# MGAS40-A1, MGAS80-A1, MGAS110-A1

**AO MODULATORS/SHIFTERS**

TECHNICAL DATA SHEET 2014

## Product Overview

These modulators have been specially designed for low infrared range operation from 1300 to 1600 nm. They can be also used as fixed frequency shifters @ 40 MHz, @ 80 MHz, @ 110 MHz as well as variable frequency shifters with a frequency range up to 4 MHz.


## Features

- 1300-1600 nm.
- Not sensitive to polarisation.
- High diffraction efficiency.

## Access to your operating manual

## Technical Specifications

| Parameter | MGAS40-A1 | MGAS80-A1 | MGAS110-A1 |
|---|---|---|---|
| **Material-Acoustic mode-Velocity** | Doped Glass - 2520 m/s | | |
| **Optical Wavelength range (AR coated)** | 1300- 1600 nm | | |
| **Optical Transmission** | 95 % | | |
| **Input / Output Polarization** | Random or linear | | |
| **Active Aperture** | 1 x 2 mm² | | |
| **Carrier Frequency / Frequency shift** | +/- 40 MHz | +/- 80 MHz | +/-110 MHz |
| **Separation Angle (0-1)** | 20.6 mrad @ 1300 nm | 41.3 mrad @ 1300 nm | 56.7 mrad @ 1300 nm |
| **Static Extinction Ratio** | > 33 dB | | |
| **Rise / Fall time** | 270 ns / mm ( min 160ns/mm) | | |
| **Diffraction Efficiency** | ≥ 85 %, nom 90 % with TEM00 laser beam | | |
| **Analog Amplitude modulation bandwidth (-3 dB)** | > 3 MHz, with 0.6 mm beam diameter | | |
| **Max optical power density (CW)** | 0.5 W/mm² | | |
| **Input impedance** | Nom 50 Ω | | |
| **V.S.W.R.** | Nom < 1.2/1 | | |
| **RF Power/ Connector** | <0.5 W/ SMA | | |
| **Size / Weight** | (Lxlxh) 50.9 x 22.4 x 15.8 / 50 g | | IN PRO 004 |
| **Operating Temperature** | +10 to +40 Non condensing | | |
| **Storage Temperature** | -40 to +50 Non condensing | | |

## On request

VARIABLE FREQUENCY SHIFT ☑ +/- 4 MHz




**AA Sa,** 18, rue Nicolas Appert F-91898 ORSAY Tel: +33 (0)1 76 91 50 12 Fax: +33 (0)1 76 91 50 31

Rise Time (Tr) is beam diameter (Φ) sensitive:

$$Tr = 0.66\frac{\Phi}{V}$$

Amplitude modulation bandwidth ($F_{-3dB}$) is rise time (Tr) sensitive:

$$F_{-3dB} = \frac{0.48}{Tr}$$

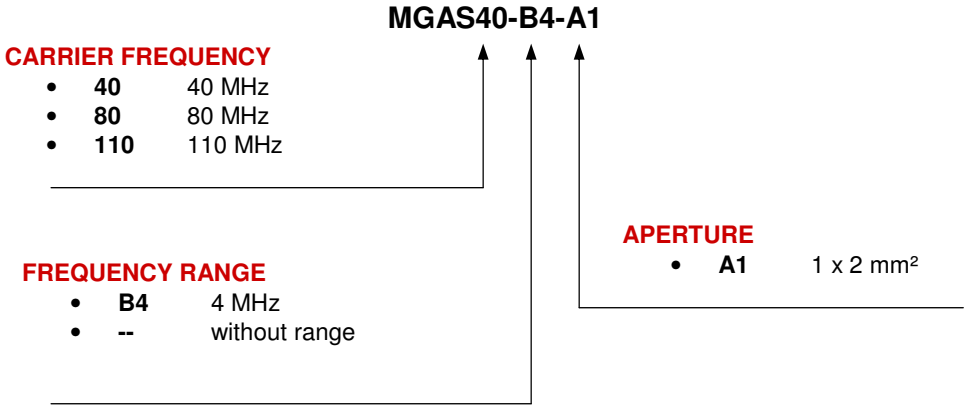
Separation angle (Δθ) is wavelength (λ) sensitive:

$$\Delta\theta = \frac{\lambda F}{V}$$

RF power (P) is wavelength (λ) sensitive:

