



**AM Power Systems, Inc.**  
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## Piezo-Electric Actuators for Mignature Mechanical Manipulation Applications

- *AMC0612-3PE w/  $V_{out} \leq 600\text{Volts DC-DC converter}$*
- *AMC0212-1PE w/  $V_{out} \leq 200\text{Volts DC-DC converter}$*
- *AMW0612-9 wire harness with 9" flying leads, compatible for both actuators*

The Piezoelectric Actuator Series AMC0612-3PE and AMC0212-1PE feature output voltages of 200 volts and 600 volts and a variable/controllable input voltage. The fine tuning on these devices makes possible to have parts/million control of the valve. These new piezoelectric actuators are ideal for the miniature and micro-miniature valve markets.

Piezoelectric actuators convert electrical energy directly into linear motion with virtually unlimited resolution.

### BRIEF DESCRIPTION:

**AMC0612-P3** - This is a specially designed piezo-electric actuator for miniature mechanical manipulation applications. Output drive capability of up to 600V<sub>out</sub> will cause actuations for capacitance loads of 20 pF to 100 nF. Rise (Ton) and Fall (Toff) times specifications are guaranteed to be less than 30 ms.

**AMC0212-P1** - This is a specially designed piezo-electric actuator for miniature mechanical manipulation applications. Output drive capability of up to 200V<sub>out</sub> will cause actuations for capacitance loads of 20 nF to 2 uF. Rise (Ton) and Fall (Toff) times specifications are guaranteed to be less than 25 ms.

### APPLICATIONS:

- Micro-Valve Operations
- Micro-positioning Applications
- Nano-positioning Applications
- Miniature Electronic Actuators
- Miniature Mechanical Actuators
- Key Switch Actuations



### GENERAL SPECIFICATIONS:

- Package outline w/PCB Size: 1.5" X 1.0" X 0.6" (double sided, two (2) layer PCB)
- Input voltage = 12 VDC  $\pm$  10% nominal or 10.8 volt to 15 volt V<sub>in</sub> range (RED Wire)
- (reverse voltage protection to 50 volts)
- Input control voltage of 0 - 10V<sub>in</sub> (YELLOW Wire)
- Charge time: with 23nf load and 200 volts: < 3 ms. (Ton @ 10% of final value)
- w/ no resistive load on output voltage
- Discharge time: with 23nf load to 12 volts: < 2 ms. (Toff @ 10% of final value)
- w/ use of internal active discharge circuit.
- Quiescent power:
- AMC0212 type: w/no load and V<sub>out</sub> at 0 volts: <85 mw.



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- AMC0612 type: w/no load and Vout at 0 volts: <125 mw.
- Accuracy:  $\pm 5\%$  w/ Vin set voltage (see note #1)
- Power output : 2 watt at full output voltage (see note #2)
- Efficiency: >60% at full power and full output voltage
- Protected against input short circuit and output overloads to ground
- Line and Load Regulation  $\leq 0.1\%$  (w/ No Load to Full Load and 12VDC  $\pm 10\%$ )
- Interface connectors – Molex 3 pin #87438-0342 on the PCB (compatible w/ Molex housing #87439-0300 w/ terminal pins #87421 used on the wire harness)
- Coating parts supplied with Silicone epoxy spay coating
- Operating temperature range: 0°C to 50 °C at full power
- Vibration and Shock - SMT technology with very low mass for higher performance (Spec TBD)

**Note #1:** This is a boost topology, so the minimum output voltage is equal to the input voltage of 12VDC. There is a protection circuitry against short circuit to ground possibilities.

**Note #2:** Power output does NOT decrease proportionately with output voltage. The power output approaches a constant voltage down to very low output approaches a constant voltage down to very low output voltages. This will improve capacitance charging time significantly. A capacitance discharge circuit will activate when the output exceeds the set voltage on the control pin.

**Note #3:** Vout and Output Ground connections are noted on the topside of the PCB as +HV and GRD.

**Note #4:** Vin (12V) is RED wire, Input Ground wire (center wire) is BLACK and Control Voltage wire is GREEN.

**Note #5:** Special Wire Harness **AMW0612-9** is required for the input connection described in Note #4.

**Note #6:** These specifications are not final and changes may be made at any time to improve product performance or meet specific customer requested modifications.

#### **AVAILABILITY:**

**Stock.** For quantities over 20 please contact factory