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## LASERMETRICS<sup>®</sup> Division

FASTPULSE TECHNOLOGY, INC.

220 Midland Avenue • Saddle Brook, NJ 07663

Tel: (973)478-5757 • Fax: (973)478-6115

WebSite • <http://www.lasermetrics.com>

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## 1145 SERIES POCKELS CELL ELECTRO-OPTIC Q-SWITCHES

*Sol Gel AR Crystal  
Coatings Are Standard  
on the 1145 Series*

Series 1145 Q-switches are miniature electro-optic devices (Pockels cells) intended for use with the latest compact size lasers. They are useful for Q-switching, cavity dumping and laser pulse extraction in regenerative amplifiers. Other applications include polarization rotation, laser beam chopping, slicing and pulse picking. They accommodate the most demanding high peak power laser applications. All models within the series utilize a rugged internal crystal support and hermetic sealing system. The devices incorporate highest quality crystals, fused quartz windows and high damage threshold antireflection coatings.

E-O performance of the 1145 Series is based on highly deuterated (98.5+ %)DKDP (KD\*P) crystals, selected for absence of strain and stria, lowest residual birefringence and wavefront distortion. The optimized geometry cylindrical ring electrode-crystal configuration produces the most uniform retardation field currently available. Crystals are mounted in rugged thermoplastic housings. Stainless steel aperture plates are used in all models. Windows are bubble and strain-free fused quartz with high efficiency antireflection coatings.

The 1145 Series is available with wedged windows, wedged crystals and with crystals having a 1 or 2 degree off-axis orientation.



Sol Gel antireflection coatings are standard in the 1145 Series and are applied to the crystal for highest peak and average power applications. Sol Gel coatings are extremely efficient, having reflectance losses of 0.05%. Damage threshold for Sol Gel coatings is at least as high as that of the KD\*P crystal material at any optical fluence.

In very fast pulse gating applications, with laser pulses less than 100 picoseconds width, the 1145 Series has a damage threshold of 20 Gigawatts/cm<sup>2</sup>. In Q-switching, the devices will tolerate in excess of 750 Megawatts/cm<sup>2</sup> at less than 20 nanoseconds pulse width.

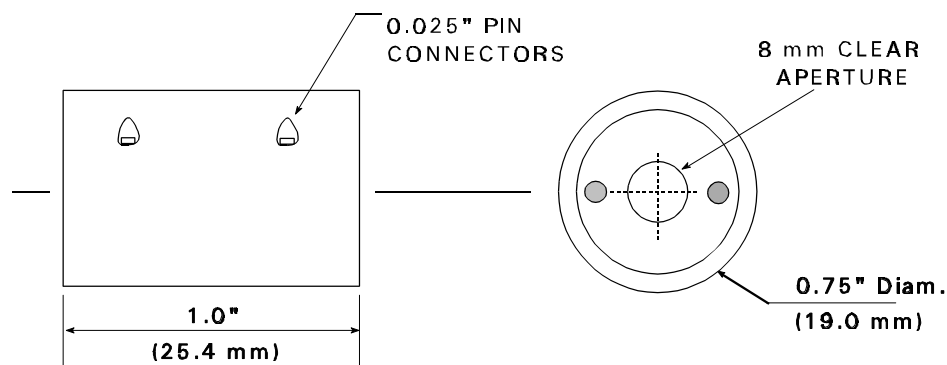
Lasermetrics Q-switch drivers 5048, 5055SC, 5056, and Pulse Choppers / Pulse Extractor Models 8025S, 5046E, 5046SC and 5057 can be used with all 1145 devices.

1145 Series devices are guaranteed against defects in materials and workmanship for one year.

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## 1145 SERIES - NOMINAL SPECIFICATIONS

Aperture Diameter	8.0 mm diameter
Crystal Material	98.5+ % Deuterated D-KDP (KD*P)
Peak Optical Power Density Capability (650 to 1100 nm), Uniform Beam, no Hot Spots	750 Megawatt/cm <sup>2</sup> for pulses < 20 nsec wide 10 Gigawatt/cm <sup>2</sup> for pulses < 500 psec wide 20 Gigawatt/cm <sup>2</sup> for pulses < 100 psec wide
Spectral Range for Peak Power Density*	400 to 1100 nanometers
Transmission Range*	98% from 400 nm to 1064 nm
Quarter Wave Retardation Voltage, DC	@ 694 nm 2.2 kilovolts @ 1064 nm 3.4 kilovolts
Extinction Ratio (Contrast Ratio) with Full Aperture Beam	1000:1 at 633 nm
Rise Time	< 250 picoseconds
Capacitance	5 picofarads
Weight	50 grams



\* The useful spectral range of transmission for KD\*P crystals extends from less than 300 nm to more than 1100 nm. Sol Gel coatings are available within the spectral range of 450 to 1100 nm. The coatings will provide highest possible transmission efficiency in this range. Above and below this range, reflectance increases. The 1145 with Sol Gel coatings for 650 nm may be used at wavelengths as short as 400 nm without reduction of its power handling capabilities but transmission will be reduced slightly due to increased reflection losses. Antireflection coatings on the protective windows can be specified for a particular wavelength or band.