

FEATURES

- ★ ≤ 3 Nanosecond Output Rise time
- ★ Single Shot to 50 Hz Repetition Rates
- ★ EMI/RFI Shielded Enclosure
- ★ Adjustable HV to 8 kV Output Voltage
- ★ Drives cell at 1/2 wave voltage
- ★ Power with +24 VDC Power Supply
- ★ High Reliability

Model 5058SC-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 5058SC-A drives capacitive loads up to 30pF. It is intended for stand-alone operation with the company's Series 104x, Q1059, 1144, 1145, and 1150 electro-optic Q-switches operating at repetition rates between single-shot and 50 Hz 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 5058SC Output voltage is conveniently adjusted by a front panel mounted miniature potentiometer.

The 5058 features a balanced output, i.e., there are 2 independent output connections, one for each terminal on the Q-switch/Pockels cell. 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 potential across the terminals.



Fig 1. Model 5056SC-A (5058 is shorter)

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 1/4 or 1/2 wave retardation voltages or at any voltage in this range. The adjustable 0.8-8KV 5058SC-A-8 will produce pulsed voltages suitable for 1/4 and 1/2 wave retardation with DKDP, BBO, Pockels cell Q-switches. (See 5055SC series for 5KV req.)

NOMINAL SPECIFICATIONS

Output Pulse Voltage Range
Output Rise Time (4-15pF load)
Output Pulse ON Time
Fall Time/Recovery
Jitter — Input to Output
Propagation Delay — Input to Output
Repetition rate
HV leads to cell
Input Trigger
DC Power Input
Connectors: DC Power:
 Trigger Input:
 Output, HV
Weight
Cable

Model 5056SC-A-8

<700 to 8000
3 to 8 nanoseconds
~ 4 μ s, typical (30us FWHM)
~ 100us
<0.2 ns
<50 ns
Single Shot to 50 Hz (burst 2 kHz)
Length 15cm with 2mm pins (or #4 ring)
TTL levels, 4-10 volts max into 50 Ohms
24 to 28 VDC, ~10 watts
BNC
SMA is standard, or BNC - Specify
HV wire leads, length 15cm
~1 kg
SMA-BNC 4 foot length (120cm)

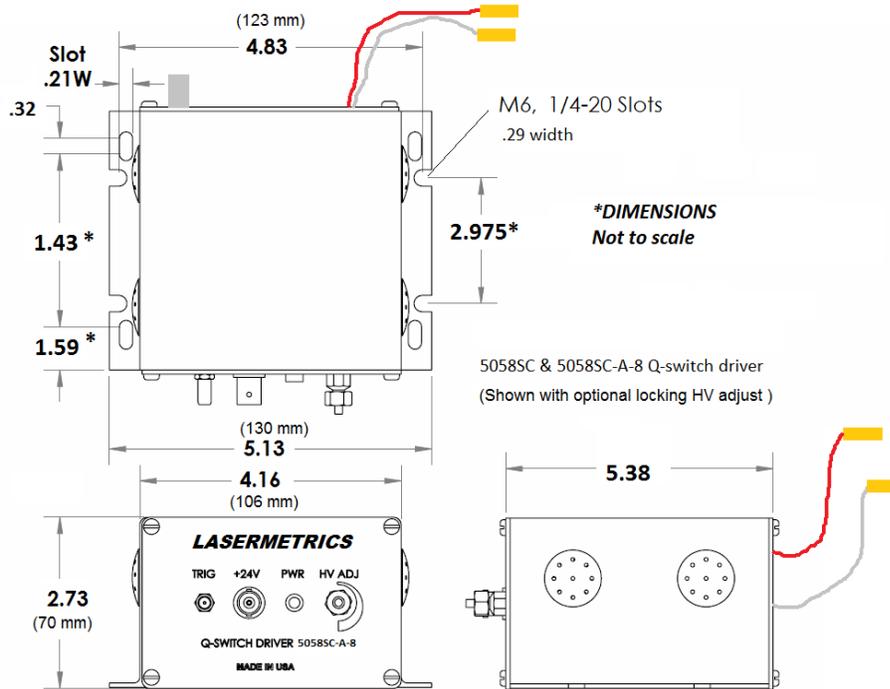
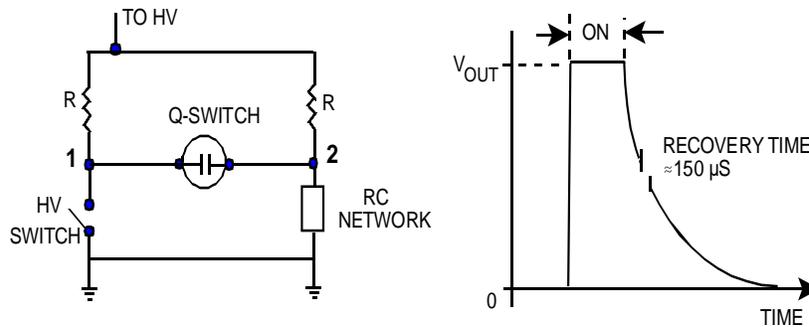


Fig 2. Outline Model 5058SC-A



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

Fig 3

The 5058SC-A can also be operated as a SINGLE ENDED DRIVER "MODE 2" ; in this mode of operation, DC high voltage is applied to the Pockels cell (PC) to attain a static ¼ or ½ wave retardation. The voltage may then be switched to the ground state. It will typically recover to the high voltage set point within ~150 μsecond time period. This operation is set up as follows: For "-A" series units with insulated wire leads, connect WHITE the lead from side 1 (PULSED) to a terminal on the Pockels cell. The other cell terminal should be connected to ground. The RED lead from side 2 (FIXED) is not used but it must be well covered and insulated with electrical tape since it is DC high voltage. The 5058 enclosure can be grounded by connecting the supplied wire lug to the 5058SC ground post. See product manual for details.