$$\frac{P_1}{P_2} = \frac{\lambda_1^2}{\lambda_2^2}$$

**How to determine your model**







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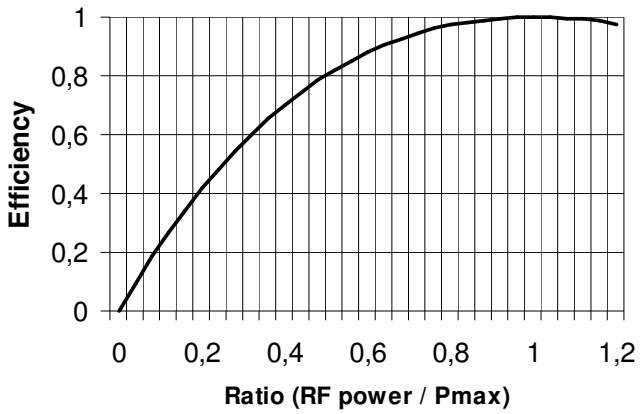
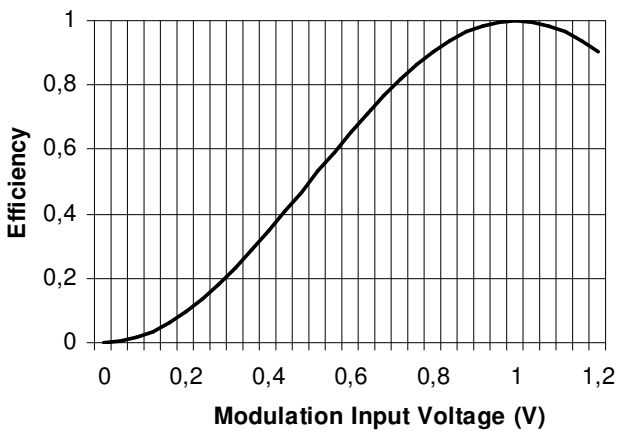
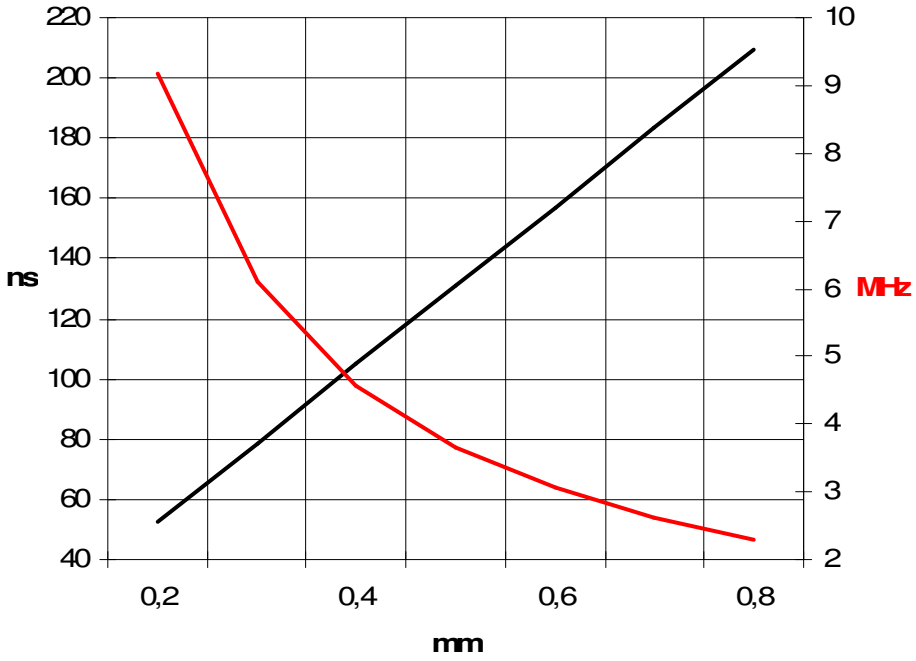
**Relative Efficiency versus RF power**




