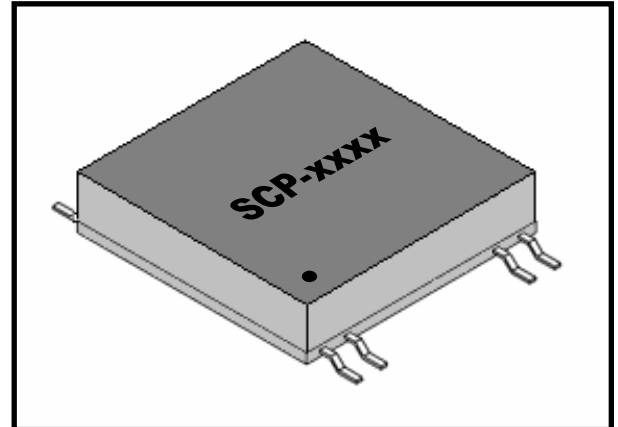# SCP-6212/ SCP-6212ADJ 1.25A EFFICIENT SOLENOID DRIVER

FEATURES

- **Input voltage range 21V – 40V (12V – 40V for SCP-6212ADJ)**
- **1.25A drive capability**
- **At Vin = 28V, I_{load} = 1.25A**
  - **V_{out} = 28V nominal for 1.2 seconds upon command**
  - **V_{out} = 15V nominal after 1.2 seconds**
- **Adjustable time delay and hold voltage (SCP-6212ADJ)**
- **Integrated catch diode for inductive kickback**
- **0V – 5V on/off control**
- **PWM operating frequency 2.2MHz**
- **Short circuit protection**
- **Low-profile surface mount package**

The SCP-6212 is designed to drive solenoids and relays in an efficient manner, taking advantage of the characteristic of differing driving and holding currents. For 1.2 seconds upon receiving a command signal, or for an adjustable time on the SCP-6212ADJ, the device behaves as a traditional high-side driver, passing the input voltage to the output terminals. After the solenoid has engaged, plus some time margin, the delivered current is reduced by switching the output from the pass element to a dc-dc converter to fix the output at 15V, or to another adjustable voltage on the SCP-6212ADJ. The driver is controlled by a 5V signal. A block diagram is shown in Figure 1. Short-circuit protection is employed for each of the two operating states. Delay-time to DC-DC operation and DC-DC output voltage on the SCP-6212ADJ are programmed with external resistors, shown in Figure 4.
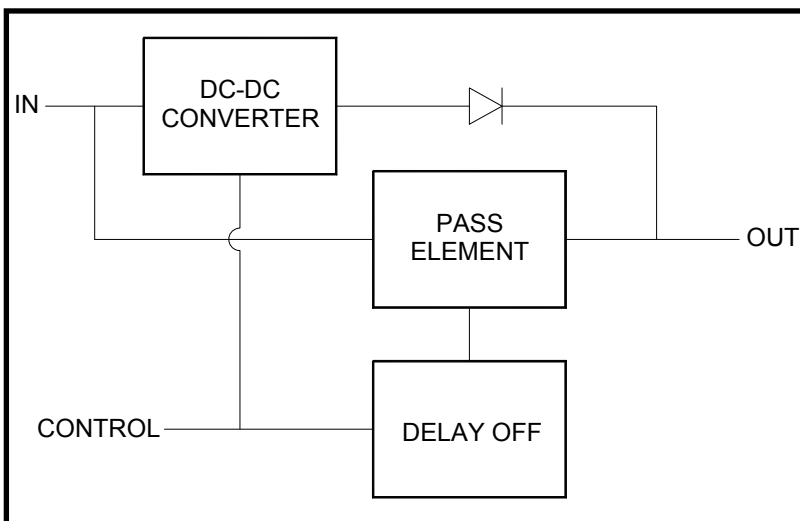

Figure 1. Block diagram

ABSOLUTE MAXIMUM RATINGS

V_{in} 40V
V_{cmd} ....-0.2V to 12V
Output Current (drive) 1.25A
Output Current (hold) 0.5A
Storage and Operating Temperature ....-40^{0}C to 85^{0}C

ELECTRICAL CHARACTERISTICS

T_A = 25^{0}C unless otherwise specified.

PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNITS
turn-on threshold		1.3	1.8	2.3	V
turn-off threshold		1.4	1.9	2.4	V
driving current voltage drop	I_{out} = 0.25A		0.25	0.40	V
(V_{in} - V_{out})	I_{out} = 0.50A		0.45	0.60	V
	I_{out} = 1.25A		0.85	1.00	V
time delay to hold-current mode	V_{CMD} = 5.0V	1.0	1.2	1.4	s
efficiency in hold-current mode	I_{out} = 0.25A	85	89		%
PWM frequency[1]			2.2		MHz

[1] PWM frequency is provided for information only, for the purpose of general electromagnetic interference consideration. The output is a smooth DC voltage in both driving and holding modes.
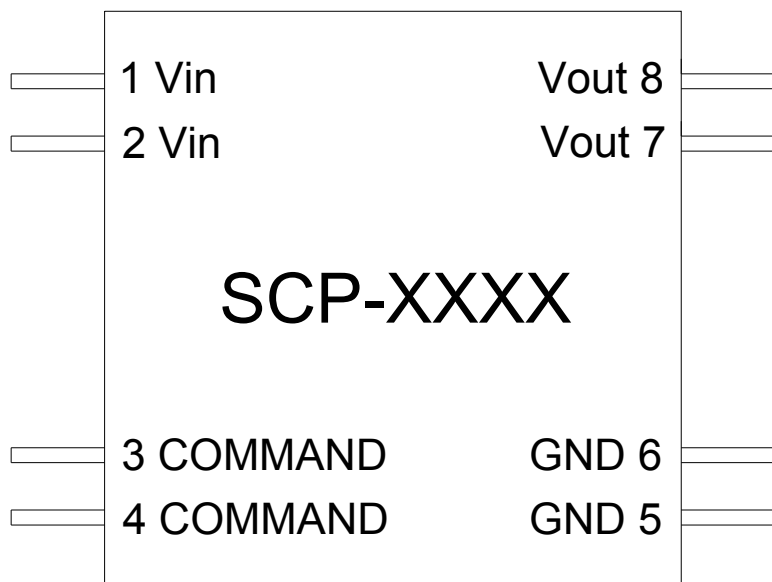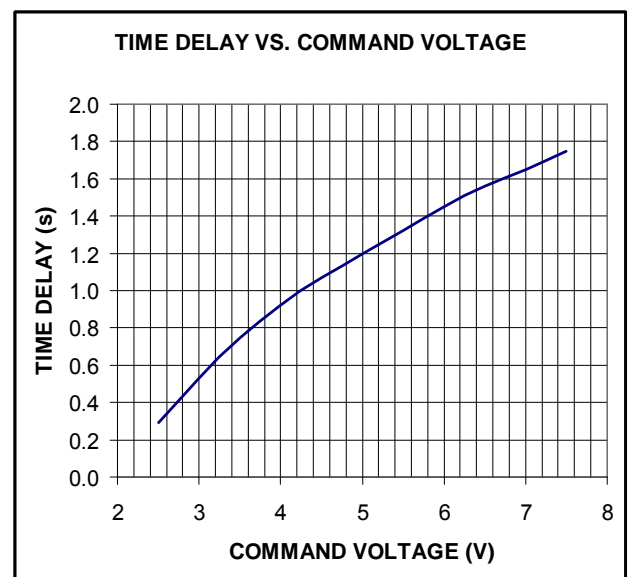

