

2-WAY POWER DIVIDER/COMBINER

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



In-Line, N-Jack Connectors



T-Style, N-Jack Connectors



In-Line, SMA-Jack Connectors



T-Style, SMA-Jack Connectors

Application Note

STOCK 2-Way Power Divider, Power Combiners are available in two configurations, In-Line and T-Style, each offered with N-Jack and SMA-Jack connectors. All four models are optimized for broadband operation covering the frequency range from 0.7– 2.7 GHz with outstanding electrical performance. These Wilkinson-type, 2-way, power divider/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 two output signals, each down 3 dB from the incident due to the 2 x 1/2 power division. No power is actually lost from this power split; it is just allocated into two amplitude and phase matched signals, thus a so-called 3 dB insertion loss. True insertion loss of less than 0.4 dB max 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

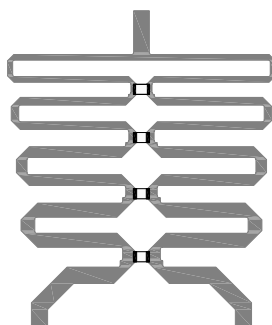
is applicable when connected to matched output load VSWR's of 1.2:1 or better. This maximum power rating must be reduced when load VSWR's increase or are unbalanced or out-of-phase with respect to one another. See **Power Divider Input Rating Tables** for additional guidelines.

The situation with power combining is a bit more complex. While it is possible to sum two input signals with no loss, this can

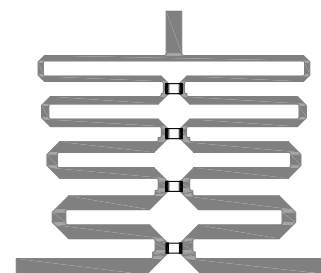
only be accomplished if the input signals are coherent and identical in phase and amplitude. Such a case would be the splitting of a signal

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 two non-coherent signals will result in a minimum 3 dB loss (1/2 power ratio) plus the true insertion loss of the power combiner (0.4 dB max @2.7 GHz). Worst-case combining loss occurs with coherent signals 180° out-of-phase, where all input 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.

Model Number	Configuration	Connectors
PD1020	In-Line	N-Jack
PD3020	T-Style	N-Jack
PD1120	In-Line	SMA-Jack
PD3120	T-Style	SMA-Jack



2-Way, In-Line, Power Divider Circuit



2-Way, T-Style, Power Divider Circuit

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