

DC Pass, High Power

Power Splitter/Combiner

ZN8PD-183W-S+

8 Way-0° 50Ω 500 to 18000 MHz

The Big Deal

- Wideband, 0.5 to 18 GHz
- Low insertion loss, 2.5 dB typ.
- High Isolation, 23 dB typ. at 11 GHz
- 20W power handling
- Low amplitude unbalance, 0.03 dB typ.



CASE STYLE: UU1676-2

Product Overview

Mini-Circuits' ZN8PD-183W-S+ is a wideband 8-way 0° splitter/combiner providing coverage from 0.5 to 18 GHz, supporting a wide range of applications including L-Band, S-Band, C-Band, X-Band, Ku-Band and many more. This model provides 20W power handling as a splitter and very low insertion loss across the entire operating frequency range, minimizing power dissipation and delivering excellent signal power transmission from input to output. The ZN8PD-183W-S+ comes housed in a case measuring 5.80 x 5.8 x 0.5" with SMA connectors.

Key Features

Feature	Advantages
Ultra-wideband, 0.5 to 18 GHz	Extremely wide frequency range supports many broadband applications in a single model.
Low insertion loss, 2.5 dB typ. at 11 GHz	The combination of 20W power handling and low insertion loss makes this model a suitable candidate for distributing signals while maintaining excellent transmission of signal power.
High isolation, 23 dB typ. at 11 GHz	Minimizes interference between ports.
High power handling: •20W as a splitter at 25°C •1.5W per port	The ZN8PD-183W-S+ is suitable for systems with a wide range of power requirements.
Low amplitude unbalance, 0.3 dB at 11 GHz	Produces nearly equal output signals, ideal for parallel path and multichannel systems.
DC Passing, 630mA	Supports applications where DC power is needed through the RF line.

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/MCLStore/terms.jsp



Power Splitter/Combiner

ZN8PD-183W-S+

8 Way-0° 50Ω 0.5 to 18 GHz

Maximum Ratings

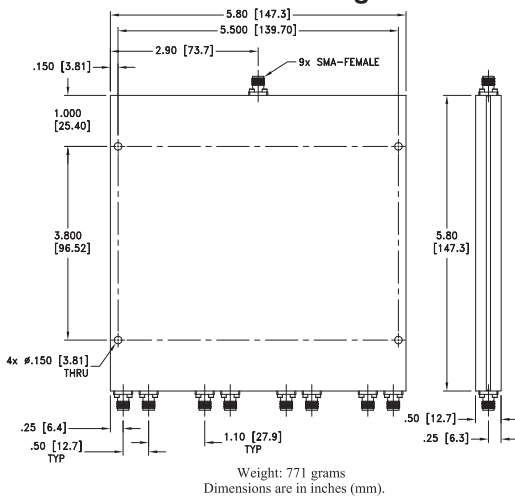
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Power Input (as a splitter)	20W max.
Internal Dissipation	10.5W max.
DC Current at Sum Port	630mA
DC Current at Output/Port	80mA

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

Coaxial Connections

SUM PORT	S(COM)
PORT 1,2,3,.....,8	1,2,3,.....,8

Outline Drawing



Features

- wideband, 0.5 to 18 GHz
- low insertion loss, 2.5 dB typ.
- low amplitude unbalance, 0.3 dB typ.
- excellent output VSWR, 1.1:1 typ.
- DC PASS from sum port to output ports