**AO relative Efficiency vs driver MOD IN**




**Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter**







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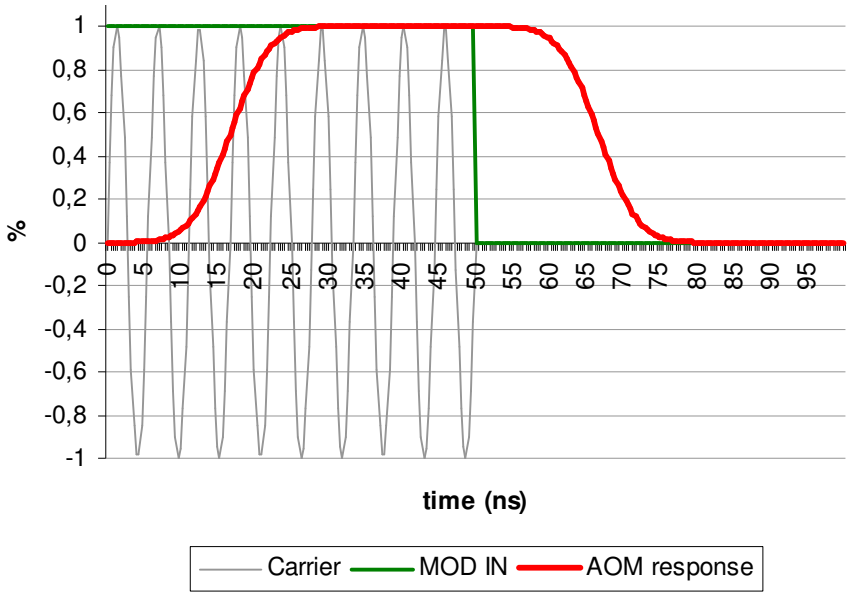
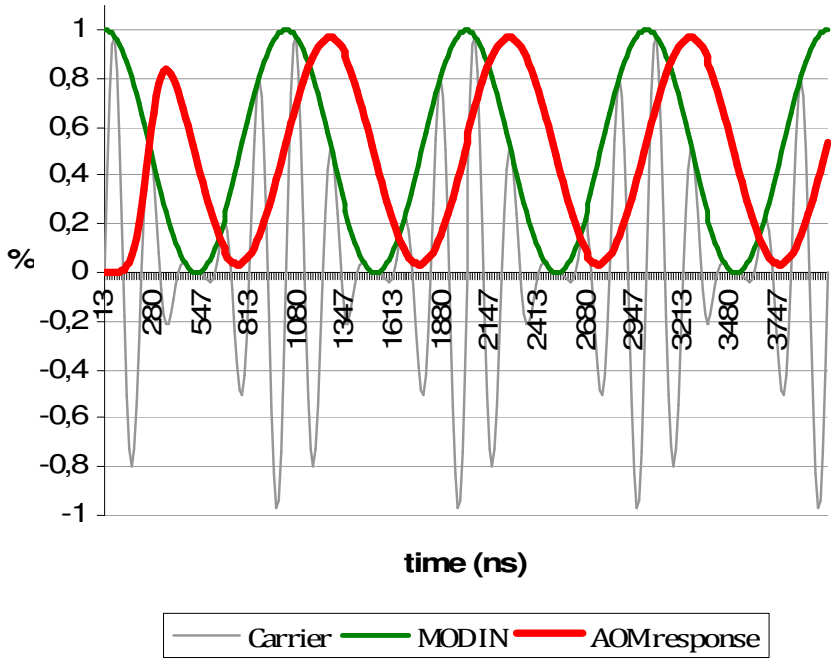
## Relative Efficiency / AOM temporal response




