Filters and Diplexers

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LORCH
MICROWAVE
RF & Microwave Filters

Lorch Microwave offers a series of discrete lumped element filters and diplexers with standard "off the shelf" packaging utilizing the same internal components, circuit topologies and transfer functions found in Lorch filter products manufactured for military and space applications. Standard units are an ideal choice when hermetic sealed packages are not a requirement and when lower cost and quick delivery are essential.

Bandpass, Lowpass and Highpass Filters

These filters are a standard low ripple Chebyshev design. Bessel, Gaussian and elliptic transfer functions are available. Frequency range is from 50 MHz to 3000 MHz. Length varies with the number of sections while the width remains constant at .50 inches. Height is **.27 inches maximum**. The SME series features a smaller input/output pad configuration for better impedance matching as frequency increases.

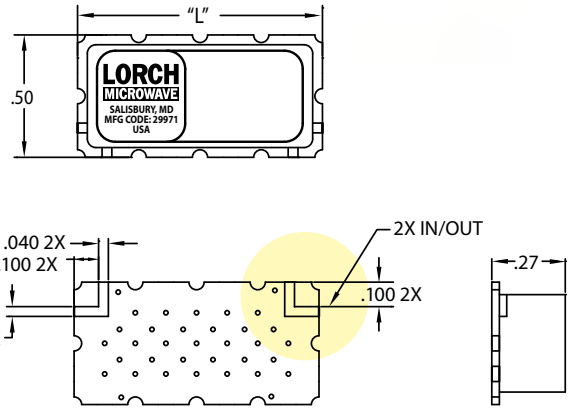
Length Chart

Model	Number of Sections	Length	Input/Output Style	
BP10, LP10, HP10	2 - 3	.5	E	SME
BP20, LP20, HP20	4 - 5	1.0	E	SME
BP30, LP30, HP30	6 - 7	1.5	E	SME

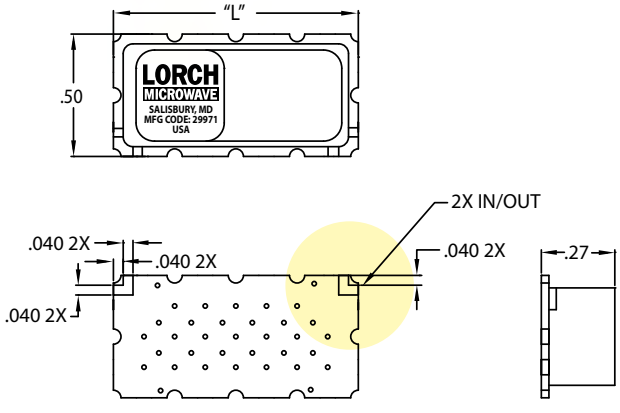
General Specification

Frequency Range	% 3dB BW	VSWR	Average Power	Operating Temperature
50 MHz - 3 GHz	3 - 100	1.5:1	1 WATT	-55°C to +85°

Input/Output Style



E-Series



SME-Series

LORCH MICROWAVE

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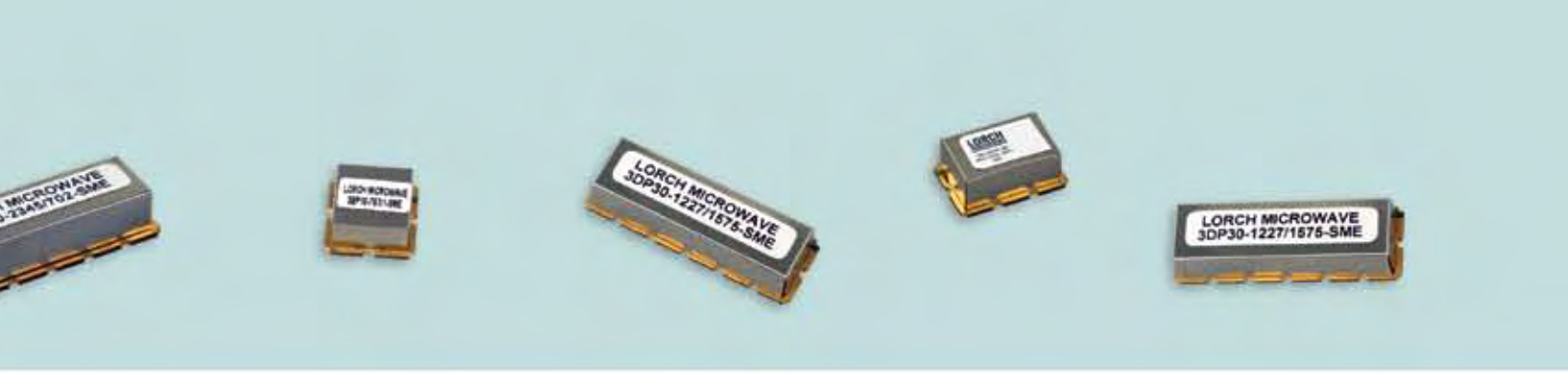


Diplexers

These diplexers offer the same circuit topologies as the bandpass, lowpass and highpass models. Length is dependent on the number of sections in each channel while width and height are constant at .50 inches and **.27 inches maximum** respectively. To accommodate individual customer preferences, the input/output pads are offered in two models, the "DX" and "DI" series.