Applications

- UHF through Ku Band
- Test Instrumentation
- Lab Use
- Defense



Generic photo used for illustration purposes only

CASE STYLE: UU1676-2

Connectors	Model
SMA	ZN8PD-183W-S+

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Frequency Range		500		18000	MHz
Insertion Loss (above theoretical 9.0 dB)	500 - 5000	—	1.2	2.7	dB
	5000 - 8000	—	1.8	3.0	
	8000 - 15000	—	2.8	4.7	
	15000 - 18000	—	4.0	6.0	
Isolation	500 - 5000	12	15	—	dB
	5000 - 8000	15	23.9	—	
Phase Unbalance	500 - 5000	—	1.5	5	Degree
	5000 - 8000	—	3.5	10	
	8000 - 15000	—	6.1	13	
	15000 - 18000	—	8.5	16	
Amplitude Unbalance	500 - 5000	—	0.07	0.5	dB
	5000 - 8000	—	0.14	0.6	
	8000 - 15000	—	0.31	1.1	
	15000 - 18000	—	0.52	1.3	
VSWR (Port S)	500 - 5000		1.22		:1
	5000 - 8000		1.16		
	8000 - 15000		1.17		
	15000 - 18000		1.21		
VSWR (Port 1-8)	500 - 5000		1.10		:1
	5000 - 8000		1.08		
	8000 - 15000		1.10		
	15000 - 18000		1.12		

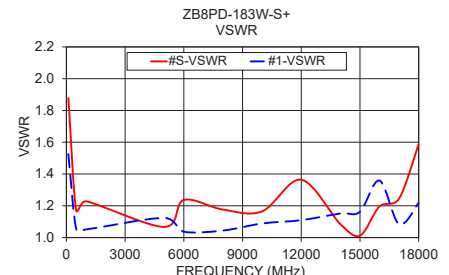
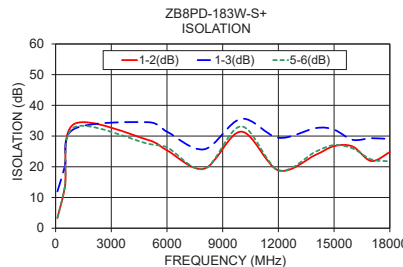
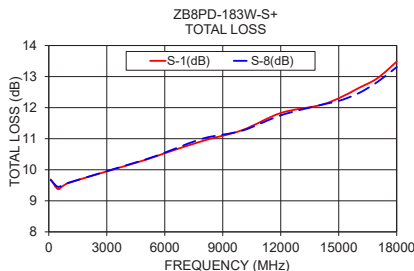
1. Over -55°C to +55°C. Derate linearly to 20% of rating at 100°C

Typical Performance Data

Freq. (MHz)	Total Loss ¹ (dB)						Amp. Unb. (dB)	Isolation (dB)			Phase Unb. (deg.)	VSWR S	VSWR 1	VSWR 8	
	S-1	S-2	S-3	S-4	S-6	S-8		1-2	1-3	3-4					5-6
100	9.7	9.7	9.6	9.6	9.6	9.7	0.1	3.3	12.0	3.3	3.3	0.66	1.88	1.53	1.53
500	9.4	9.4	9.4	9.4	9.5	9.4	0.1	13.5	20.2	13.4	13.5	0.58	1.17	1.06	1.05
1000	9.6	9.6	9.6	9.6	9.6	9.6	0.0	33.9	32.3	34.1	32.9	0.48	1.23	1.05	1.04
5000	10.3	10.4	10.4	10.4	10.4	10.3	0.1	28.7	34.5	26.7	27.5	2.66	1.07	1.12	1.12
6000	10.5	10.6	10.6	10.5	10.5	10.6	0.1	25.3	31.4	25.8	26.4	3.22	1.24	1.04	1.08
8000	10.9	11.0	11.0	10.9	10.9	11.0	0.2	19.4	25.7	19.3	19.3	3.53	1.18	1.04	1.11
10000	11.3	11.4	11.3	11.2	11.2	11.3	0.2	31.4	35.6	30.8	33.2	5.29	1.16	1.09	1.09
12000	11.8	11.9	11.8	11.7	11.7	11.8	0.2	18.8	29.4	17.2	18.9	6.43	1.36	1.11	1.07
14000	12.1	12.3	12.2	12.0	12.0	12.1	0.3	23.9	32.6	24.3	24.9	6.79	1.08	1.15	1.09
15000	12.3	12.5	12.4	12.2	12.3	12.2	0.3	26.7	32.1	28.3	27.1	8.54	1.01	1.16	1.06
16000	12.6	12.8	12.9	12.6	12.6	12.5	0.5	26.6	28.8	24.0	26.0	7.16	1.20	1.36	1.18
17000	12.9	13.1	13.0	12.7	12.7	12.8	0.4	21.9	29.3	20.6	22.4	10.25	1.25	1.08	1.05
18000	13.5	13.7	13.7	13.3	13.5	13.3	0.4	24.8	29.0	23.9	21.8	10.55	1.59	1.22	1.25

