



## Typical Characteristics ON P2T-1840-30-R-1W-292FF

PLANAR MONOLITHICS INDUSTRIES MODEL NUMBER P2T-1840-30-R-1W-292FF-2 IS A REFLECTIVE SINGLE POLE, TWO THROW SWITCH THAT OPERATES FROM 18 GHz TO 40 GHz WHICH HANDLES 1WATT CW POWER. THE PORT TO PORT ISOLATION IS 30DB MINIMUM. THIS MODEL HAS LOW INSERTION LOSS WHILE STILL OFFERING FAST SWITCHING SPEED.



**November 5, 2021**

**Designed By:**

**Engineering PMI**

**Tested and Reported By:**

**Alfredo Lopez**



# Typical Characteristics ON P2T-1840-30-R-1W-292FF

## Product Feature

**DESCRIPTION:**

PLANAR MONOLITHICS INDUSTRIES MODEL NUMBER P2T-1840-30-R-1W-292FF IS A REFLECTIVE SINGLE POLE, TWO THROW SWITCH THAT OPERATES FROM 18 GHz TO 40 GHz WHICH HANDLES 1WATT CW POWER. THE PORT TO PORT ISOLATION IS 30DB MINIMUM. THIS MODEL HAS LOW INSERTION LOSS WHILE STILL OFFERING FAST SWITCHING SPEED.

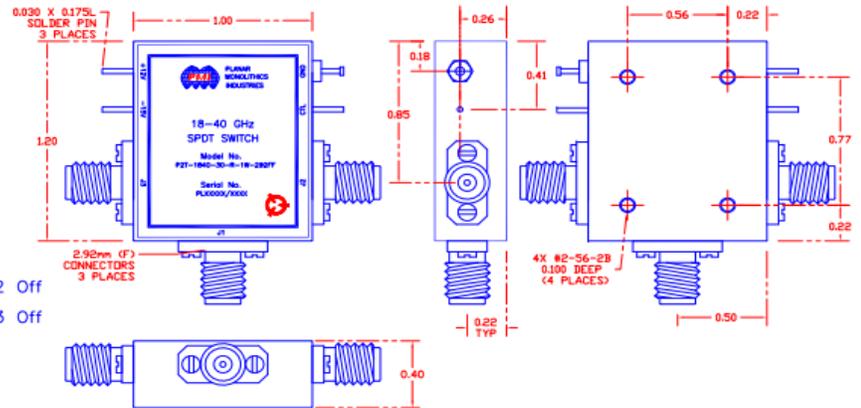
**SPECIFICATIONS @ +25°C:**

- FREQUENCY:..... 18 – 40 GHz
- INSERTION LOSS:..... 2.5dB Typical, 3.0dB Maximum
- OPERATING INPUT POWER:.... 1 Watt CW Maximum
- VSWR:..... 2.0:1 Typical, 2.5:1 Maximum
- ISOLATION:..... 35dB Typical, 30dB Minimum
- SWITCHING SPEED:.....100ns Typical, 500ns Maximum
- CONTROL:..... TTL Logic "0" = J1 to J3 On, J1 to J2 Off  
TTL Logic "1" = J1 to J2 On, J1 to J3 Off
- DC VOLTAGE:..... 50mA @ +12VDC Maximum  
50mA @ -15VDC Maximum
- CONNECTORS:..... 2.92mm Female
- POWER AND CONTROL:..... Solder Pins
- SIZE:..... 1.00 X 1.20 X 0.40 (H)
- WEIGHT:..... 1.5 OZ. Maximum
- FINISH:..... Painted Blue

**ENVIRONMENTAL RATINGS**

- TEMPERATURE:..... -55°C TO +95°C (OPERATING)  
-65°C TO +150°C (STORAGE)
- HUMIDITY:..... MIL-STD-202F, METHOD 103B COND. B
- SHOCK:..... MIL-STD-202F, METHOD 213B COND. B
- VIBRATION:..... MIL-STD-202F, METHOD 204B COND. B
- ALTITUDE:..... MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE:..... MIL-STD-202F, METHOD 107D COND. A

NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	8/20/21	

**CONFIDENTIAL AND PROPRIETARY**

PART NO.		PLANAR MONOLITHICS INDUSTRIES FREDERICK, MARYLAND	
APPROVALS	DATE	TITLE	
DRAWN DPD	5/17/21	PRODUCT FEATURE	
CHECKED		P2T-1840-30-R-1W-292FF	
ISSUED		SP2T SWITCH	
SIZE	FSCM NO.	DWG NO.	REV.
A	05XQ0	27042360	A1
SCALE N:S		SHEET 1 of 1	

