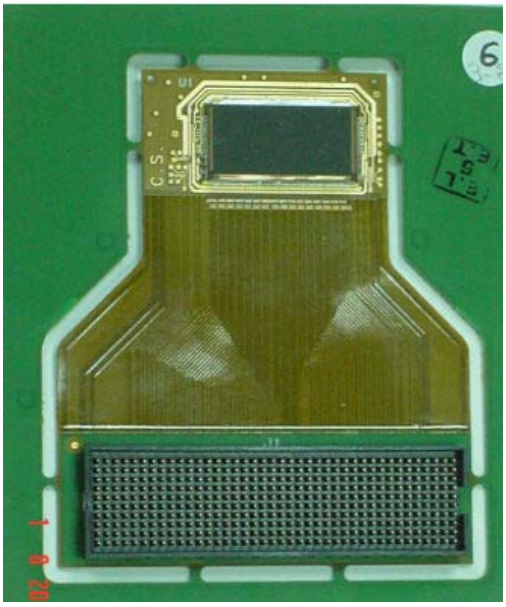
ABLAZE™ 2D MQW Spatial Light Modulator Array



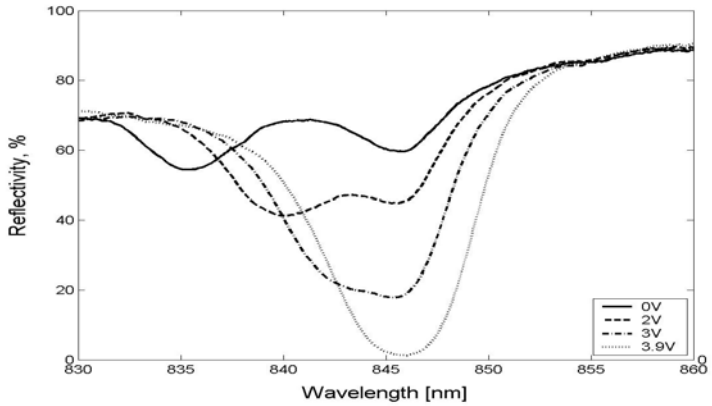
The Ablaze™ is a significant derivative of Lenslet's flagship product – the EnLight256™. The Ablaze functions as the Spatial Light Modulator (SLM) in the optical core of the EnLight256 - the world's first vector Optical DSP Engine with an embedded optical core, performing vector-vector and vector-matrix operations at a rate of up to 8000 Giga MAC operations per second.

The Ablaze™ SLM utilizes advanced Multiple Quantum Well (MQW) GaAs technology and is a two dimensional 8 bit resolution, reflective mode intensity modulator. This SLM operates at a low level voltage, high efficiency, high contrast ratios, low insertion loss and high frame rates, ideal for cutting-edge technological applications.

The device is an attractive solution for many applications such as optical processors, free-space optical communications, optical correlators, laser beam control, high density and high capacity data storage, high bandwidth I/Os onto a CMOS chip and many more.

In order to achieve this state-of-the-art MQW SLM, Lenslet has overcome technological barriers with regard to uniformity across large device areas; high contrast ratio at low level voltage; integration with 2D fast driver and potential to realize high yield volume production. These achievements enable Lenslet to design and develop SLMs with different parameters targeting customers' specific requirements.

The typical reflectivity spectrum as in the figure below, portrays a contrast ratio of 98:1 at 3.9 Volts for a single pixel.

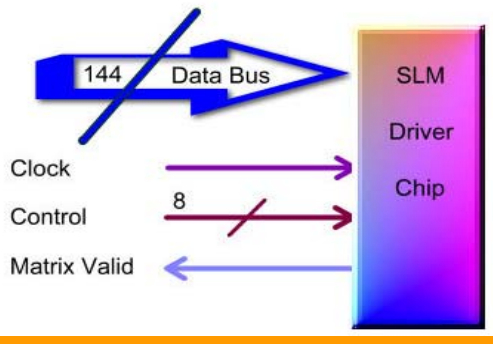


Typical Reflectivity Spectrum

DEVICE SPECIFICATIONS:

Technology:	GaAs/GaAlAs MQW SLM
Device Configuration:	2D Reflective mode SLM
Modulation Type:	Intensity
Modulator Size:	2cm x 1cm
Module size:	7.0 x 5.7 cm
Number of Pixels:	288 x 132
Pixel Pitch:	65µm x 62.5µm
Fill factor:	90% X 85%
Modulation Resolution:	8 bits (256 linear grey levels)
Single pixel Switching Rate:	20GHz (pixel size limited, excluding electronic driver limitations)
Matrix Frame Rate:	Currently 50kHz for 256 grey levels and 300kHz for 4 grey levels (limited by current driver chip), 4 Matrix Storage on chip
SLM Driver:	0.25µm silicon CMOS - Hybridized to the GaAs Modulator
Spectral Bandwidth:	845nm – 850nm
Contrast Ratio:	98:1 at 3.9 Volts for a Single pixel 16:1 at 2.1 Volts for a pixel in the matrix
Central Wavelength:	847nm radiation
Uniformity:	<1.5nm spread of the resonance peak location across die
Device Operation:	0 to 5V
Insertion Loss:	<2.2dB
Max. Reflectivity:	60%
Min. Reflectivity:	3.75% for a pixel in matrix and 0.6% for a Single pixel
Maximum Light Input Power:	5 KW / cm^2
Device Package:	Wire Bonded to a flex cable with 400 pin BGA connector
MQW Driver interface:	144bit Parallel Data Bus, 66MHz, LVCMOS 2.5V or 3.3V
Power supply:	5V modulator & 2.5V core logic

MQW Driver Logic Interface:



The reflective device can be customized according to customer requirements with the following parameters:

Modulation Type:	Intensity or Phase
Device configuration:	2D reflective mode; 1D reflective or transmission mode
Number of Pixels:	<640 x 480 or 1X2048 for 1D
Pixel Pitch:	>24µm x 24µm for 2D
	>15µm x 15µm for 1D
Fill factor:	95% X 95%
Max Matrix Frame Rate:	10MHz
Spectral Bandwidth:	Visible, near IR or far IR
Max. Reflectivity:	of up to 75%
Min. Reflectivity:	> 1% for a pixel in matrix and 0.5% for a Single pixel

Applications:

- Medical, Industrial and Defense Applications including:
- Free-space optical communication
- Ultra-fast Pulse Shaping
- Optical Correlators for Laser Beam Control (Beam Steering)
- High-density and high-capacity data storage (Optical Holographic Memories)
- High Bandwidth I/Os onto CMOS chips
- Optical Processors

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