Acousto-optic Q-Switches

STQ Series

2022 V1

For customized projects please Contact us:

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Acousto-optic Q-switch

High-peak-power short-pulse laser intracavity devices

Acousto-optic Q-switch (AOQS) works within the laser cavity to generate short-pulses, and high-peak-power lasers by actively controlling the Q-factor of the cavity. AOQS is usually used to modulate the loss of zero-order beams. When the RF drive of AOQS is turned on, the zero-order light cannot form an oscillation of laser in the cavity due to diffraction, and the cavity loss increases and prevents laser output. When the RF drive is turned off for a short time, the optical power accumulated in the laser cavity is emitted in the form of a pulse to generate a pulsed laser. The process can be repeated at rates in excess of 100KHz. AOQS can operate either in the Bragg state, like AOM (Acousto-optic modulator) with a single diffracting beam, or in the Raman-Nath state with multiple diffracting beams.

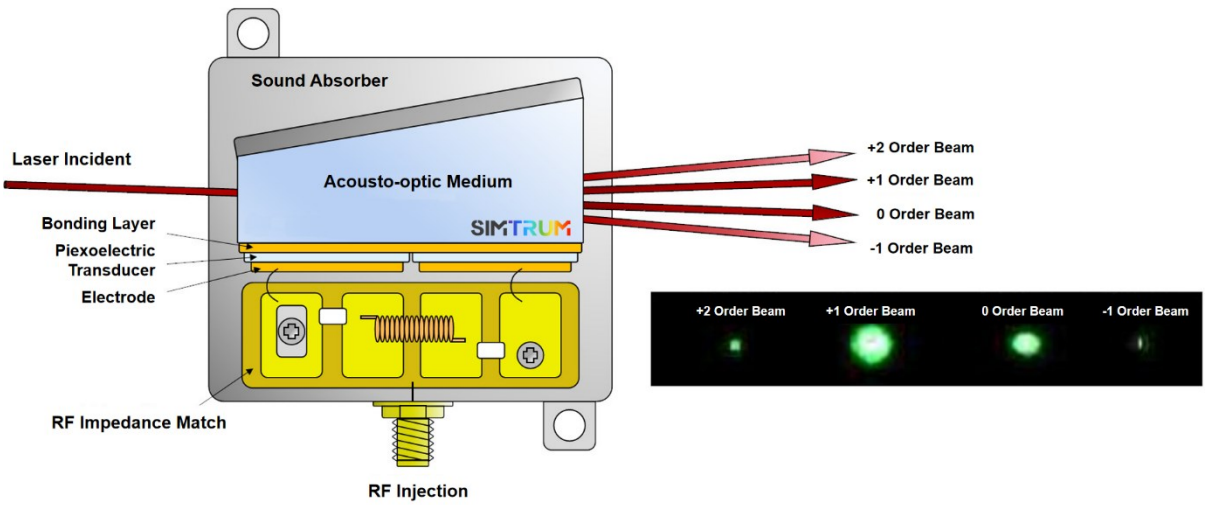
SIMTRUM offers a complete solution oriented to polarized (layout) or non-polarized lasers and can be adapted to include lamp-pumped lasers as well as LD-pumped lasers. Our AOQS product wavelength range from ultraviolet to far infrared, a diameter of up to 12 mm. AOQS selects AO materials with excellent quality (fused quartz, quartz crystal, Ge crystal, etc.), which can be designed into shear and longitudinal wave mode according to to needs. High-quality optical polishing, anti-reflective coatings with low reflection and high damage, reliable welding techniques, and novel acoustic management and optical-mechanical design techniques enable excellent thermal management, maintaining excellent beam quality and high transmittance.

SIMTRUM can provide AOQS-matched series of RF drivers, you can choose the corresponding RF driver according to the product specifications.

Applications

- Lamp pump and end pump DPSS laser
- Laser marking
- Lithography
- Material processing
- Surgery
- Micromachining

Principle of Operation



Product Specifications

General Specifications	
Interaction Material	Fused Silica / Crystalline Quartz / Germanium
Acoustic Mode	Longitudinal
Operating Wavelength	1064 nm ~10.6 um
Polarization	Linear, perpendicular to base
Transmission	> 99.6%
Active Aperture	1.0 ~ 11.6 mm
Center Frequency (Fc)	27.12 ~ 80 MHz
Loss Modulation	>70% ~ 85%
RF Power	25 ~ 50 W (Max)
Input Impedance	50Ω Nominal
VSWR @Fc	< 1.2:1
RF Connector	SMA-F / BNC-F
Cooling	Conduction-cooled / Water-cooled
Shell Material	Aluminum alloy 6063

Selection Guide

Ordering Information

	Fc		Active aperture		Wavelength
STQ0001 - QL	XXX	-	XXX	-	XXXX
27.12 MHz	027	4 mm	040	1030 nm	1030
40.68 MHz	041	6 mm	060	1064 nm	1064
80 MHz	080	8 mm	080		

Product Code	Wavelength	Active Aperture	Center Frequency	Loss Modulation	Optical Material	Cooling
STQ0015-FL027-040-1064	1064 nm	4.0 mm	27.12 MHz	> 85%	Fused Silica	Water-cooling
STQ0003-FL027-060-1064	1064 nm	6.0 mm	27.12 MHz	> 85%	Fused Silica	Water-cooling
STQ0016-FL041-050-1064	1064 nm	5.0 mm	40.68 MHz	> 85%	Fused Silica	Water-cooling
STQ0005-STQL041-015-1064	1064 nm	1.5 mm	40.68 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0007-STQL068-030-1064	1064 nm	3.0 mm	68 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0008-STQL080-010-1064	1064 nm	1.0 mm	80 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0001-STQL080-015-1064	1064 nm	1.5 mm	80 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0009-STQL080-020-1064	1064 nm	2.0 mm	80 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0010-STQL080-010-1342	1342 nm	1.0 mm	80 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0006-STQL041-015-1535	1532 nm	1.5 mm	40.68 MHz	> 80%	Crystal quartz	Conduction-cooled
STQ0011-STQL080-010-1550	1550 nm	1.0 mm	80 MHz	> 85%	Crystal quartz	Conduction-cooled
STQ0012-STQL041-040-2000	1900- 2100 nm	4.0 mm	40.68 MHz	> 70%	Crystal quartz	Conduction-cooled
STQ0013-STQL041-116-10600	10.6 um	11.6 mm	40.68 MHz	> 80%	Germanium	Water-cooling

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