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



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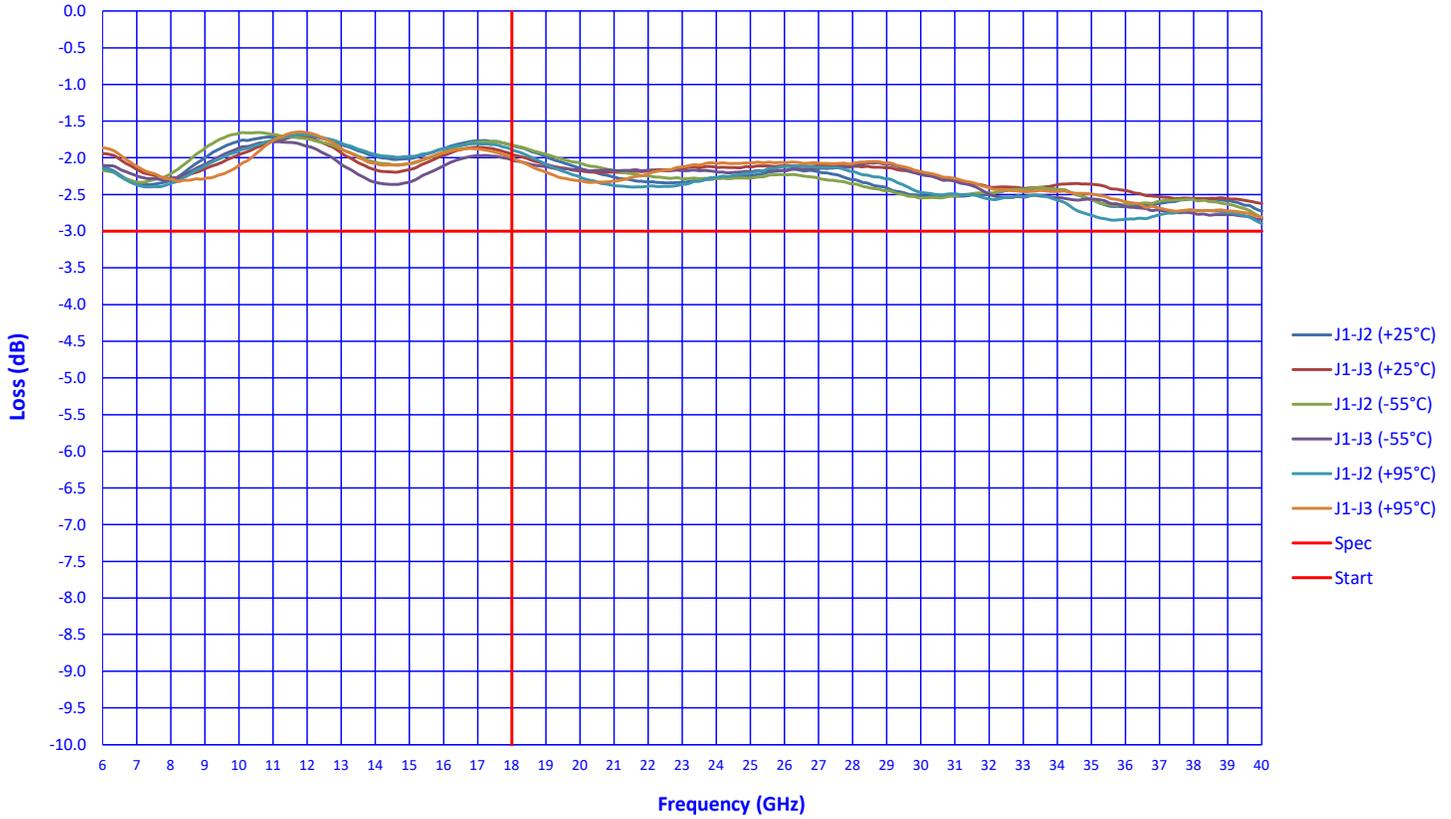
## Technical specifications

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	TEST RESULTS			QA QC
			+25°C	-55°C	+95°C	
1	Frequency Range:	18 GHz - 40 GHz	18 GHz - 40 GHz	18 GHz - 40 GHz	18 GHz - 40 GHz	
2	Insertion Loss:	2.5 dB Typ. 3.0 dB Max.	2.73 dB (See Graph)	2.84 dB (See Graph)	2.9 dB (See Graph)	
3	Isolation:	35 dB Typ. 30 dB Min.	43.64 dB (See Graph)	43.48 dB (See Graph)	43.86 dB (See Graph)	
4	VSWR: In/Out	2.0:1 Typ. 2.5:1 Max.	1.63 :1 In  1.82 :1 Out (See Graph)	1.63 :1 In  1.8 :1 Out (See Graph)	1.71 :1 In  1.87 :1 Out (See Graph)	
5	Switching Speed:	100 ns Typ. 500 ns Max.	Rise Time - 2.3ns Fall Time - 5ns Speed ON - 30ns Speed OFF - 19.60ns (See Graph)	Rise Time - 2.3ns Fall Time - 5ns Speed ON - 30ns Speed OFF - 19.60ns (See Graph)	Rise Time - 2.3ns Fall Time - 5ns Speed ON - 30ns Speed OFF - 19.60ns (See Graph)	
6	Input Power:	1W CW Max.	Pass 1Watt CW (See Graph)	Pass 1Watt CW (See Graph)	Pass 1Watt CW (See Graph)	
7	DC Supply:	+12 VDC @ 50 mA Max. -15 VDC @ 50 mA Max.	+12 VDC @ 31 mA -15 VDC @ 20 mA	+12 VDC @ 30 mA -15 VDC @ 21 mA	+12 VDC @ 33 mA -15 VDC @ 22 mA	
8	Control Signal:	TTL "0" → (J1-J3) TTL "1" → (J1-J2)	Pass	Pass	Pass	

