.00	6.310	-1.00
40	10.000	38.92	7.798	-1.08	39.02	7.980	-0.98
41	12.589	39.95	9.886	-1.05	40.00	10.000	-1.00
42	15.849	40.96	12.474	-1.04	41.01	12.618	-0.99
43	19.953	41.94	15.631	-1.06	41.99	15.812	-1.01
44	25.119	42.88	19.409	-1.12	42.93	19.634	-1.07
45	31.623	43.93	24.717	-1.07	43.98	25.003	-1.02
46	39.811	44.95	31.261	-1.05	44.99	31.550	-1.01
47	50.119	45.99	39.719	-1.01	45.99	39.719	-1.01
48	63.096	47.02	50.350	-0.98	47.12	51.523	-0.88
49	79.433	47.99	62.951	-1.01	48.12	64.863	-0.88
50	100.000	48.87	77.090	-1.13	49.13	81.846	-0.87
51	125.893	49.84	96.383	-1.16	50.08	101.859	-0.92
51.2	131.826	50.01	100.231	-1.19	50.21	104.954	-0.99