1. Total Loss = Insertion Loss + 9dB theoretical splitter loss.

Electrical Schematic



Notes

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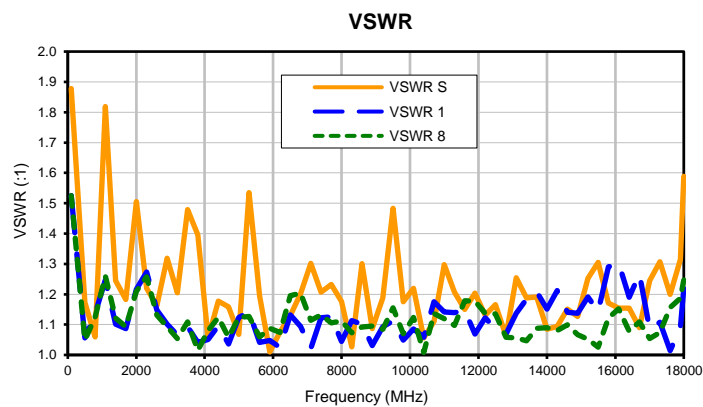
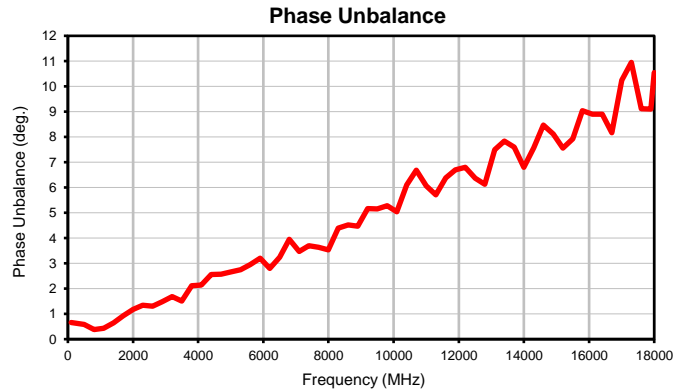
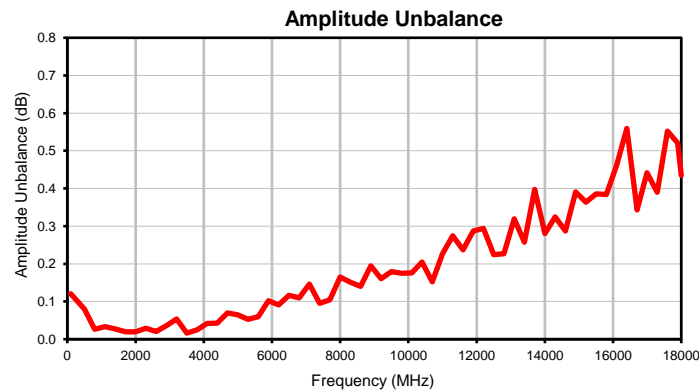
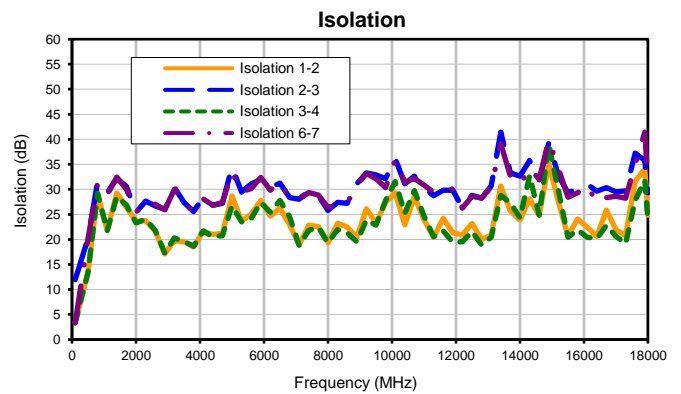
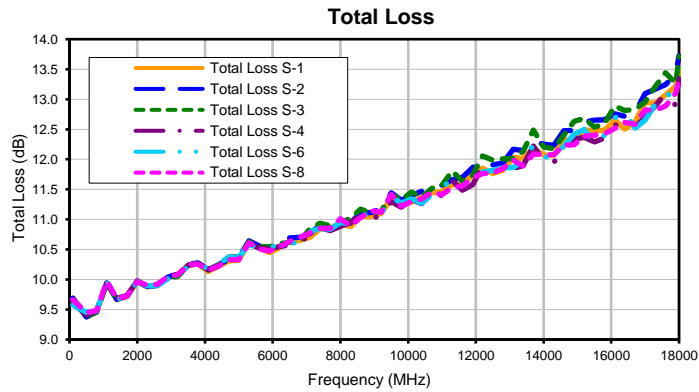
Typical Performance Data