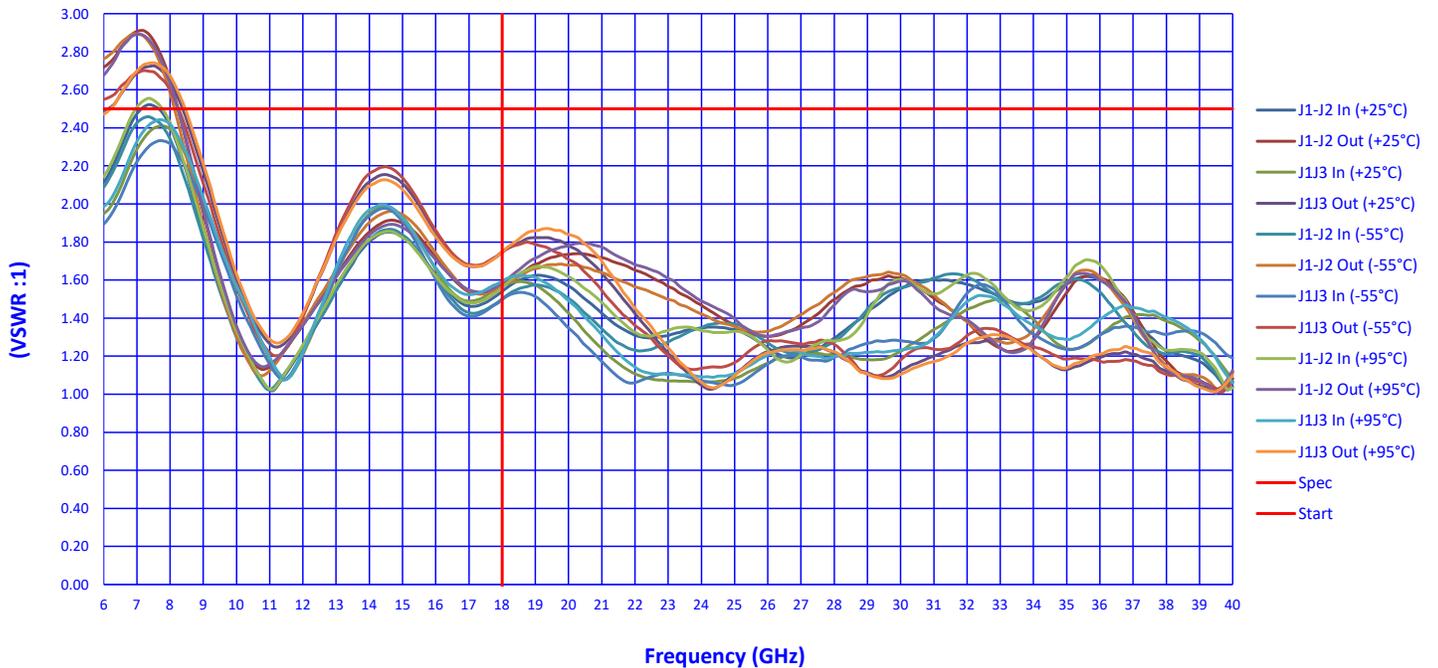


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### Insertion Loss

