Photonics On Crystals

POC-OC-120212-Acousto-Optic Q-Switches Datasheet

Key Features

- Enables precise intracavity Q-switching for high-peak-power laser pulses.
- Wide operational wavelength range from 310 nm to 10.6 µm.
- High modulation efficiency with loss modulation greater than 85%.
- Exceptional damage threshold exceeding 1.0 GW/cm² at 1064 nm, 10 ns, and 10 Hz.
- Fast switching speed and robust thermal stability with water cooling options.

General Description

Photonics of Crystals (POC) **Acousto-Optic Q-Switches (AOQS)** are advanced devices designed for efficient Q-switching in laser cavities. By increasing diffraction loss during pumping, AOQS devices ensure the laser cavity remains in a low Q-value state. This allows a large accumulation of inverted particles in the upper energy level. When the diffraction loss is rapidly removed, the cavity transitions to a high Q-value state, enabling the release of high-energy pulses in the form of giant laser bursts.

POC's AOQS devices are tailored for use in applications requiring high peak power, pulse stability, and rapid switching. Constructed using premium materials such as fused silica and crystalline quartz, these switches guarantee excellent transmittance, low insertion loss, and high damage thresholds, making them ideal for demanding industrial and scientific applications.

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To achieve optimal performance, higher RF power injection and efficient heat dissipation are essential for larger aperture devices. Water cooling options are available to ensure stable operation under high-power conditions, further enhancing device longevity and reliability.

General Applications and Examples

1. **Laser Marking and Engraving:**
   AOQS devices enable precise pulse control for creating detailed engravings and markings on various materials, including metals, plastics, and ceramics, ensuring high-quality results.
2. **Medical Laser Systems:**
   Used in therapeutic and surgical applications, AOQS devices provide stable, high-energy laser pulses for procedures like tissue ablation and photocoagulation, ensuring precision and safety.
3. **Material Processing:**
   AOQS devices enhance laser-based material processing, such as micromachining, cutting, and welding, by delivering controlled high-power laser pulses for superior processing efficiency.

Our Standard Products and Model Numbers

Model Number	Center Frequency (MHz)	Aperture (mm)	Material	Mode	Wavelength (nm)	RF Connector	Housing
CAQS-f-a-mt-w-c-h	40.68	1	CQ / T	C (Compression)	266	SMA-F	A01

Typical Specifications

Wavelength (nm)	Aperture (mm)	Operating Frequency (MHz)	Loss Modulation (%)	Material
1030–1064	1–6	24, 27.12, 40.68, 68, 80	>85	FS
1030–1064	1–3	40.68, 68, 80, 100	>85	CQ
1319–1342	1	80	>85	CQ
1550	1	80	>85	CQ
1900–2100	4	40.68	≥75	CQ
9.4–10.6 µm	11.6	40.68	>85	-

Housing Dimensions (mm)

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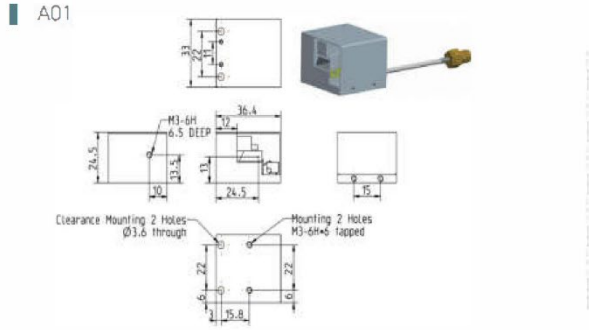
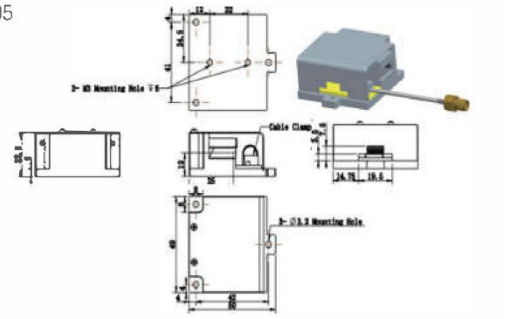
- **A01:** 36.4 x 24.5 x 20 mm, compact and designed for smaller setups.
- **A05:** 64 x 40 x 25 mm, suitable for larger configurations and industrial applications.

A01



A05



POC Strength and Capabilities

Photonics of Crystals (POC) leads the industry in the design and manufacturing of **Acousto-Optic Q-Switches**, offering cutting-edge solutions for precise pulse modulation in advanced laser systems.

Why Choose POC?

- **High-Performance Materials:** Our AOQS devices are crafted with high-transmittance fused silica and crystalline quartz, ensuring durability and superior performance.
- **Tailored Solutions:** We provide customized Q-switches to meet specific requirements, including wavelength range, aperture size, and operating frequency.
- **Thermal Stability:** Water cooling options ensure efficient heat dissipation, maintaining device stability under high-power conditions.
- **Global Expertise:** POC's AOQS devices serve a wide range of industries, from medical technology to material processing, ensuring reliability and precision in every application.

Choose Photonics of Crystals for reliable, high-quality Acousto-Optic Q-Switches that deliver peak performance.