FREQ. (MHz)	TOTAL LOSS ¹ (dB)						AMP. UNBAL. (dB)	ISOLATION (dB)				PHASE UNBAL. (deg.)	FREQ. (MHz)	VSWR (:1)		
	S-1	S-2	S-3	S-4	S-6	S-8		1-2	2-3	3-4	6-7			S	1	8
100	9.69	9.69	9.62	9.63	9.57	9.67	0.12	3.33	11.98	3.34	3.33	0.66	100	1.88	1.53	1.53
500	9.37	9.38	9.39	9.41	9.45	9.45	0.08	13.45	20.18	13.42	20.09	0.58	500	1.17	1.06	1.05
800	9.46	9.46	9.46	9.48	9.48	9.48	0.03	29.11	31.49	29.18	31.28	0.38	800	1.06	1.14	1.12
1100	9.94	9.94	9.94	9.96	9.97	9.97	0.03	21.84	29.31	21.70	28.92	0.42	1100	1.82	1.25	1.26
1400	9.67	9.67	9.67	9.69	9.67	9.68	0.03	29.24	32.20	28.53	32.45	0.65	1400	1.25	1.10	1.12
1700	9.72	9.73	9.72	9.73	9.72	9.72	0.02	26.46	30.62	26.88	30.01	0.93	1700	1.18	1.09	1.09
2000	9.96	9.96	9.97	9.98	9.96	9.96	0.02	23.64	25.34	23.33	25.44	1.18	2000	1.51	1.22	1.21
2300	9.88	9.88	9.88	9.88	9.90	9.90	0.03	23.77	27.65	24.04	27.43	1.34	2300	1.22	1.27	1.26
2600	9.90	9.91	9.92	9.92	9.90	9.92	0.02	21.72	26.67	21.85	27.01	1.30	2600	1.16	1.15	1.13
2900	10.03	10.04	10.02	10.02	10.01	10.05	0.04	17.09	25.98	17.32	25.95	1.48	2900	1.32	1.10	1.09
3200	10.09	10.10	10.05	10.06	10.04	10.08	0.05	19.73	30.40	20.33	30.04	1.68	3200	1.20	1.07	1.05
3500	10.23	10.25	10.24	10.24	10.24	10.24	0.02	19.57	27.38	19.61	27.49	1.50	3500	1.48	1.09	1.11
3800	10.26	10.28	10.26	10.26	10.26	10.26	0.02	18.50	25.57	18.64	25.55	2.11	3800	1.40	1.04	1.01
4100	10.13	10.16	10.17	10.16	10.17	10.15	0.04	21.59	28.41	21.72	28.08	2.13	4100	1.06	1.05	1.08
4400	10.22	10.25	10.24	10.23	10.26	10.22	0.04	21.00	26.83	20.59	26.81	2.55	4400	1.18	1.10	1.12
4700	10.31	10.33	10.37	10.35	10.37	10.33	0.07	21.18	27.22	20.76	27.38	2.56	4700	1.16	1.04	1.06
5000	10.32	10.36	10.38	10.36	10.37	10.33	0.06	28.71	34.51	26.70	33.48	2.66	5000	1.07	1.12	1.12
5300	10.61	10.64	10.63	10.60	10.59	10.61	0.05	23.71	29.44	23.48	29.50	2.74	5300	1.54	1.14	1.13
5600	10.53	10.56	10.55	10.52	10.51	10.51	0.06	25.06	31.08	24.21	30.14	2.95	5600	1.19	1.04	1.06
5900	10.45	10.50	10.54	10.50	10.52	10.48	0.10	27.81	31.95	27.42	32.40	3.20	5900	1.01	1.05	1.09
6200	10.53	10.58	10.60	10.55	10.59	10.54	0.09	24.67	30.42	25.39	29.82	2.80	6200	1.08	1.02	1.07