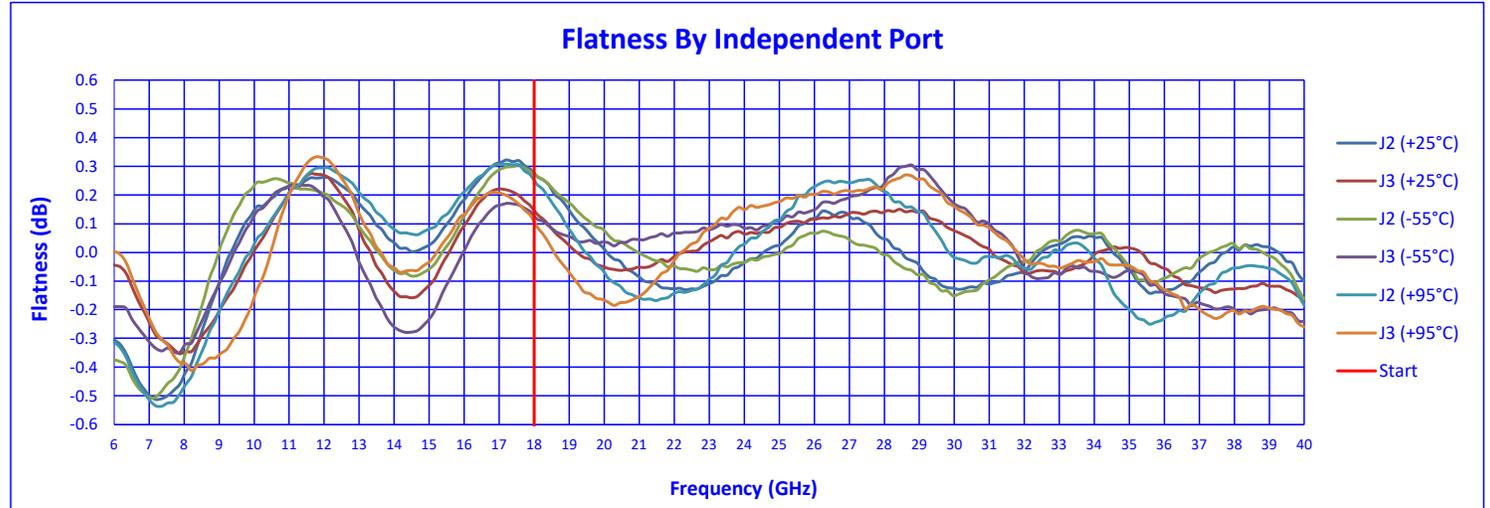
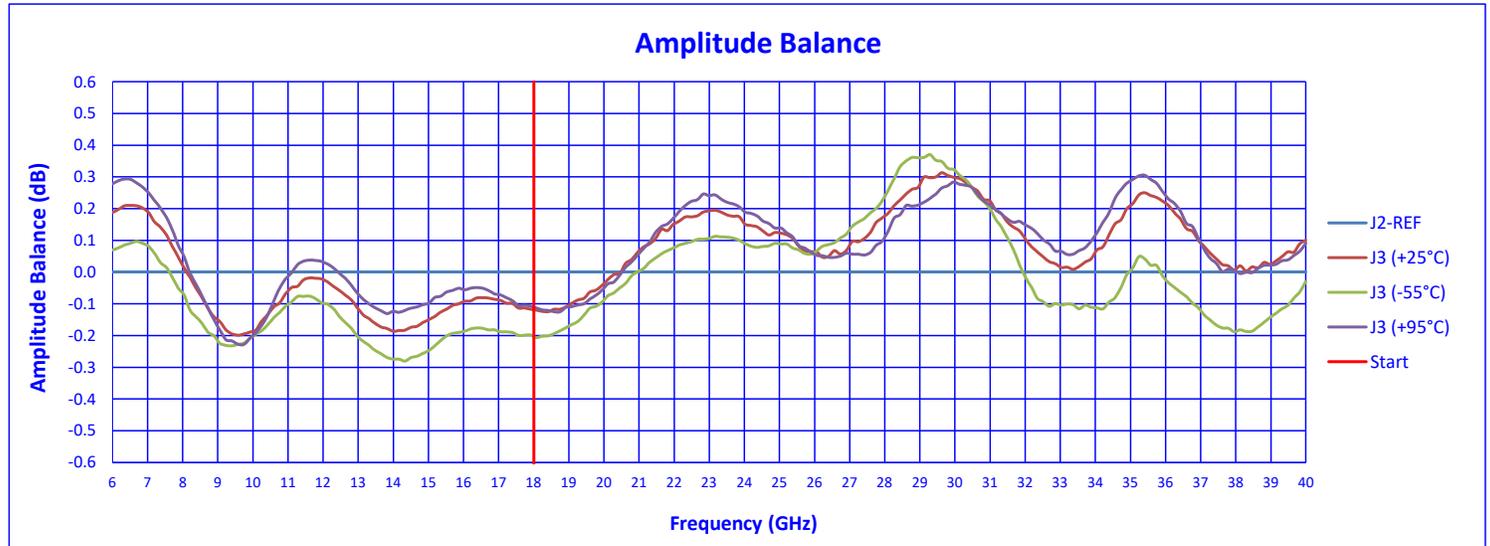
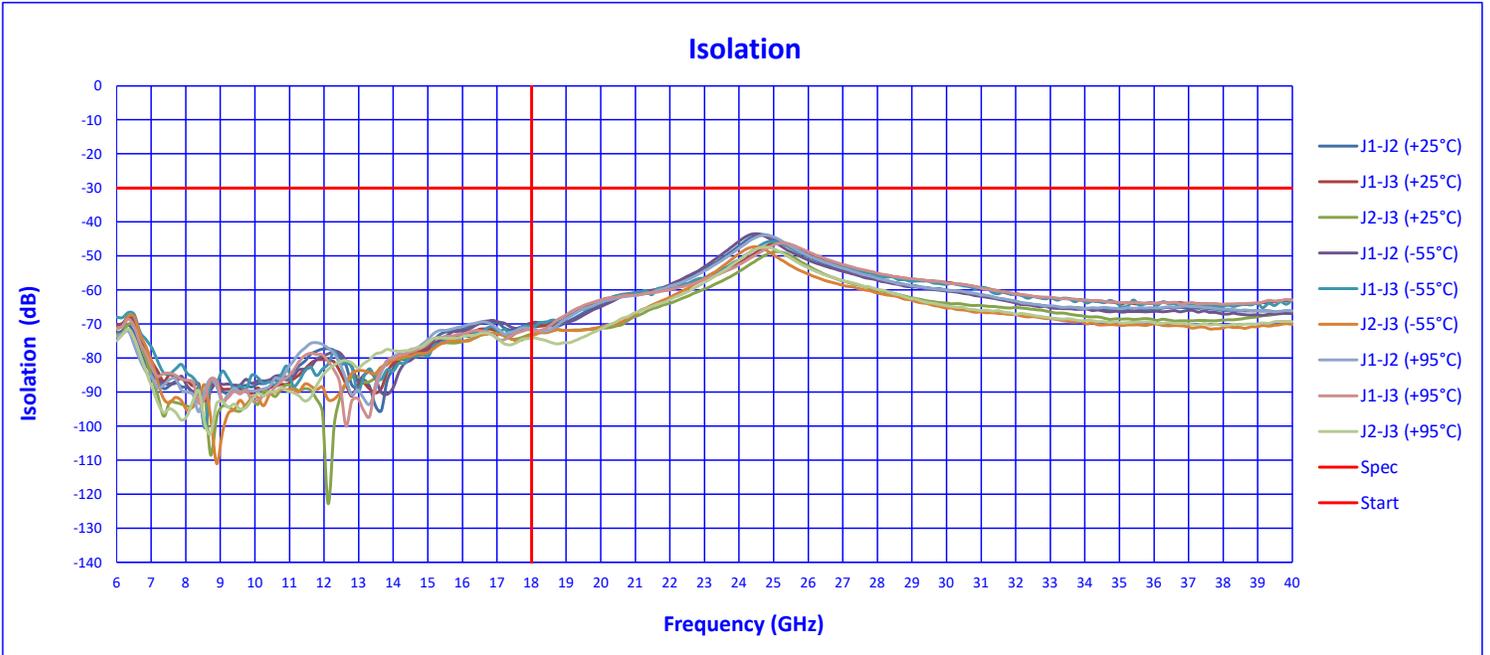