## Relative Efficiency / AOM temporal response
## 1 MHz with 0,6 mm beam dia







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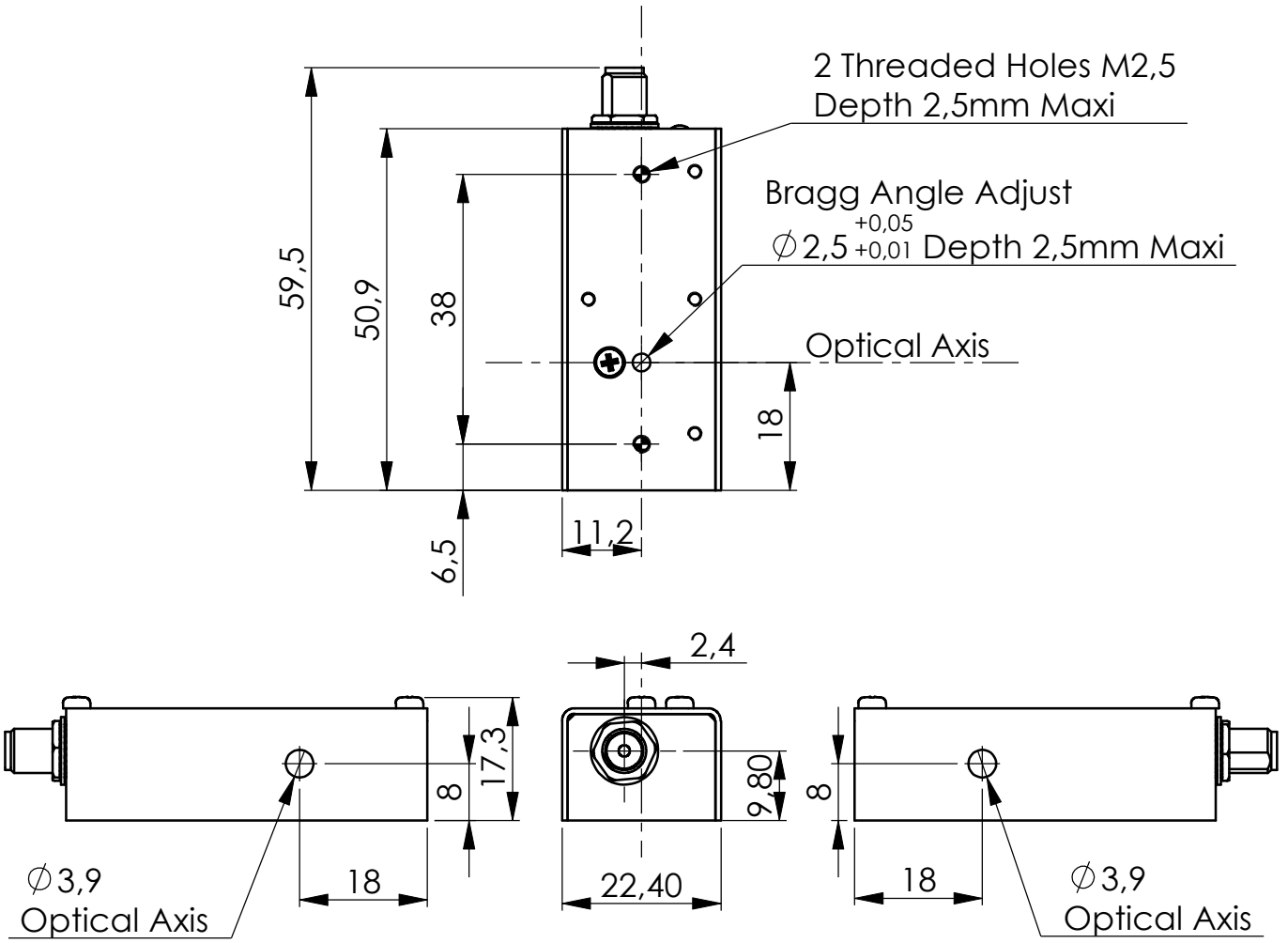


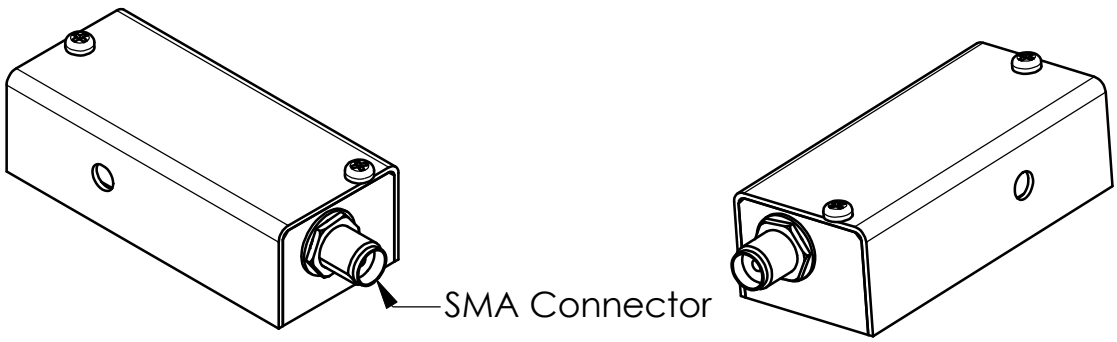


| Indice Index | Date | Auteur Author | Modifications |
|---|---|---|---|
| B | 18/12/06 | E.D | Mise en page |
| A | 15/10/03 | OGB | Plan initial / Initial Drawing |

| | | |
|---|---|---|
| Conception Design: E.D | PLAN D'INTERFACE / OUTLINE DRAWING | OPTO-ELECTRONIC<br>A.A. SA OPTO-ELECTRONIQUE DIVISION<br>18, rue Nicolas Appert<br>F-91898 ORSAY<br>tel : 08 11 09 76 76<br>fax : 01 76 91 50 31 |
| Vérification Checking: E.D | | |
| Tolérance Tolerance: ISO 2768mK | Référence / Reference<br>IN-PRO-004 | |
| Echelle Scale: 1:1 | | |
| Format A4 |  | Folio / Sheet: 1/1<br>Indice / Index: B |