6500	10.64	10.69	10.62	10.58	10.58	10.63	0.12	26.26	31.21	27.77	31.49	3.24	6500	1.13	1.13	1.19
6800	10.65	10.70	10.64	10.59	10.64	10.70	0.11	22.95	28.34	24.51	28.25	3.94	6800	1.20	1.09	1.20
7100	10.70	10.77	10.85	10.77	10.80	10.78	0.15	18.90	28.01	18.75	28.06	3.46	7100	1.30	1.02	1.11
7400	10.84	10.90	10.94	10.86	10.85	10.85	0.10	22.88	29.74	21.81	29.40	3.70	7400	1.21	1.12	1.13
7700	10.86	10.91	10.90	10.81	10.84	10.85	0.10	22.56	28.75	22.42	28.88	3.63	7700	1.23	1.13	1.11
8000	10.94	10.98	10.95	10.88	10.95	11.01	0.17	19.38	25.78	19.32	26.38	3.53	8000	1.18	1.04	1.11
8300	10.88	10.94	11.02	10.95	10.93	10.89	0.15	23.25	27.42	21.98	27.06	4.39	8300	1.03	1.11	1.07
8600	11.05	11.11	11.17	11.08	11.06	11.03	0.14	22.50	27.24	21.34	27.26	4.52	8600	1.30	1.10	1.09
8900	11.05	11.11	11.11	11.03	11.10	11.15	0.20	20.45	31.10	19.54	30.79	4.47	8900	1.09	1.03	1.10
9200	11.10	11.18	11.14	11.05	11.09	11.12	0.16	26.15	33.27	23.88	33.17	5.17	9200	1.19	1.09	1.08
9500	11.35	11.44	11.41	11.29	11.37	11.42	0.18	23.25	32.88	22.87	32.14	5.15	9500	1.48	1.11	1.15
9800	11.24	11.32	11.33	11.20	11.27	11.22	0.18	27.42	32.10	27.76	30.35	5.28	9800	1.18	1.05	1.07
10100	11.29	11.39	11.45	11.33	11.34	11.30	0.18	29.34	36.14	31.56	35.88	5.03	10100	1.22	1.09	1.12
10400	11.37	11.47	11.37	11.26	11.27	11.34	0.20	22.95	31.11	25.25	31.45	6.11	10400	1.06	1.06	1.01
10700	11.44	11.54	11.52	11.40	11.42	11.45	0.15	28.56	32.66	29.75	32.22	6.68	10700	1.11	1.17	1.14
11000	11.47	11.57	11.56	11.40	11.53	11.41	0.23	23.93	30.27	24.68	30.82	6.07	11000	1.30	1.14	1.12
11300	11.58	11.66	11.80	11.65	11.66	11.53	0.27	20.46	28.71	20.58	29.47	5.71	11300	1.21	1.14	1.10
11600	11.57	11.70	11.63	11.48	11.56	11.56	0.24	24.22	29.80	21.73	29.64	6.37	11600	1.15	1.15	1.18
11900	11.75	11.86	11.73	11.58	11.67	11.69	0.29	21.32	29.80	19.50	30.15	6.70	11900	1.20	1.07	1.18
12200	11.85	11.96	12.06	11.88	11.79	11.76	0.29	20.87	26.29	19.52	26.23	6.80	12200	1.13	1.12	1.14
12500	11.76	11.91	11.99	11.79	11.82	11.77	0.22	23.15	28.83	21.61	28.60	6.36	12500	1.17	1.09	1.14