### VSWR In / Out





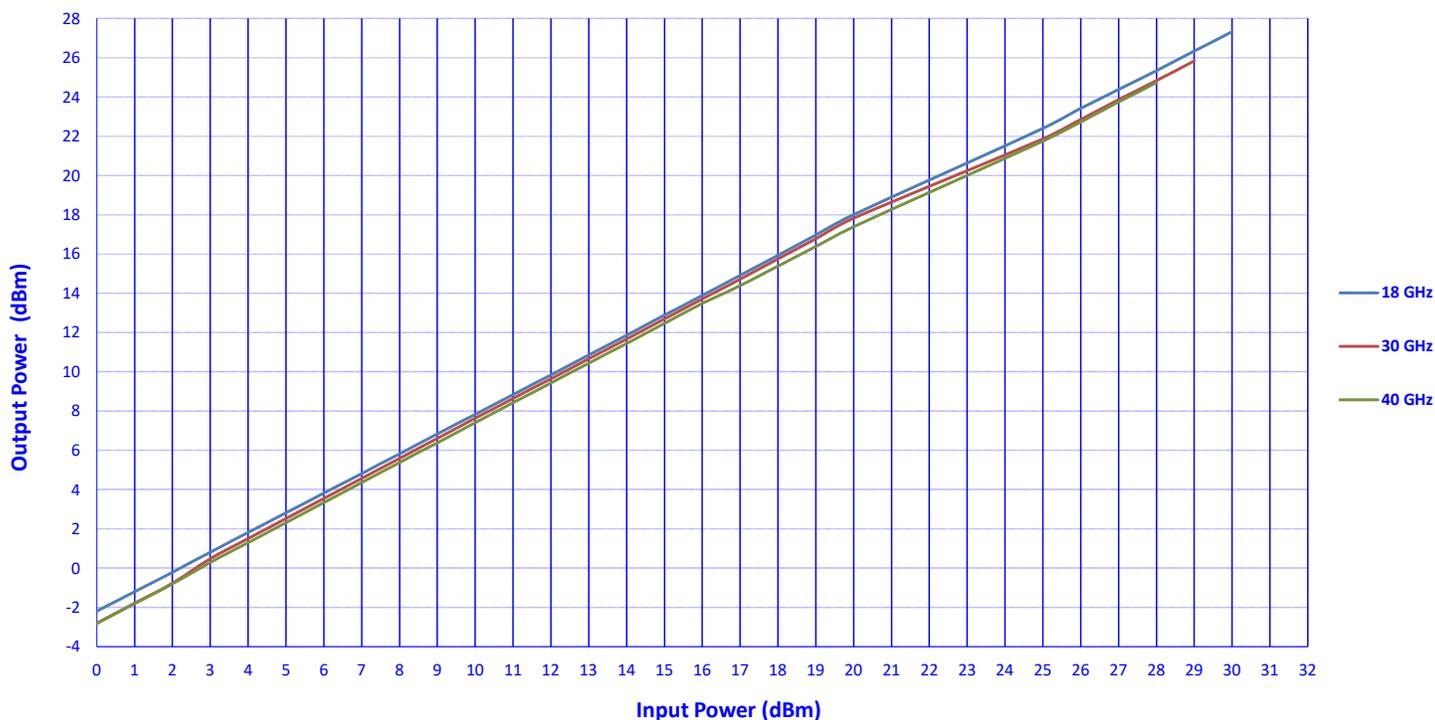
# Typical Characteristics ON P2T-1840-30-R-1W-292FF





