

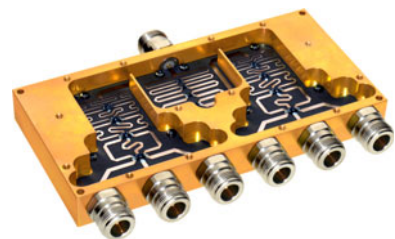
6-WAY POWER DIVIDER/COMBINER

0.7-2.7 GHz, 40 Watts, N & SMA-Jack Connectors

Application Note



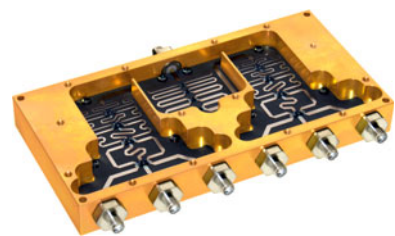
6-Way, N-Jack Connectors



precision microstrip circuit



6-Way, SMA-Jack Connectors



fully-shielded CNC-housing

STOCK 6-Way Power Divider, Power Combiners are available with two connector styles, N-Jack and SMA-Jack. Both models are optimized for broadband operation covering the frequency range from 0.7– 2.7 GHz with outstanding electrical performance. These Wilkinson-type, 6-way, power divider, power combiners are reciprocal units that can be used to divide or combine signals with equal facility.

In power divider applications, the input signal is equally split into six output signals, each down 7.78 dB from the incident due to the 6 x 1/6th power division. No power is actually lost from this power split; it is just allocated into six amplitude and phase matched signals, thus a so-called 7.78 dB insertion loss. True insertion loss of less than 1.1 dB max @ 2.7 GHz will be found at the output ports resulting from dissipation of small amounts of RF & microwave energy within the connectors and microstrip circuit. The output signals are isolated from each other by 22 dB minimum through the use of resistors that dissipate any power reflected back to the circuit caused by unequal or unbalanced output loads. The 40 watt maximum power rating of these power dividers is applicable when connected to

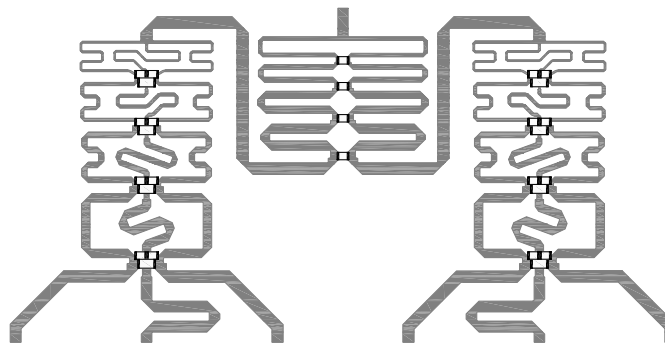
matched output load VSWR's of 1.2:1 or better. This maximum power rating must be reduced when load VSWR's increase or are unbalanced or out-of-phase with respect to one another. See **Power Divider Input Rating Tables** for additional guidelines.

The situation with power combining is a bit more complex. While it is possible to sum six input signals with no loss, this can only be accomplished if the input signals are coherent and identical in phase and amplitude. Such a

Model Number	Connectors
PD1060	N-Jack
PD1160	SMA-Jack

case would be the 6-way splitting of a signal which is then recombined after amplification, provided the amplified signals are

phase-locked together. But outside this case, or cases of pure sine signals, or CW signals without any transmitted info, the combining of six non-coherent signals will result in a minimum 7.78 dB loss (1/6th power ratio) plus the true insertion loss of the power combiner (1.1 dB max @ 2.7 GHz). Worst-case combining loss occurs with coherent signals 180° out-of-phase, where all power is dissipated. Because the combining loss is dissipated through the isolation resistors, it is the power handling capability of these resistors that ultimately determines the combiner power rating. See **Power Combiner Input Rating Tables** for more information.



6-Way Power Divider, Power Combiner Circuit

- design
- manufacture
- direct sales

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wireless components
Better Products. Better Prices.

50 Intervale Road
Boonton, NJ 07005 USA
ph: 973.335.6550
fx: 973.335.6770
email: sales@instockwireless.com
web: www.instockwireless.com