

# PM MEMS OPTICAL ATTENUATOR

DiCon's PM MEMS Optical Attenuator is based on a micro-electro-mechanical system (MEMS) chip. The PM MEMS chip consists of an electrically movable mirror on a silicon support. A voltage applied to the PM MEMS chip causes the mirror to rotate, which changes the coupling of light between the input and output fibers of the PM MEMS Optical Attenuator.



## FEATURES

- Small attenuator package
- Based on DiCon's proven MEMS platform
- Available in opaque or transparent versions
- Qualified to GR-1221
- High Extinction Ratio

## APPLICATIONS

PM MEMS Optical Attenuators are used for distributed power equalization within OADMs, MUX/DMUXes, Band Equalizers, Channel Equalizers, Optical Cross-Connects, Line Cards and Transponders. Polarization Maintaining Optical Attenuators can also be used for power adjustment in polarization sensitive devices such as modulators.



# PM MEMS OPTICAL ATTENUATOR

## OPTICAL SPECIFICATIONS<sup>1</sup>

PARAMETER		RATING	
Excess Loss		0.8 dB max	
WDL Flatness <sup>2</sup>	Superior	0 to 1 dB	0.3 dB max. <sup>3</sup>
		1 to 5 dB	0.5 dB max. <sup>3</sup>
		5 to 10 dB	0.6 dB max. <sup>3</sup>
		10 to 20 dB	1.0 dB max. <sup>4</sup>
Fine <sup>6</sup>	0 to 15 dB	0.3 dB max. <sup>5</sup>	
	15 to 20 dB	0.4 dB max. <sup>5</sup>	
Extinction Ratio		18 dB min.	
Attenuation Slope		20 dB/V max.	
Back Reflection		-50 dB max.	
Optical Power		500 mW max.	
Response Time		2 ms max.	
Repeatability <sup>7</sup>		0.1 dB max.	
Durability		1 x 10 <sup>9</sup> cycles min.	
Fiber Type		Panda PM Fiber	
Operating Temperature		-5°C to +70°C	
Storage Temperature		-40°C to +85°C	

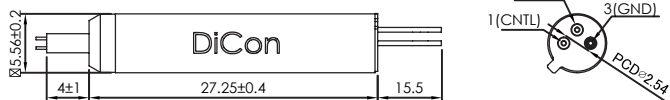
- All Specifications at room temperature, without connectors
- WDL is for single band wavelength measured from CWL
- Operation from 1290 - 1330nm or 1570-1610 nm adds 0.2dB
- Operation from 1290 - 1330nm or 1570-1610 nm adds 0.3dB
- Operation from 1290 - 1330nm or 1570-1610 nm adds 0.1dB
- Maximum change of each 2 nm segment within the operating range
- Repeatability is defined within 100 cycles

## ELECTRICAL SPECIFICATIONS

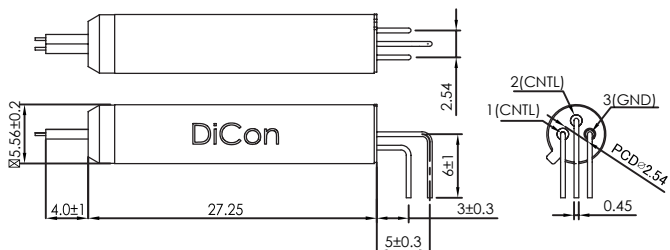
PARAMETER	RATING
Actuation type	Non-latching
DC Drive Voltage	0-7 VDC
Voltage Damage Threshold	10 VDC max.
Resistance	2 MΩ min.
Power Consumption	20 uWatt max.

## MECHANICAL DIMENSIONS

Straight Pins



Bent Pins



## ORDERING INFORMATION

MT - C - □ - □ - □ - □ - □ - □ - □ - □ - □

<b>Housing Type</b>	
C	Cylindrical
<b>Attenuator Type</b>	
T	Transparent <sup>1</sup>
O	Opaque <sup>2</sup>
<b>Operating Wavelength Range</b>	
13	1290 - 1330 nm
15	1528 - 1563 nm
16	1570 - 1610 nm
<b>Attenuator Range</b>	
30	30 dB min. <sup>3</sup>
X	Specify X dB min. (X <= 40)
<b>Flatness Type</b>	
S	Superior broad band flatness
F	Fine narrow band flatness
<b>Connector Key Orientation</b>	
PMF	Fast axis
PMS	Slow axis
PMN	No Connector
<b>Fiber / Jacket Type</b>	
2B	9/125 μm Panda Fiber, 250 μm buffer
2/LT	9/125 μm Panda Fiber, 900 μm loose tube over 250 μm buffer
4B	9/125 μm Panda Fiber, 400 μm buffer
4/LT	9/125 μm Panda Fiber, 900 μm loose tube over 400 μm buffer
<b>Connector Type</b>	
FC	FC/SPC
FC/APC	FC/APC
X	specify connector type <sup>4</sup>
N	None
<b>Pigtail Length</b>	
1	1 meter
X	Specify X meters
<b>Pin Bending</b>	
S	Straight Pins
B	Bent Pins

- Minimum insertion loss at 0 V.
- Minimum insertion loss at 6 - 7 V (high isolation at 0 V).
- Transparent type DC drive voltage is 0-5 VDC for up to 30 dB of attenuation.
- Connector Types: FC/UPC, SC, SC/APC, SC/UPC, LC, LC/UPC, MU/UPC.

## OPTICAL PERFORMANCE