# Typical Characteristics ON P2T-1840-30-R-1W-292FF

### High Power Test Graph CW (+25°)

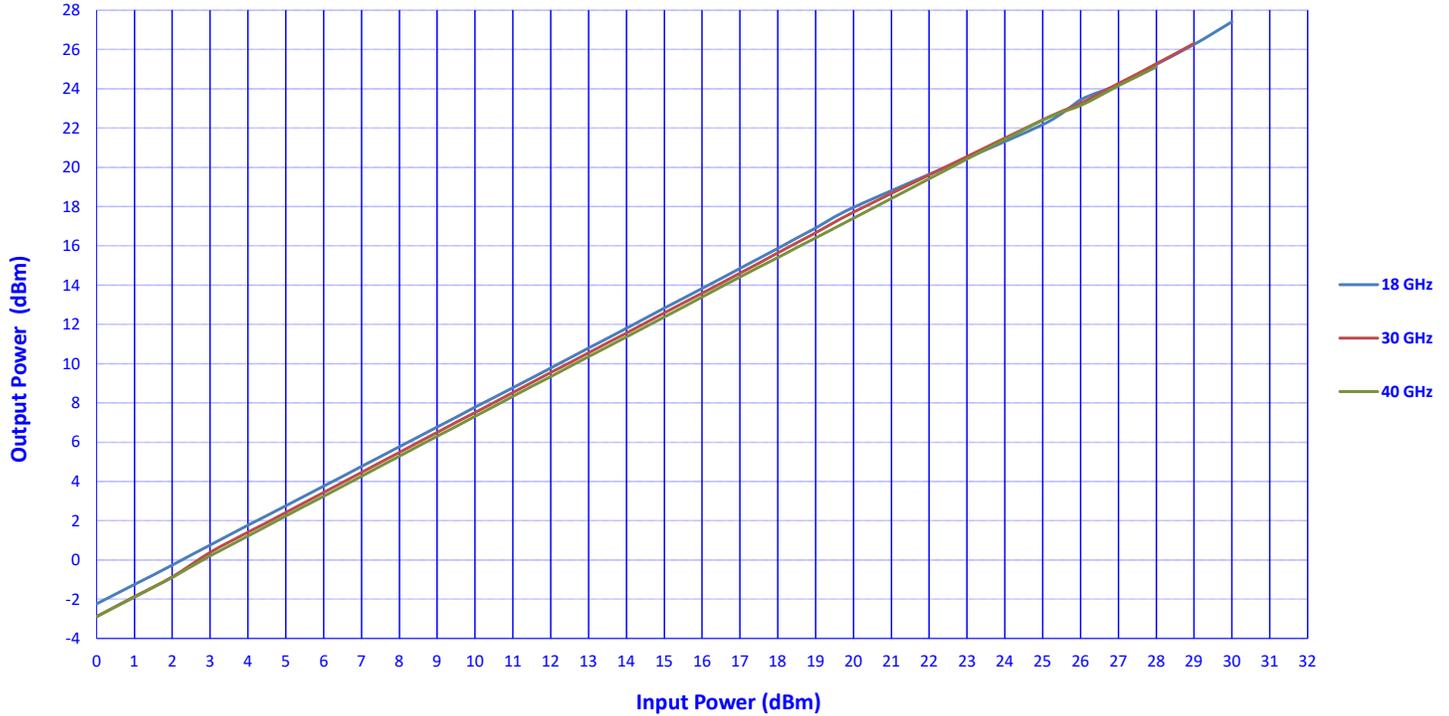


High Power Test Data CW (+25°C)												Input Power (Watts)
18 GHz				30 GHz				40 GHz				
Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	
0	-2.190	2.190	0.000	0	-2.798	2.798	0.000	0	-2.814	2.814	0.000	
1	-1.199	2.199	0.008	1	-1.781	2.781	0.017	1	-1.805	2.805	0.009	
2	-0.206	2.206	0.016	2	-0.767	2.767	0.031	2	-0.800	2.800	0.014	
3	0.818	2.182	0.008	3	0.482	2.518	0.280	3	0.290	2.710	0.104	
4	1.817	2.183	0.007	4	1.504	2.496	0.302	4	1.304	2.696	0.118	
5	2.818	2.182	0.008	5	2.526	2.474	0.324	5	2.322	2.678	0.136	
6	3.818	2.182	0.009	6	3.549	2.451	0.347	6	3.342	2.659	0.156	
7	4.821	2.179	0.011	7	4.568	2.432	0.366	7	4.361	2.640	0.175	
8	5.825	2.176	0.015	8	5.589	2.411	0.387	8	5.378	2.622	0.192	
9	6.839	2.161	0.029	9	6.608	2.392	0.405	9	6.393	2.607	0.207	
10	7.831	2.169	0.021	10	7.632	2.368	0.430	10	7.407	2.593	0.221	
11	8.839	2.161	0.029	11	8.642	2.358	0.440	11	8.420	2.580	0.234	
12	9.846	2.154	0.036	12	9.651	2.349	0.449	12	9.434	2.566	0.249	
13	10.854	2.146	0.044	13	10.660	2.340	0.458	13	10.441	2.559	0.255	
14	11.866	2.134	0.056	14	11.674	2.326	0.472	14	11.447	2.553	0.261	
15	12.879	2.121	0.069	15	12.692	2.308	0.490	15	12.462	2.538	0.276	
16	13.894	2.106	0.084	16	13.706	2.294	0.504	16	13.478	2.522	0.292	
17	14.913	2.087	0.103	17	14.724	2.276	0.522	17	14.385	2.615	0.199	
18	15.936	2.064	0.126	18	15.748	2.252	0.546	18	15.385	2.615	0.199	
19	16.966	2.034	0.156	19	16.778	2.222	0.576	19	16.385	2.615	0.199	
20	18.006	1.994	0.196	20	17.821	2.179	0.619	20	17.385	2.615	0.199	
25	22.400	2.600	0.410	25	21.860	3.140	0.342	25	21.750	3.250	0.436	
26	23.420	2.580	0.390	26	22.860	3.140	0.342	26	22.730	3.270	0.456	
27	24.380	2.620	0.430	27	23.850	3.150	0.352	27	23.740	3.260	0.446	
28	25.340	2.660	0.470	28	24.830	3.170	0.372	28	24.730	3.270	0.456	
29	26.330	2.670	0.480	29	25.830	3.170	0.372					
30	27.320	2.680	0.490									1 Watt



