

# ATTENUATORS

## PM MEMS ATTENUATOR

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



Cylindrical Package

## FEATURES

- Small attenuator package
- High extinction ratio
- Qualified to GR-1221
- Available in opaque or transparent versions
- Available in both cylindrical and 14-pin DIP packages

## APPLICATIONS

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



# ATTENUATORS

## OPTICAL SPECIFICATIONS<sup>1,2</sup>

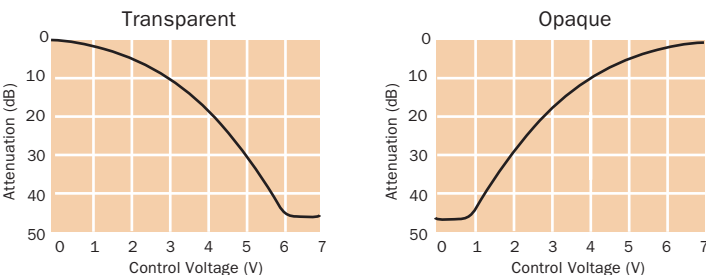
|                       |                                      |                                 |             |
|-----------------------|--------------------------------------|---------------------------------|-------------|
| Excess loss           |                                      | 0.8 dB max.                     |             |
| Flatness              | Broad band Application               | 0 to 15 dB                      | 0.4 dB max. |
|                       |                                      | 15 to 20 dB                     | 0.7 dB max. |
|                       | Narrow band Application <sup>3</sup> | 0 to 20 dB                      | 0.2 dB max. |
| Attenuation slope     |                                      | 20 dB/V max.                    |             |
| Extinction ratio      |                                      | 18 dB min.                      |             |
| Back-reflection       |                                      | -50 dB max.                     |             |
| Optical power         |                                      | 500 mW max.                     |             |
| Response time         |                                      | 2 ms max.                       |             |
| Repeatability         |                                      | 0.1 dB max.                     |             |
| Wear-out              |                                      | 1 x 10 <sup>9</sup> cycles min. |             |
| Fiber type            |                                      | Panda 400 or equivalent         |             |
| Operating temperature |                                      | -5°C to +70°C                   |             |
| Storage temperature   |                                      | -40°C to +85°C                  |             |

1. All specifications referenced without connectors.
2. At room temperature.
3. Maximum change of each 2 nm segment within the operating range.

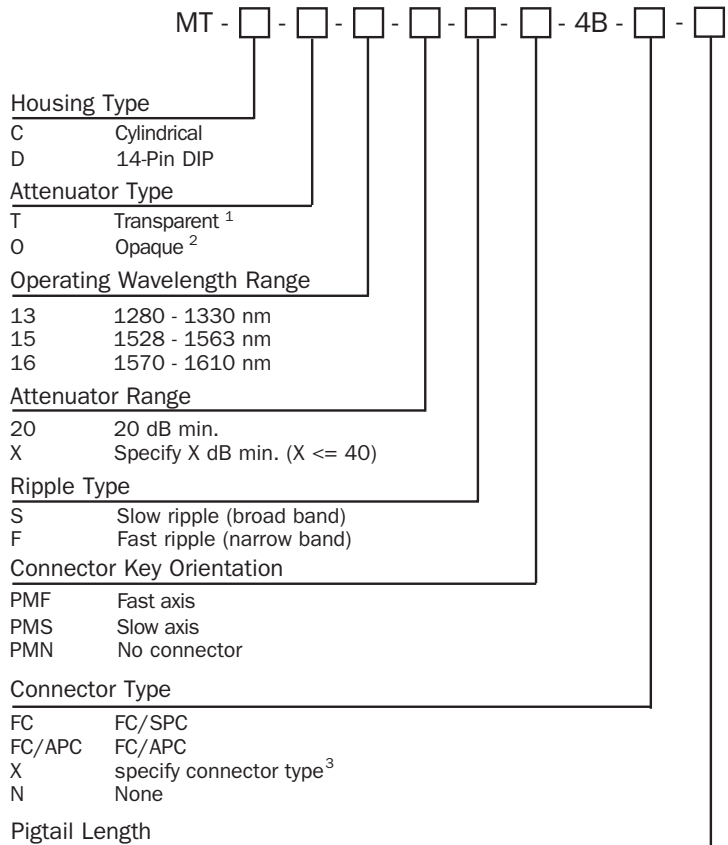
## ELECTRICAL SPECIFICATIONS

|                          |                              |
|--------------------------|------------------------------|
| Actuation type           | Non-latching                 |
| DC drive voltage         | 0 - 5 VDC (6.5 V for opaque) |
| Voltage damage threshold | 10 VDC max.                  |
| Resistance               | 2 MΩ min.                    |
| Power consumption        | 20 uWatt max.                |

## OPTICAL PERFORMANCE



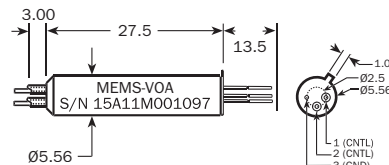
## ORDERING INFORMATION



1. Minimum insertion loss at 0 V.
2. Minimum insertion loss at 6.5 V (high isolation at 0 V).
3. Connector Types: FC/UPC, SC, SC/APC, SC/UPC, LC, LC/UPC, MU/UPC

## HOUSING DIMENSIONS

### Cylindrical Package



### 14-pin DIP Package

