Gooch & Housego
ENABLING PHOTONIC TECHNOLOGIES

CHIRON 3

BBO Pockels Cell

PRODUCT DATASHEET

Chiron 3 BBO Pockels cell raises the bar for high repetition rate and high-average power laser applications.

The Chiron 3 BBO Pockels cell design builds on the dual crystal geometry successfully used to minimize drive voltage (~2.3 kV quarter-wave voltage @ 1064 nm for the Chiron 3). BBO Pockels cells operate from approximately 0.2 to 1.65 µm and are not subject to tracking degradation. Due to the low piezoelectric coupling coefficients of BBO, the Chiron 3 functions at repetition rates up to 1 MHz.

Chiron Pockels cells work in regenerative amplifiers, high pulse repetition rate micro-machining lasers, and high-average power lasers for material processing and metal annealing.

Key Features

- High pulse rate operation to 1 MHz
- Solid state – no index matching fluid
- Low acoustic noise
- Damage resistant ceramic apertures
- Compact design
- High-reliability
- Operation at high average power

Key Benefits

- Ideal for high average power systems
- Low absorption leading to reduced thermal lensing/thermal depolarization
- Exceptional high repetition rate performance
- Excellent, accessible technical support

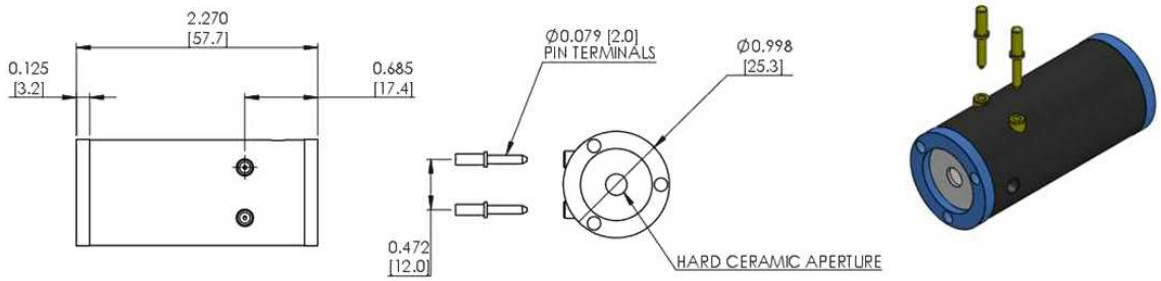
Applications

- Military
- OEM and replacement laser systems:
  - Machining, marking, via drilling
  - Ophthalmology
  - Q-switching and regenerative amplifiers
  - Research

Performance Data

Typical specifications for standard cell	Chiron 3
PHYSICAL	
Hard aperture diameter	3.25 mm
Single pass insertion loss @ 1064 nm	< 1.5%
Intrinsic contrast ratio (ICR) @ 1064 nm	> 1000:1
Voltage contrast ratio (VCR) @ 1064 nm (parallel polarizers)	> 500:1
Single pass wavefront distortion @ 1064 nm	< λ /6
LIDT[1], 10 Hz @1064 nm, 10 ns, ~1 mm diameter	10 J/cm^2
ELECTRICAL	
Capacitance (DC)	~4 pF
DC half wave voltage @ 1064 nm	4.3 to 4.9 kV
Temperature range exposure to simulate storage and shipping conditions [2]	-25°C to 50°C
10-90% rise time (theoretical) into 50 Ω line	~ 1 ns
Duty cycle in 1 s (applied voltage time / total time)	< 5%

1 Recommended operation at 1/2 this fluence level for increased longevity. LIDT will vary with wavelength and beam parameters.
2 May require 48 hours, or more, to equilibrate following exposure to temperature extremes for contrast ratio values to recover.



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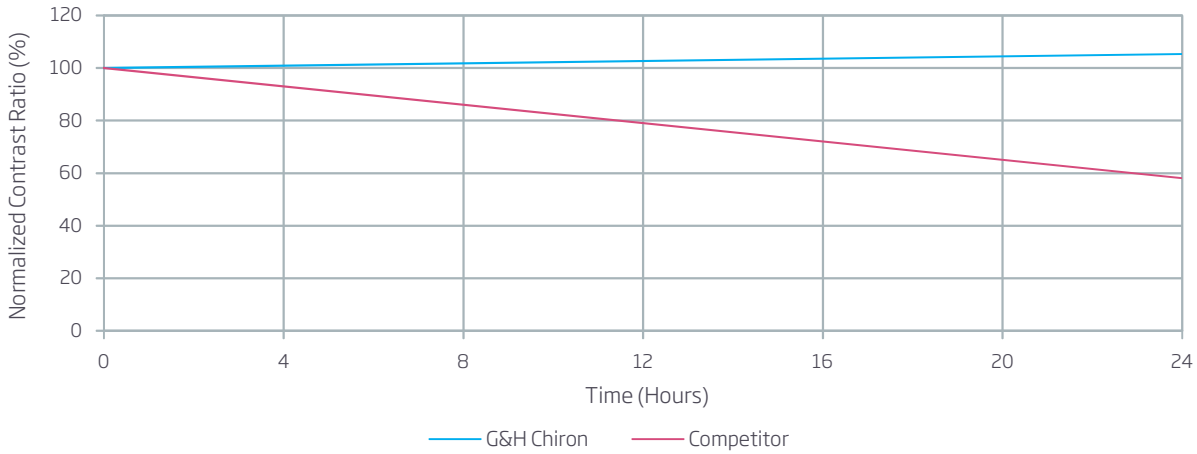
Cell performance at 1 MHz repetition rate normalized for 100% starting contrast ratio



For further information

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