# Typical Characteristics ON P2T-1840-30-R-1W-292FF

### High Power Test Graph CW (-55°)

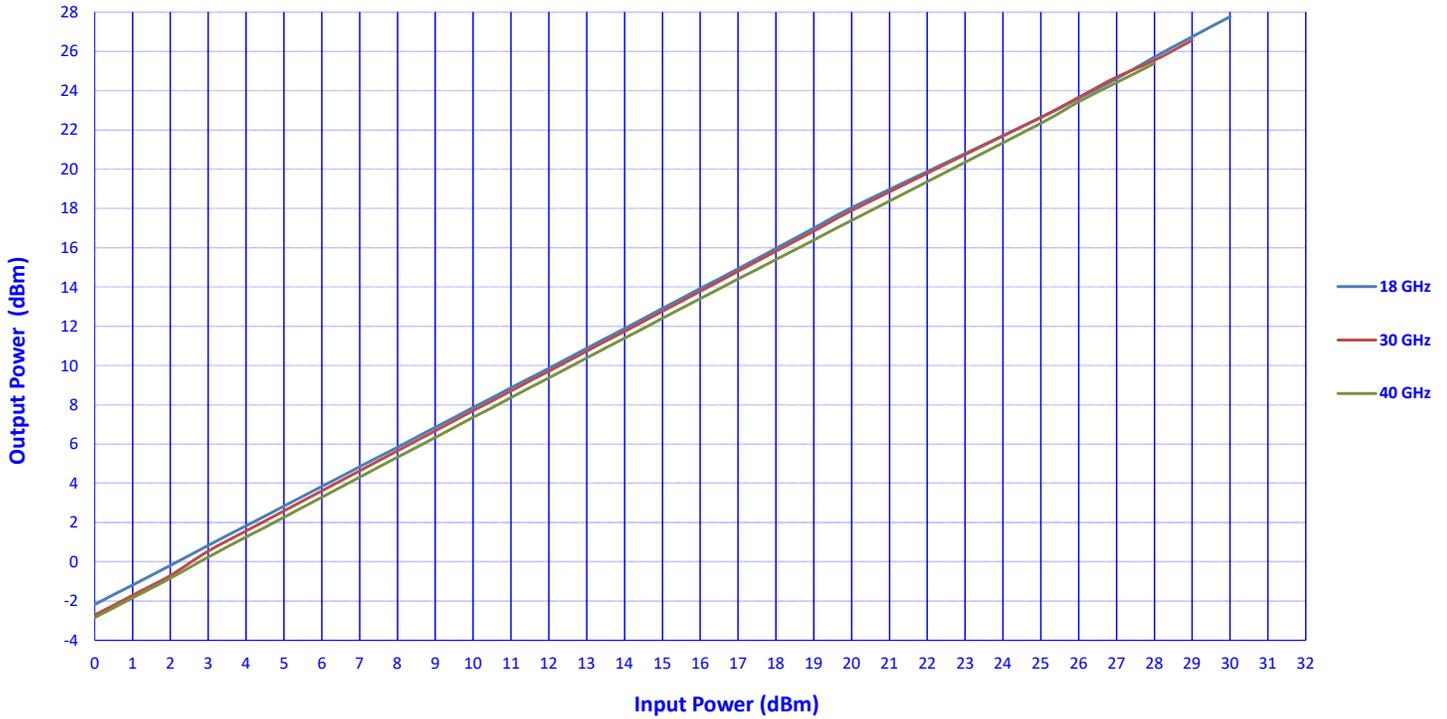


High Power Test Data CW (-55°C)												Input Power (Watts)
18 GHz				30 GHz				40 GHz				
Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	
0	-2.239	2.239	0.000	0	-2.882	2.882	0.000	0	-2.890	2.890	0.000	
1	-1.250	2.250	0.011	1	-1.871	2.871	0.011	1	-1.889	2.889	0.002	
2	-0.261	2.261	0.021	2	-0.862	2.862	0.020	2	-0.884	2.884	0.006	
3	0.762	2.239	0.001	3	0.382	2.618	0.264	3	0.205	2.795	0.095	
4	1.759	2.241	0.002	4	1.402	2.598	0.284	4	1.216	2.785	0.106	
5	2.759	2.241	0.002	5	2.420	2.580	0.302	5	2.232	2.768	0.122	
6	3.757	2.243	0.003	6	3.442	2.558	0.324	6	3.249	2.751	0.140	
7	4.759	2.241	0.002	7	4.459	2.541	0.341	7	4.267	2.733	0.157	
8	5.762	2.238	0.001	8	5.478	2.522	0.360	8	5.283	2.717	0.174	
9	6.771	2.229	0.010	9	6.495	2.505	0.378	9	6.298	2.702	0.189	
10	7.772	2.229	0.011	10	7.511	2.489	0.393	10	7.313	2.687	0.203	
11	8.770	2.230	0.009	11	8.521	2.479	0.403	11	8.327	2.673	0.217	
12	9.774	2.226	0.014	12	9.539	2.461	0.421	12	9.343	2.657	0.234	
13	10.787	2.213	0.026	13	10.549	2.451	0.431	13	10.350	2.650	0.240	
14	11.799	2.201	0.038	14	11.559	2.441	0.441	14	11.360	2.640	0.250	
15	12.815	2.185	0.054	15	12.575	2.425	0.457	15	12.372	2.628	0.262	
16	13.824	2.176	0.063	16	13.589	2.411	0.471	16	13.392	2.608	0.282	
17	14.849	2.151	0.088	17	14.610	2.390	0.492	17	14.412	2.588	0.302	
18	15.873	2.127	0.112	18	15.634	2.366	0.516	18	15.404	2.596	0.294	
19	16.906	2.094	0.145	19	16.665	2.335	0.547	19	16.404	2.596	0.294	
20	17.951	2.049	0.190	20	17.707	2.293	0.589	20	17.402	2.598	0.292	
25	22.174	2.826	0.587	25	22.423	2.577	0.305	25	22.391	2.609	0.281	
26	23.432	2.568	0.329	26	23.252	2.748	0.134	26	23.140	2.860	0.030	
27	24.208	2.792	0.553	27	24.258	2.742	0.140	27	24.142	2.858	0.032	
28	25.231	2.769	0.530	28	25.260	2.740	0.142	28	25.100	2.900	0.010	
29	26.257	2.743	0.504	29	26.300	2.700	0.182					
30	27.399	2.601	0.362									1 Watt



# Typical Characteristics ON P2T-1840-30-R-1W-292FF

### High Power Test Graph CW (+95°)



High Power Test Data CW (+95°C)												Input Power (Watts)
18 GHz				30 GHz				40 GHz				
Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	Input Power (dBm)	Output Power (dBm)	Loss	Compression (dBm)	
0	-2.166	2.166	0.000	0	-2.714	2.714	0.000	0	-2.840	2.840	0.000	
1	-1.177	2.177	0.011	1	-1.701	2.701	0.013	1	-1.836	2.836	0.004	
2	-0.186	2.186	0.020	2	-0.690	2.690	0.024	2	-0.832	2.832	0.008	
3	0.839	2.161	0.005	3	0.549	2.451	0.263	3	0.246	2.754	0.086	
4	1.836	2.164	0.002	4	1.571	2.429	0.285	4	1.258	2.742	0.097	
5	2.837	2.163	0.003	5	2.592	2.408	0.306	5	2.274	2.726	0.113	
6	3.837	2.163	0.003	6	3.613	2.387	0.327	6	3.291	2.709	0.131	
7	4.839	2.161	0.005	7	4.632	2.368	0.346	7	4.308	2.692	0.148	
8	5.842	2.158	0.008	8	5.652	2.348	0.366	8	5.324	2.676	0.164	
9	6.853	2.148	0.018	9	6.671	2.329	0.385	9	6.338	2.662	0.177	
10	7.853	2.148	0.018	10	7.694	2.306	0.408	10	7.351	2.649	0.190	
11	8.860	2.140	0.026	11	8.706	2.294	0.420	11	8.363	2.637	0.202	
12	9.859	2.141	0.025	12	9.714	2.287	0.428	12	9.374	2.626	0.213	
13	10.873	2.127	0.039	13	10.726	2.274	0.440	13	10.389	2.611	0.228	
14	11.885	2.115	0.051	14	11.741	2.259	0.455	14	11.386	2.614	0.225	
15	12.903	2.097	0.069	15	12.754	2.246	0.468	15	12.402	2.598	0.241	
16	13.915	2.085	0.081	16	13.770	2.230	0.484	16	13.411	2.589	0.251	
17	14.934	2.066	0.100	17	14.790	2.210	0.504	17	14.402	2.598	0.241	
18	15.959	2.041	0.125	18	15.813	2.187	0.527	18	15.392	2.608	0.232	
19	16.994	2.006	0.160	19	16.842	2.158	0.556	19	16.392	2.608	0.232	
20	18.037	1.963	0.203	20	17.887	2.113	0.601	20	17.397	2.603	0.236	
25	22.628	2.372	0.206	25	22.645	2.355	0.359	25	22.331	2.669	0.171	
26	23.609	2.391	0.225	26	23.657	2.343	0.371	26	23.436	2.564	0.276	
27	24.610	2.390	0.224	27	24.683	2.317	0.397	27	24.414	2.586	0.254	
28	25.700	2.300	0.134	28	25.546	2.454	0.260	28	25.373	2.627	0.213	
29	26.750	2.250	0.084	29	26.559	2.441	0.273					
30	27.765	2.235	0.069									1 Watt