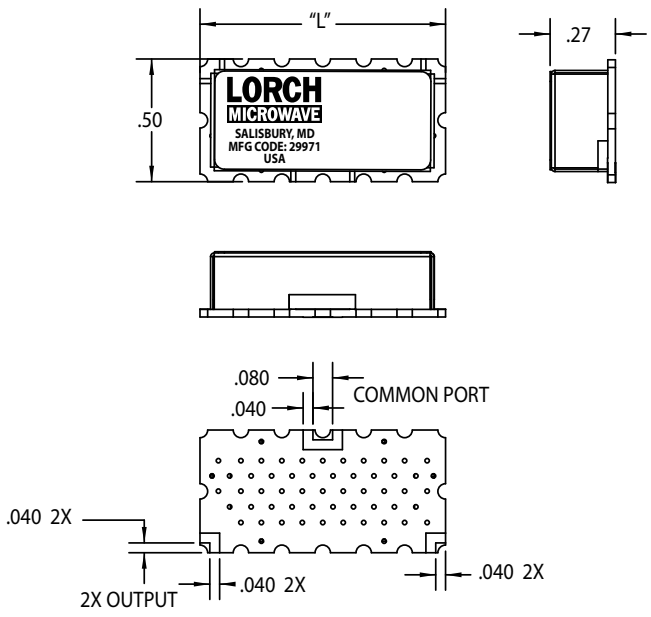
DX-Series Length Chart

Model	Number of Sections	Length	Input/Output Style
DX20	4 - 5	1.0	SME
DX30	6 - 7	1.5	SME
DX40	8	2.0	SME

DI-Series Length Chart

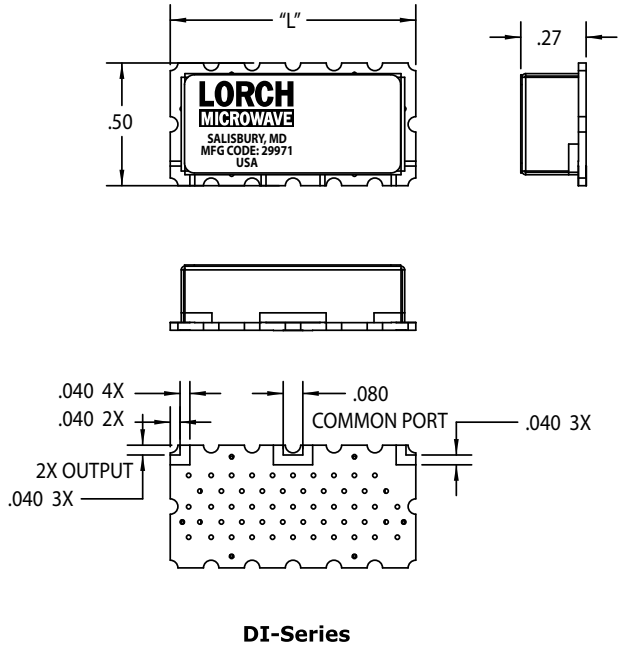
Model	Number of Sections	Length	Input/Output Style
DI20	4 - 5	1.0	SME
DI30	6 - 7	1.5	SME
DI40	8	2.0	SME

Input/Output Style



DX-Series

Input/Output Style



DI-Series

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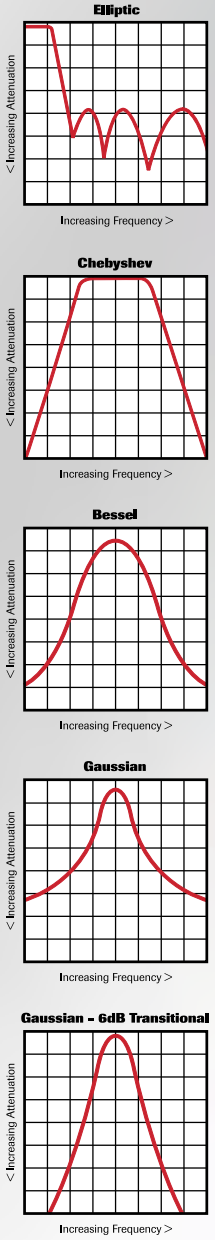
Filter Shape Factors

Transfer Function	Frequency Domain Characteristics	Time Domain Characteristics	General
Elliptic	Steep out of band rejection	Poor	Phase and group delay characteristics degraded by steep selectivity Most apparent near band edge
Chebyshev *Standard Catalog Response*	Very good, though not as steep roll-off as Elliptic	Better performance than Elliptic but still degraded phase and group delay characteristics	Most frequent choice Provides best compromise between rejection, phase and group delay
Bessel	Shallow amplitude roll-off to stopband	Good phase and group delay characteristics	Good choice when phase linearity is more important than rejection
Gaussian	Poor rejection characteristics	Excellent phase and group delay performance	Good choice when phase, group delay and impulse response are important
Gaussian - 6dB Transitional Filter	Rejection begins increasing abruptly outside the passband (-6dB)	Excellent in the passband to -6dB Attenuation more steep in transition to the reject band than a pure Gaussian response	Usually chosen when good time delay and rejection cannot be sacrificed Generally more expensive to produce



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