Acousto-Optic Q-Switches

Intracavity Q-switching devices with high damage threshold and high modulation

The Acousto-optic Q-switches (AOQS) are a type of Q-switch designed for laser Q-switching applications. At the beginning of pumping,the AOQS increases the diffraction loss in the cavity, causing the cavity to be in a low Q-value state, which increases the oscillation threshold and prevents oscillation from occurring. This allows a large number of inverted particles in the upper energy level to accumulate. When the accumulation reaches saturation, suddenly removing the diffraction loss causes the cavity loss to decrease and the Q-value to suddenly increase, rapidly establishing laser oscillation. In a very short period of time, the inverted particles in the upper energy level are consumed and converted into optical energy in the cavity, resulting in high-peak-power giant pulse laser output.

CASTECH can provide a variety of A-0 Q-switches with operating wavelength ranges covering 310 nm-10.6 um. Our products have high transmittance (single pass transmittance up to 99.6%), fast switching speed, strong shut-off capability ,high damage threshold, and excellent pulse stability. To achieve higher diffraction efficiency, large aperture A-0 Q-switches require higher RF power injection. Therefore,water cooling is needed to ensure proper heat dissipation of the device.

CASTECH's Q-switches are fully in-house manufactured and customizable to meet specific needs. Explore our standard product range below.

Applications

- Laser marking
- Medical procedure
- Material processing
- Material processing

Model Number: CAQS-f-a-mt-w-c-h

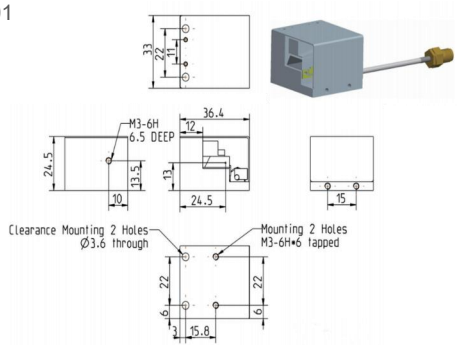
Center Frequency (f)	Aperture (a)	Material (m)	Mode (t)	Wavelength (w)	RF Connector (c)	Housing (h)
041 (40.68 MHz) ...	010 (1 mm) ...	CQ TE	C (Compressional) ...	266 (266 nm) ...	AF (SMA-F) ...	A01 ...

Typical Specifications

Wavelength	Aperture	Operation frequency	Loss modulation	Material
1030-1064 nm	1-8 mm	24，27.12，40.68，68，80 MHz	>85 %	FS
1030-1064 nm	1-8 mm	40.68，68，80，100 MHz	>85 %	CQ
1319-1342 nm	1 mm	80 MHz	>85 %	CQ
1550 nm	1 mm	80 MHz	>85 %	CQ
1900-2100 nm	4 mm	40.68 MHz	≥75 %	CQ
9.4-10.6 μm	11.6 mm	40.68 MHz	≥85 %	/
*Damage threshold ＞1.0 GW/cm² @ 1064 nm, 10 ns , 10 Hz				

Housing dimensions(mm):

A01



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