

- ★ ≤ 3 Nanosecond Output Rise time
- ★ Single Shot to 5 kHz Repetition Rates
- ★ EMI/RFI Shielded Enclosure
- ★ 5 kV & 8 kV Output Voltage Models
- ★ Works on +24 VDC Power Supply
- ★ High Reliability

Model 5056SC-A Q-switch Driver Modules integrate high voltage MOSFET circuits and self-contained miniature high voltage power supplies which require only +24 volts DC input. Trigger signals can be TTL level voltages. The 5056SC-A is intended for stand-alone operation with the company's Series 1058, 1059, 1145, 1147 and 1150 electro-optic Q-switches operating at repetition rates between single-shot and 5 kHz repetition rates. It will also drive similar Pockels cells from other manufacturers. All circuits are packaged in an electrically shielded enclosure which attenuates EMI/RFI to minimize radiated and conducted switching noise. The 5056SC-A Output voltage is conveniently adjusted by a front panel mounted miniature potentiometer.

The 5056 features a balanced output, i.e., there are 2 independent output connections, one for each terminal on the Q-switch. The Switched and Unswitched HV outputs have identical HV DC levels which produce a static, zero net differential voltage across the crystal. When triggered, the Switched side goes to ground; the Unswitched side remains at HV resulting in a voltage pulse across the terminals.

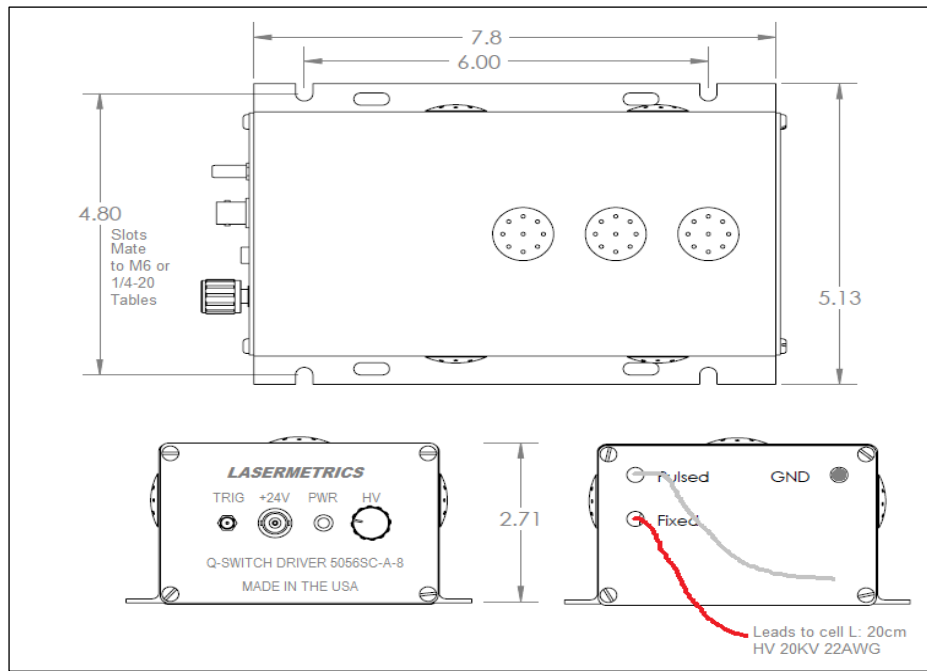


Two other modes of operation are available without modifications. Referring to circuit diagram on page 2; when a trigger signal is applied, Side 1 switches from the pre-adjusted HV level to ground and then, between laser pulses, is allowed to recover to its original value.

Side 2 always remains at the original HV level so that during the time Side 1 is at the ground level (ON time), pre-set retardation voltage is applied to the crystal. The Q-switched pulse is generated during the ON time. Given an appropriate Q-switch, the 5056SC-A permits operation at the $\frac{1}{4}$ or $\frac{1}{2}$ wave retardation voltages or at any voltage in this range. The 8 kV Model 5056SC-A-8 will produce pulsed voltages suitable for $\frac{1}{4}$ and $\frac{1}{2}$ wave retardation at 1064 nm with DKDP, BBO, RTP and Lithium Niobate Pockels cell Q-switches.

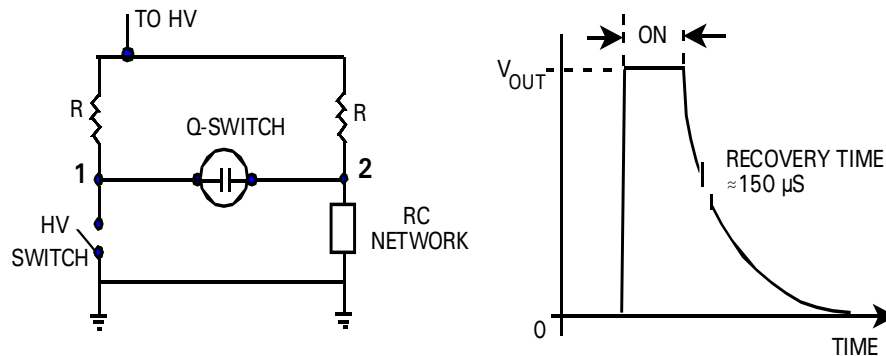
NOMINAL SPECIFICATIONS	Model 5056SC-A-5	Model 5056SC-A-8
Output Pulse Voltage Range, Volts	< 1000 to 5000	< 1000 to 8000
Output Rise Time	3 to 5 nanoseconds, (73 ns with < 40 pf total load of cell + cable*)	
Output Pulse ON Time	~ 3 μ s, typical	
Jitter — Input to Output	< 1 ns	
Propagation Delay — Input to Output	< 50 ns	
Repetition rate	Single Shot to 5 kHz	
Input Trigger	TTL levels, 5 volts max.	
DC Power Input	+24 \pm 5% VDC, 24 watts	
Connectors: DC Power:	BNC	
Trigger Input:	SMA is standard, or BNC - Specify	
Output, HV	SHV & Shielded Cable or HV wire leads	
Weight	~ 1.2 kg	

OVER



The 5056SC-A can be operated as a **SINGLE ENDED DRIVER**; in this mode of operation, a DC high voltage is applied to the Pockels cell (PC) to attain a static $\frac{1}{4}$ or $\frac{1}{2}$ wave retardation. The voltage may then be switched to the ground state. It will typically recover to the high voltage set point within ~ 150 μ second time period. This operation is set up as follows:

1. For units with insulated wire leads, connect the lead from side 1 (PULSED) to a terminal on the Pockels cell. The other cell terminal should be connected to ground. The lead from side 2 (FIXED) is not used but it must be well covered and insulated with electrical tape since it is not at zero voltage or ground potential. The 5056 enclosure can be grounded by connecting a wire lug to the 5056 mounting base and then wiring to house ground
2. For units with SHV connectors: Connect Output 1 to a coaxial cable, typically RG59/u, and connect the cable center conductor and cable shield to the PC terminals. The PC crystal may exhibit residual birefringence and thus be sensitive to voltage polarity. It may be necessary to reverse these leads to attain the desired retardation with the lowest voltage. It is recommended that the center pin of the SHV Connector 2 be taped over to prevent arcing between the center pin and the connector shell.



5056SC-A Equivalent circuit and output waveform for standard, balanced output configuration