12800	11.82	11.94	12.01	11.84	11.86	11.85	0.23	20.06	28.21	18.89	28.30	6.13	12800	1.06	1.07	1.06
13100	12.03	12.17	12.01	11.85	11.86	11.98	0.32	20.83	30.65	20.42	30.50	7.49	13100	1.25	1.14	1.06
13400	12.01	12.15	12.14	11.90	11.97	11.89	0.26	30.67	41.43	28.82	39.07	7.84	13400	1.19	1.18	1.05
13700	12.19	12.29	12.49	12.22	12.24	12.09	0.40	25.67	33.31	27.25	32.64	7.59	13700	1.19	1.21	1.09
14000	12.07	12.26	12.21	11.98	12.04	12.08	0.28	23.87	32.67	24.34	30.99	6.79	14000	1.08	1.15	1.09
14300	12.07	12.23	12.18	11.95	12.02	12.08	0.32	28.07	35.80	32.70	34.29	7.57	14300	1.09	1.21	1.08
14600	12.33	12.48	12.40	12.19	12.22	12.24	0.29	24.84	31.80	24.82	31.99	8.47	14600	1.15	1.14	1.10
14900	12.30	12.48	12.63	12.34	12.42	12.24	0.39	35.13	39.31	38.94	39.87	8.11	14900	1.13	1.14	1.07
15200	12.49	12.62	12.68	12.37	12.50	12.39	0.36	27.49	32.75	29.77	34.21	7.55	15200	1.25	1.19	1.05
15500	12.48	12.65	12.53	12.29	12.26	12.40	0.39	20.69	29.34	20.46	28.40	7.93	15500	1.30	1.14	1.03
15800	12.48	12.66	12.60	12.35	12.40	12.42	0.38	24.11	30.14	21.93	29.32	9.05	15800	1.17	1.29	1.12
16100	12.65	12.76	12.89	12.58	12.69	12.52	0.46	22.44	31.07	20.45	30.84	8.90	16100	1.15	1.30	1.15
16400	12.50	12.72	12.81	12.48	12.78	12.62	0.56	20.60	29.65	20.17	27.27	8.90	16400	1.15	1.19	1.08
16700	12.63	12.78	12.83	12.54	12.52	12.58	0.34	25.87	30.34	22.80	28.37	8.16	16700	1.09	1.27	1.11
17000	12.95	13.10	12.96	12.70	12.65	12.82	0.44	21.87	29.49	20.60	28.64	10.25	17000	1.25	1.08	1.05
17300	12.93	13.17	13.21	12.89	12.92	12.82	0.39	20.80	29.67	19.17	28.23	10.95	17300	1.31	1.11	1.07
17600	13.07	13.24	13.44	13.09	13.11	12.89	0.55	31.65	37.25	27.86	35.04	9.12	17600	1.20	1.01	1.16
17900	13.22	13.42	13.26	12.90	13.01	13.10	0.52	34.12	35.77	31.83	41.44	9.10	17900	1.31	1.09	1.19
18000	13.48	13.72	13.71	13.34	13.52	13.31	0.44	24.82	29.31	23.92	31.27	10.55	18000	1.59	1.22	1.25

¹Total Loss = Insertion Loss + 9dB Splitter Loss



Typical Performance Curves





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	-55° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I