Power dividers

Description and purpose

Power dividers are designed to divide and summarize signals within wide frequency range. Micran has developed two-resistor and three-resistor power dividers of DMS and DM series, accordingly, designed for 7/3.04 mm and 3.5/1.52 mm coaxial paths and operating at frequencies between 0 and 18 GHz and between 0 and 26.5 GHz. These devices differ in their circuits, port impedances and applications. Three-resistor dividers (DM series, Fig. 1) are applied where equal division for three ports is required and measurement quality depends on VSWR of divider ports. Three-resistor divider has equal transmission coefficients S_{21}= S_{31}= S_{32}= -6 dB. Two-resistor dividers (DMS series, this type of dividers is also called as splitter, Fig. 2) are, generally, applied where decoupling of divided signals is required. With that, VSWR of output ports will not affect the connected devices. Transmission coefficient of two-resistor dividers S_{21}= S_{31}= −6 dB, and transmission coefficient S_{32}= −12 dB, which provides decoupling between splitter arms greater than the decoupling of three-resistor divider. Materials and design of power dividers provide low reflection level and low attenuation irregularity, high stability of parameters at operating temperatures between −60 °C and +85 °C for at least 5000 connect/disconnect cycles in 7.0/3.04 mm path and 3000 cycles in 3.5/1.52 mm path.

Specifications

DM2A power divider

	DM2A-18-01R	DM2A-18-11R	DM2A-26-03R	DM2A-26-13R
Connector	Type III (female)	Type N (female)	Type IX, ver. 3 (female)	3.5 mm (female)
Frequency range, GHz	0 ... 18		0 ... 26.5	
Port VSWR, max.	1.15 (0 ... 12 GHz) 1.2 (12 ... 18 GHz)		1.15 (0 ... 20 GHz) 1.25 (20 ... 26.5 GHz)	
TC between outputs, dB, min	−6.5 (0 ... 18 GHz)		−6.5 (0 ... 20 GHz) −7.5 (20 ... 26.5 GHz)	
TC difference between arms, dB, max	0.3 (0 ... 18 GHz)		0.3 (0 ... 20 GHz) 0.5 (20 ... 26.5 GHz)	
Phase difference between arms, max	5° (0 ... 18 GHz)		3° (0 ... 20 GHz) 5° (20 ... 26.5 GHz)	
P_{in}*, W, max.	2**		2**	
Figure	3		4	

REMARKS

* Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

DMS2A power divider

	DMS2A-18-01R	DMS2A-18-11R	DMS2A-26-03R	DMS2A-26-13R
Connector	Type III (female)	Type N (female)	Type IX, ver. 3 (female)	3.5 mm (female)
Frequency range, GHz	0 ... 18		0 ... 26.5	
Input VSWR, max.	1.15 (0 ... 12 GHz) 1.2 (12 ... 18 GHz)		1.15 (0 ... 20 GHz) 1.25 (20 ... 26.5 GHz)	
Output VSWR, max	1.7			
Input/output TC, dB, min	−6.5 (0 ... 18 GHz)		−6.5 (0 ... 20 GHz) −7.5 (20 ... 26.5 GHz)	
Input/otput isolation, dB	−12 ± 2			
TC difference between arms, dB, max	0.3 (0 ... 18 GHz)		0.3 (0 ... 20 GHz) 0.5 (20 ... 26.5 GHz)	
Phase difference betweenarms, max	5° (0 ... 18 GHz)		3° (0 ... 20 GHz) 5° (20 ... 26.5 GHz)	
P_{in}*, W, max.	2**		2**	
Figure	3		4	

NOTE

* Maximum long-term dissipated power for direct current.

** The value is given for normal climatic conditions. For increased ambient temperature, reduction of input power is recommended.

Circuit diagrams

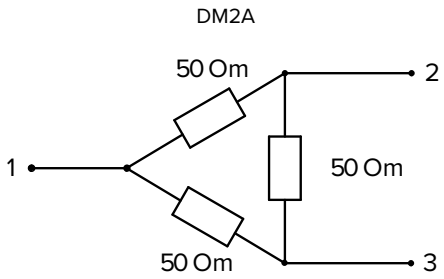

Fig. 1

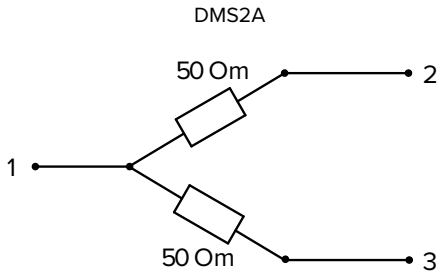

Fig. 2

Dimensions

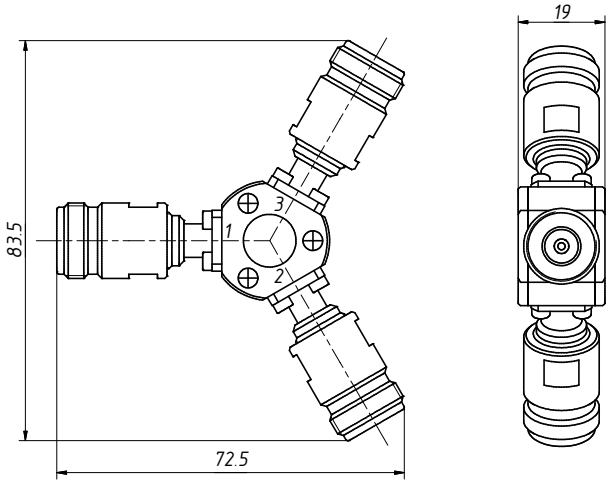

Fig. 3

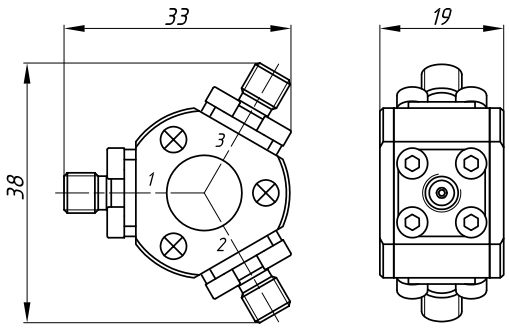

Fig. 4

Ordering example

- DM2A-03R Power divider, type IX, ver. 3 (female) connectors.