7311-F Grove Road Frederick, MD 21704 USA Phone: (301)662-5019 Fax: (301)662-1731  
Email: sales@pmi-rf.com





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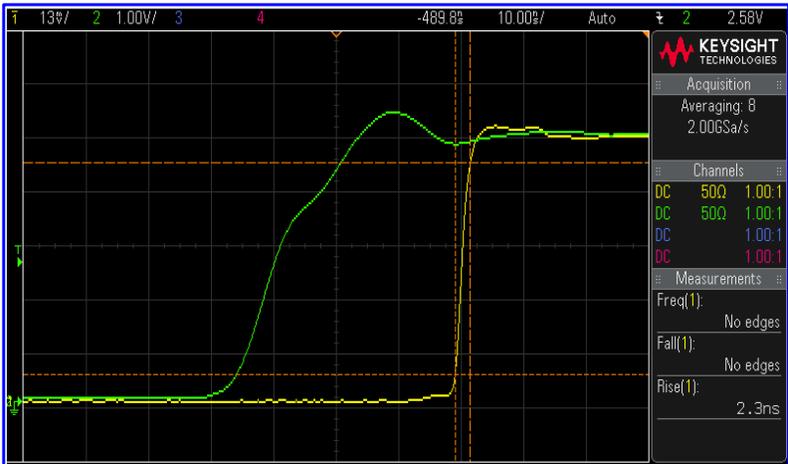
Speed ON  
10 ns Per Div.



Speed OFF  
10 ns Per Div.



Rise Time  
10 ns Per Div.



Fall Time  
10 ns Per Div.



Full Pulse  
100 ns Per Div.



Green Trace - TTL Signal

Yellow Trace - RF Signal

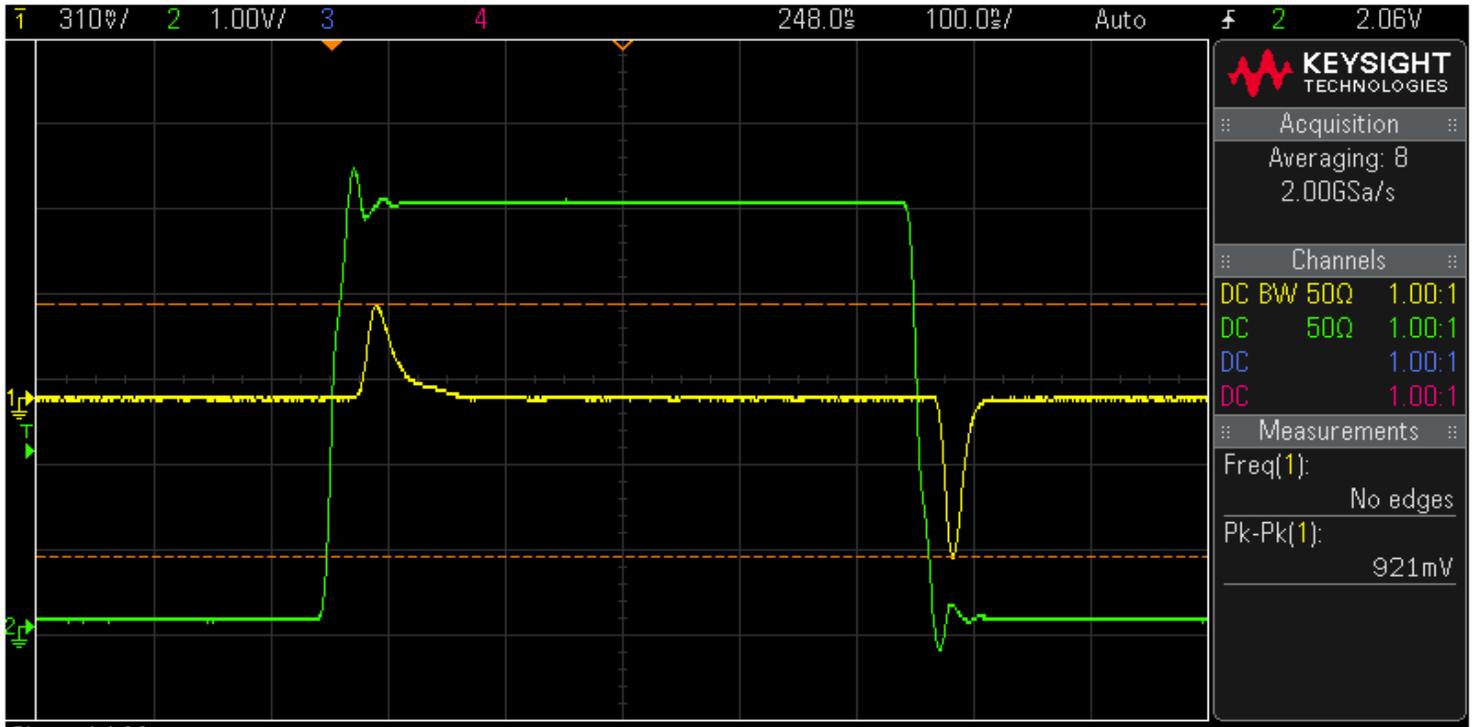
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Email: sales@pmi-rf.com





# Typical Characteristics ON P2T-1840-30-R-1W-292FF

Video Transients  
100 ns Per Div.



Green Trace - TTL Signal  
Yellow Trace - Transients Signal