

Series 93410

# MIL-APPROVED SOLID STATE TIME DELAY RELAYS

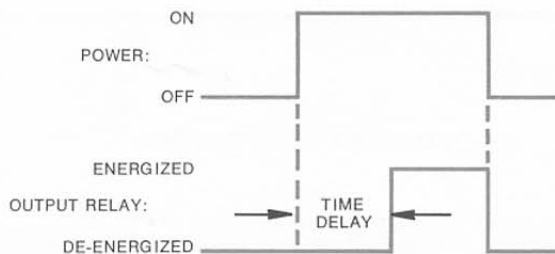
## QPL per MIL-R-83726/7

TIME DELAY ON OPERATE

**QPL-approved timers designed specifically to meet high accuracy and reliability requirements in a wide range of military applications such as aircraft, missile, aerospace, naval, ordnance and ground support installations.**

### TIMING ACTION

Fixed time delays, available from 0.10 to 300 seconds. Timing action is Delay-On-Pull-In (DOPI). Application of power initiates the timing cycle. After the fixed time delay, the output relay assumes the energized state and remains energized until the timer is reset by the removal of power.



### CIRCUIT DESCRIPTION

These time delay units include a BC Systems Transistorized Timing Module and a hermetically sealed miniature output relay. The timing module consists of a RC timing network, a two transistor gate circuit, a resistor bias network, and a transient suppression circuit. In operation, when input voltage is applied to the timer, the output relay remains de-energized due to high series impedance exhibited by the gate in its unfired state. Upon completion of the fixed time delay, the gate fires, applying a voltage step to the output relay, causing the relay to actuate. Positive electronic latching of the output is provided as long as power remains applied.

### PROVEN RELIABILITY

Our relays have proven exceptional reliability and performance since 1957. The extremely conservative performance and extended life expectancy ratings of BC Systems Timers exceed those associated with other timer circuits and have resulted in unequaled service records of high reliability and accurate performance.

### SOLID STATE TIMING CIRCUIT

The timing circuit used in these Series 93410 timers does not employ any moving parts, does not deteriorate with use and is not prone to wear. High performance is maintained through-out the extended service life rating. Finest components including silicone semiconductors and tantalum timing capacitors are used. A warm up period is not required. Additional design features include zener input regulation and electronic latching of the output relay.

### PROTECTED AGAINST ENVIRONMENTS TRANSIENT AND VOLTAGE VARIATIONS

These hermetically sealed timers will not be damaged by the shock, vibration, or environmental extremes encountered in military applications. Timing is not affected by voltage variations and the circuit will function properly while subjected to transients.

### MEETS OR EXCEEDS MIL SPECS

Series 93410 time delay relays have been QPL-approved and meet or surpass all requirements of MIL-R-5757, MIL-STD-242, MIL-E-5400, and MIL-R-83726/7.

**BC Systems Inc.**

**200 Belle Mead Rd., Setauket N.Y. 11733**

**(631)-751-9370 Fax (631)-751-9378**

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# SPECIFICATIONS

## Series 93411 TIME DELAY RELAYS

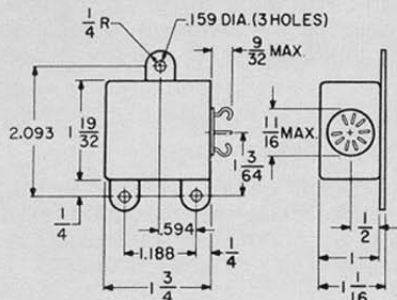
TIMING ACTION.....	Delay-On-Drop-Out (DODO)
TIME DELAY.....	Fixed values from 0.100 to 300 seconds. See tabulation under "ORDERING INFORMATION" below.
TIMING ACCURACY.....	±10% of the nominal value under all combinations of input voltage and output extremes.
PULL-IN TIME.....	10 milliseconds, max.
INPUT VOLTAGE.....	26.5VDC nominal; range 18 to 31VDC.
TRANSIENT PROTECTION.....	MIL-STD-704A, per Fig. 9, Limit 1 for Category B Equipment.
POLARITY PROTECTION.....	The timer will be inoperative during, and undamaged by, reversal of the input polarity.
CURRENT DRAIN.....	110 milliamperes maximum, with nominal input voltage at 25°C.
OUTPUT RELAY.....	In accordance with MIL-R-5757/9 (High level type).
CONTACT ARRANGEMENT.....	DPDT (2 form C).
CONTACT RATING.....	2 amp resistive, 0.75 amp inductive load at 28VDC; 0.3 amp resistive or inductive load at 115VAC, 60 to 400 Hz.
CONTACT BOUNCE.....	2 milliseconds, max.
CONTACT LIFE.....	100,000 operations, min.
DIELECTRIC STRENGTH.....	350 volts rms, 60 Hz, between all mutually insulated parts.
INSULATION RESISTANCE.....	1000 megohms at 500VDC between all mutually insulated parts.

RECYCLING.....	BEFORE TIME OUT: Control power must remain off at least 25 msec. or 1% of the nominal time delay, whichever is greater, after which reapplication of control power for 25 msec. min. will recycle the timer with a loss in timing no greater than 10%. AFTER TIME OUT: Reapplication and subsequent removal of control power will recycle the timer. Control power must be applied for 25 msec. or 1% of the total time delay, whichever is greater, to insure a loss in timing accuracy of no greater than 10%.
OPERATING TEMPERATURE.....	-65°C to +125°C (Class B).
SHOCK RATING.....	No opening of closed contacts in excess of 10 microseconds, 50 g's.
VIBRATION RATING, SINE.....	10-80 Hz at 0.06" peak DA, 80-3000 Hz at 20 g's.
ACCELERATION RATING.....	50 g's steady state.
WEIGHT.....	4 ounces, max.
TERMINAL STRENGTH.....	3 ±0.5 pounds pull.
FINISH.....	F #107 Bright Nickel QQ-N-290 Class 2, Copper flash, plus type III Bright KS 0.0004 Nickel.
MIL SPECS.....	Meet or surpass all requirements of MIL-R-83726/8, MIL-R-5757, MIL-STD-242, MIL-E-5400 and MIL-Q-9858A.

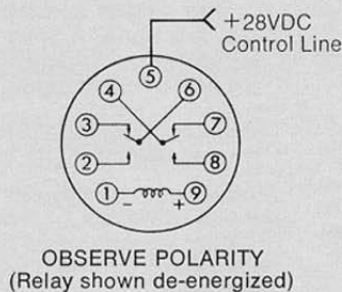
### SPECIAL TYPE VARIATIONS

*BC System's experience and familiarity with transistorized timers permits many special variations and options including: Adjustable Timing — Solid State or Different Relay Outputs — Packaging or Configuration Changes — Other Logics — Various Input Voltages — Better Accuracy — Extended Temperature and Environments — Extreme Transients — NASA Specifications.*

### DIMENSIONS



### WIRING DIAGRAM



### ORDERING INFORMATION

A complete part number consists of the basic Series (93411) or Specification (M83726/8) followed by a 4-digit dash number that denotes the desired fixed time delay.

#### EXAMPLES:

BC Systems Number	MIL Number	Time Delay
93411-1000	M83726/8-1000	100 msec.
93411-1001	M83726/8-1001	1 sec.
93411-1003	M83726/8-1003	100 sec.

*NOTE—The first 3 digits of the dash number are significant digits expressed in milliseconds. The 4th digit is a multiplier.*

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