

## MT80-Ax-xx – MT80-BxAx-xx

### Product Overview

These free space modulators operate at 80MHz and at various wavelength ranges covering the 450-700 nm, 700-1100, 980-1100 nm, 1300-1600 nm and 1900-2100 nm. The intended application can be amplitude modulation as well as frequency shifting (fixed and variable) or low resolution deflection.

### FEATURES

- Fast rise time/Access time
- Linear polarization
- High diffraction efficiency



### SPECIFICATIONS (T=25°C)

| PARAMETER                              | RATING                     | UNIT            |
|----------------------------------------|----------------------------|-----------------|
| Material-Acoustic mode-Velocity        | TeO <sub>2</sub> -L - 4200 | m/s             |
| Carrier Frequency / Frequency shift    | +/-80                      | MHz             |
| Transmission                           | ≥95, nom 98                | %               |
| Input / Output Polarization            | Linear                     |                 |
| Rise/fall time (T <sub>r</sub> )       | 160                        | ns/mm           |
| Static Extinction Ratio                | >33                        | dB              |
| Input impedance                        | 50                         | Ω               |
| V.S.W.R.                               | < 1.2:1                    |                 |
| Connector                              | SMA female                 |                 |
| Size                                   | 59.5 x 22.4 x 17.3         | mm <sup>3</sup> |
| Weight                                 | Nom 100                    | g               |
| Packaging                              | IN PRO 004                 |                 |
| Operating Temperature (non condensing) | +10 to +40                 | °C              |
| Storage Temperature (non condensing)   | -40 to +65                 | °C              |
| RoHS Compliance                        | Yes                        |                 |

### Versions

|                             | MT80-A1-400.442                                           | MT80-A1-VIS                                           | MT80-A1-IR                                           | MT80-A1-1064                                          |
|-----------------------------|-----------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|
| Wavelength                  | 400-442nm                                                 | 450-700nm                                             | 700-1100nm                                           | 980-1100nm                                            |
| Active aperture             | 1x2 mm <sup>2</sup>                                       | 1x2 mm <sup>2</sup>                                   | 1x2 mm <sup>2</sup>                                  | 1x2 mm <sup>2</sup>                                   |
| Minimum rise time           | 25 ns (Ø 0.15 mm)                                         | 25 ns (Ø 0.15 mm)                                     | 25 ns (Ø 0.15 mm)                                    | 25 ns (Ø 0.15 mm)                                     |
| Separation angle (0-1)      | >7.6 mrd                                                  | >8.6 mrd                                              | >13.3 mrd                                            | >18.7 mrd                                             |
| Diffraction efficiency      | >85 %                                                     | >85 %                                                 | >85 %                                                | >85 %                                                 |
| Maximum RF power            | 1 W                                                       | 1 W                                                   | 2 W                                                  | 2 W                                                   |
| Maximum Laser power density | 0.1 W/mm <sup>2</sup>                                     | 5 W/mm <sup>2</sup> @633nm                            | 10 W/mm <sup>2</sup>                                 | 10 W/mm <sup>2</sup>                                  |
| Option Variable frequency   | 80+/-15 MHz<br>MT80-B30A1-400.442<br>Efficiency typ >70 % | 80+/-15 MHz<br>MT80-B30A1-VIS<br>Efficiency typ >70 % | 80+/-15 MHz<br>MT80-B30A1-IR<br>Efficiency typ >65 % | 0+/-15 MHz<br>MT80-B30A1-1064<br>Efficiency typ >60 % |

## MT80-Ax-xx – MT80-BxAx-xx

|                             | MT80-A1.5-400.442                                           | MT80-A1.5-VIS                                           | MT80-A1.5-IR                                           | MT80-A1.5-1064                                          |
|-----------------------------|-------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------|
| Wavelength                  | 400-442nm                                                   | 450-700nm                                               | 700-1100nm                                             | 980-1100nm                                              |
| Active aperture             | 1.5x2 mm <sup>2</sup>                                       | 1.5x2 mm <sup>2</sup>                                   | 1.5x2 mm <sup>2</sup>                                  | 1.5x2 mm <sup>2</sup>                                   |
| Minimum rise time           | 48 ns (Ø 0.3 mm)                                            | 48 ns (Ø 0.3 mm)                                        | 48 ns (Ø 0.3 mm)                                       | 48 ns (Ø 0.3 mm)                                        |
| Separation angle (0-1)      | >7.6 mrd                                                    | >8.6 mrd                                                | >13.3 mrd                                              | >18.7 mrd                                               |
| Diffraction efficiency      | >85 %                                                       | >85 %                                                   | >85 %                                                  | >85 %                                                   |
| Maximum RF power            | 1 W                                                         | 1 W                                                     | 2.2 W                                                  | 2.2 W                                                   |
| Maximum Laser power density | 0.1 W/mm <sup>2</sup>                                       | 5 W/mm <sup>2</sup> @633nm                              | 10 W/mm <sup>2</sup>                                   | 10 W/mm <sup>2</sup>                                    |
| Option Variable frequency   | 80+/-15 MHz<br>MT80-B30A1.5-400.442<br>Efficiency typ >65 % | 80+/-15 MHz<br>MT80-B30A1.5-VIS<br>Efficiency typ >65 % | 80+/-15 MHz<br>MT80-B30A1.5-IR<br>Efficiency typ >65 % | 0+/-15 MHz<br>MT80-B30A1.5-1064<br>Efficiency typ >55 % |

|                             | MT80-A0.7-1300.1600                                           | MT80-A0.4-2000                                           |
|-----------------------------|---------------------------------------------------------------|----------------------------------------------------------|
| Wavelength                  | 1300-1600nm                                                   | 1950-2100nm                                              |
| Active aperture             | 0.7x2 mm <sup>2</sup>                                         | 0.4x1 mm <sup>2</sup>                                    |
| Minimum rise time           | 48 ns (Ø 0.3 mm)                                              | 32 ns (Ø 0.2 mm)                                         |
| Separation angle (0-1)      | >24.7 mrd                                                     | >37 mrd                                                  |
| Diffraction efficiency      | >70 % typ 75%                                                 | >65 % typ 70%                                            |
| Maximum RF power            | 2.5 W                                                         | 2.5 W                                                    |
| Maximum Laser power density | 0.5 W/mm <sup>2</sup>                                         | 10 W/mm <sup>2</sup>                                     |
| Option Variable frequency   | 80+/-21 MHz<br>MT80-B42A0.7-1300.1600<br>Efficiency typ >40 % | 80+/-15 MHz<br>MT80-B30A0.4-2000<br>Efficiency typ >50 % |

$$T_r = 0.66 \frac{\phi}{V} * F_{-3dB} = \frac{0.48}{T_r} * \Delta\theta = \frac{\lambda F}{V} * \frac{P_1}{P_2} = \frac{\lambda_1}{\lambda_2}$$

### OUTLINE DRAWING IN PRO 004, mm

