PEGASUS SERIES

Lithium Niobate ($LiNbO_3$) Pockels Cell

PRELIMINARY PRODUCT DATASHEET

From the leader in nonlinear materials and electro-optic devices comes the Pegasus series of Pockels cells. Ideal for applications in the near- to mid-IR, these high damage threshold devices are capable of fast switching rates in excess of 1MHz.

Pegasus Pockels cells use exceptionally high quality Lithium Niobate crystals ($LiNbO_3$) crystals that are grown and fabricated by G&H, insuring high extinction ratio, high transmission, low switching voltage, and excellent temperature stability.

Thanks to our vertical integration, we have full end-to-end quality control from crystal growth and polishing to our extensive range of in-house AR coatings.

The unique capabilities of Pegasus make it a higher performance alternative to RTP based Pockel cells for Q-switching high energy mid-IR lasers such as, Er:YAG 2.94 µm, Er,Cr:YSGG 2.79 µm, Ho:YAG 2.10 µm and Tm:YAG 2.01 µm. Pegasus is the ideal Pockels Cell choice for commercial applications in, for example, aesthetic and ophthalmic surgery and military applications, including target designation and range finding.



Key Features

- $LiNbO_3$ crystal grown by G&H in the USA
- Fast switching rates >1MHz
- Highest quality $LiNbO_3$, with high transmission > 99%
- Intrinsic contrast ratio > 1000:1 @ 1064 nm
- Voltage contrast ratio >1000:1 @ 1064nm
- < λ/10 transmitted wavefront distortion @ 1064 nm
- LIDT >7 J/cm^2 @ 1064 nm, 10nsec, 1mm dia.

Options

- Threaded HV adapter available

Applications

- Q switching
- Pulse picking/slicing
- Attenuation
- Power control

Preliminary Performance Data

PEGASUS Series: Typical performance $LiNbO_3$	PEGASUS 3	PEGASUS 5	PEGASUS 7	PEGASUS 9
PHYSICAL				
Hard aperture diameter	3 mm	5 mm	7 mm	9 mm
Wavelength range (operational wavelength will be determined by AR coating selected)	700 to 3500nm†			
Single pass insertion loss @ 1064 nm	< 1.0%			
Intrinsic contrast ratio (ICR) @ 1064 nm	> 1000:1			
Voltage contrast ratio (VCR) @ 1064 nm (parallel polarizers)	> 1000:1			
Single pass distortion @1064nm	< λ/10			
ELECTRICAL				
Capacitance (DC)	6 pF			
DC quarter wave voltage at 1064 nm	1.18 kV	1.78 kV	1.18 kV	1.48 kV
10-90% rise time (theoretical) into 50 Ω line	0.7 ns			
Modulation frequency	1 MHz			
Duty cycle (recommended)	< 10%			
LASER DAMAGE THRESHOLD (LIDT)				
1064 nm, 10 ns, 10 Hz, 1 mm beam	>7 J/cm²			
ENVIRONMENTAL CONDITIONS				
Operating conditions				
Temperature range	-25 °C to +70°C			
Humidity	<85% RH (non-condensing)			
Storage conditions				
Temperature range	-55 °C to + 85°C			
Humidity	non-condensing			

†There is a narrow absorption band centred around 2850 nm

The Intrinsic Contrast Ratio (ICR) and Voltage Contrast Ratio (VCR) may be scaled with the following approximations:

$ICR[\lambda_1] = ICR_{1064nm} * [\lambda_1/1064nm]^2$ $VCR(\lambda_1) = VCR_{1064nm} * [\lambda_1/1064nm]$

PEGASUS: DIMENSIONS (inches [mm])		
MODEL	DIM 'A'	DIM 'B'
PEGASUS 3	0.118 [3.0mm]	1.735 [44.1mm]
PEGASUS 5	0.197 [5.0mm]	1.735 [44.1mm]
PEGASUS 7	0.276 [7.0mm]	2.135 [54.2mm]
PEGASUS 8	0.315 [8.0mm]	2.135 [54.2mm]
PEGASUS 9	0.354 [9.0mm]	2.135 [54.2mm]

