

## Avantek Products

# Surface Mount Resistive Power Divider/Combiner DC to 10 GHz

## Technical Data

### PSP-1002

**2**

#### Features

- **Surface Mount - 1/4 Inch Square Package**
- **Excellent Phase and Amplitude Match**
- **Hermetically Sealed**
- **DC to 10 GHz Performance**
- **Optimized for Best Insertion Loss**

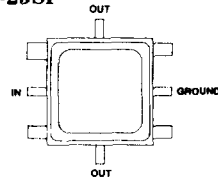
#### Applications

- **Instrumentation**
- **Missile Systems**
- **Measurement**
- **Multi-Channel Receivers**
- **LO Splitting**

#### Description

The PSP-1002 is a DC to 10 GHz resistive power divider/combiner designed for surface mounting to microstrip systems. This divider uses a symmetrical, three resistor TEE design to be used in applications where signals must be accurately divided or combined. This design approach permits a true 50 ohm match at all three ports over a broad frequency range. Insertion loss has been optimized and guaranteed to a maximum of 1.0 dB over the nominal 6 dB characteristic of resistive power dividers. The PSP-1002 power divider is complementary to the HP PlanarPak line of surface mount products, and uses the "1/4" square PP-25 package.

#### Pin Configuration PP-25SP



(See Section 5 for detailed case drawings.)

#### Maximum Ratings

Parameter	Maximum
Continuous RF Power (CW or Pulse)	+30 dBm
Operating Case Temperature	-55 to +125°C
Storage Temperature	-62 to +150°C
"R" Series Burn-In Temperature	+125°C

**Weight:** (typical) .21 grams

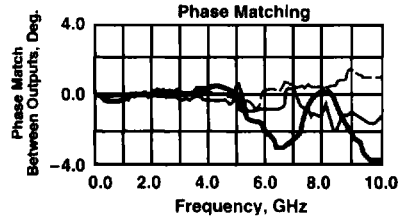
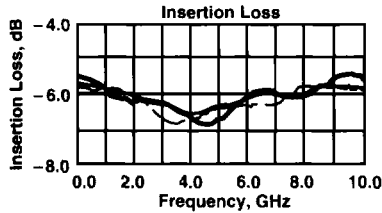
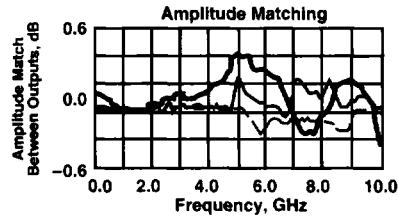
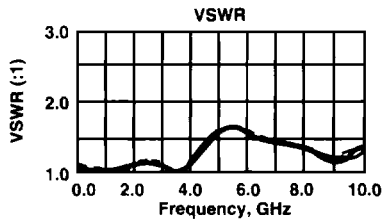
## Electrical Specifications

(Measured in a 50  $\Omega$  system)

Characteristic	Typical $T_c = 25^\circ\text{C}$	Guaranteed Specifications		Unit
		$T_c = 0$ to $50^\circ\text{C}$	$T_c = -55$ to $+85^\circ\text{C}$	
Frequency Range	DC-10	DC-10	DC-10	GHz
VSWR, IN/OUT (Max.)	1.4:1	1.7:1	1.7:1	—
Insertion Loss Over 6 dB Nominal (Max.)	.7	1.0	1.0	dB
Amplitude (Max.) (Arm to Arm)	.35	.7	.7	$\pm$ dB
Phase Balance (Arm to Arm)	3.0			$\pm$ Degrees

## Typical Performance Over Temperature

Key:  $+25^\circ\text{C}$  —  
 $+85^\circ\text{C}$  - - -  
 $-55^\circ\text{C}$  —



**Automatic Network Analyzer Measurements** (Typical production unit @ +25°C ambient)  
**S-Parameters and Group Delay**

FREQUENCY GHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>31</sub>		GPDEL ps
	Mag	Ang	dB	Ang	dB	Ang	
0.50000	0.029	-176.579	-5.790	-8.627	-5.790	-8.331	47.475
1.00000	0.040	-156.992	-5.875	-17.170	-5.867	-16.604	44.676
1.50000	0.060	-147.101	-5.988	-25.220	-5.970	-24.362	43.949
2.00000	0.081	-142.756	-6.135	-33.134	-6.110	-32.005	32.677
2.50000	0.089	-135.708	-6.305	-39.014	-6.269	-37.650	39.459
3.00000	0.070	-123.581	-6.505	-46.116	-6.450	-44.437	38.100
3.50000	0.047	-65.065	-6.682	-52.977	-6.587	-50.980	35.719
4.00000	0.105	-14.523	-6.793	-59.407	-6.651	-57.232	35.001
4.50000	0.183	-5.055	-6.772	-65.704	-6.585	-63.485	37.309
5.00000	0.235	-4.694	-6.649	-72.417	-6.428	-70.223	39.156
5.50000	0.261	-6.847	-6.612	-79.466	-6.329	-77.529	44.288
6.00000	0.254	-9.981	-6.283	-87.430	-6.073	-85.966	50.968
6.50000	0.230	-12.971	-6.251	-96.604	-5.994	-93.884	33.681
7.00000	0.204	-13.151	-6.186	-102.665	-5.969	-101.513	40.300
7.50000	0.185	-13.098	-6.089	-109.916	-5.976	-108.204	48.009
8.00000	0.167	-19.204	-5.959	-118.555	-5.864	-116.647	50.415
8.50000	0.155	-20.322	-5.898	-127.624	-5.788	-126.010	55.306
9.00000	0.133	-4.808	-5.697	-137.577	-5.732	-135.760	60.918
9.50000	0.124	22.213	-5.680	-148.538	-5.781	-146.266	63.782
10.00000	0.151	38.160	-5.934	-160.020	-6.090	-157.370	63.818