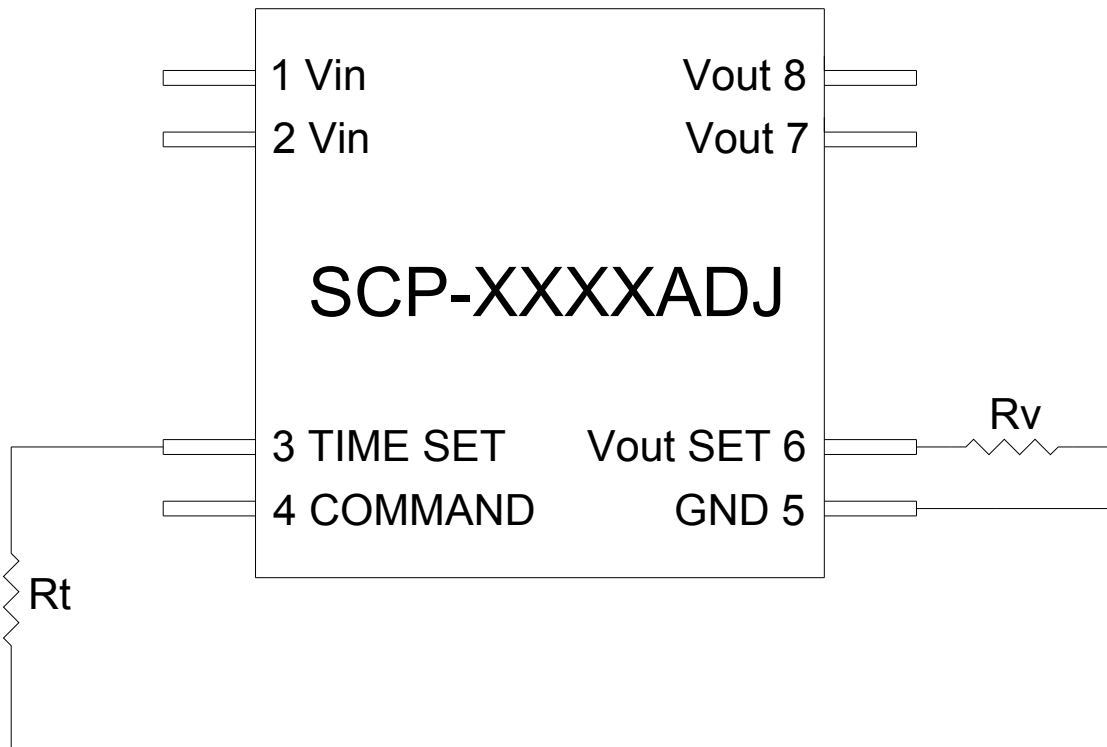**Figure 2**. SCP-6212 pinout

Figure 3.

2

Figure 4. SCP-6212ADJ pinout and external program resistors

Resistor selection Rt for time delay from command signal to output voltage reduction is made by setting Rt ≈ 6667t, where t is time in seconds. Resistor selection Rv for output voltage selection is made by Rv ≈ 144000/(Vout-0.49).
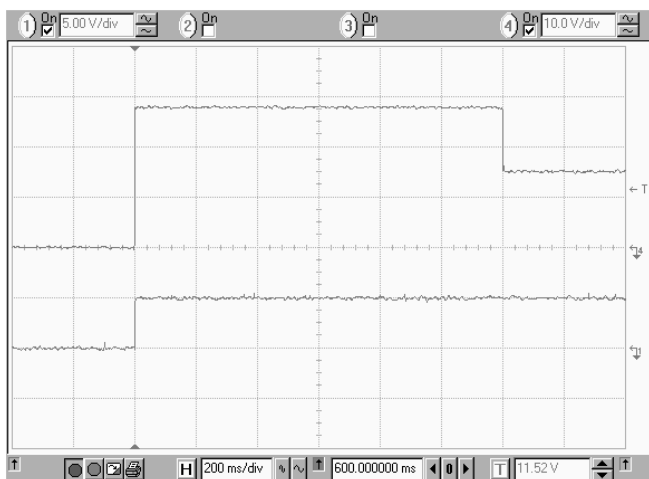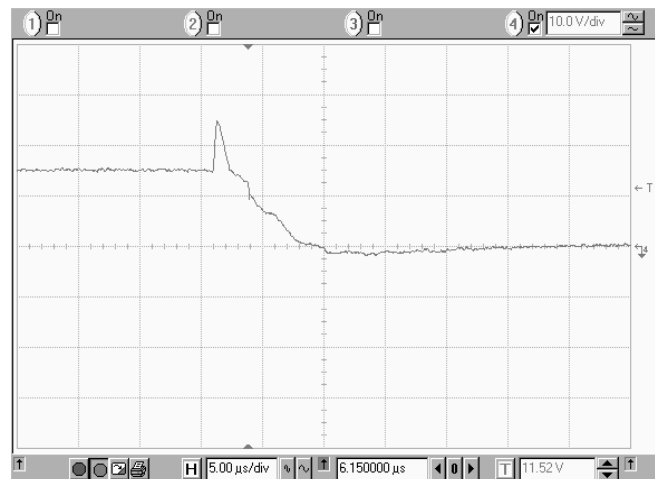

Figure 5. Turn-on, showing 28V to 15V transition.

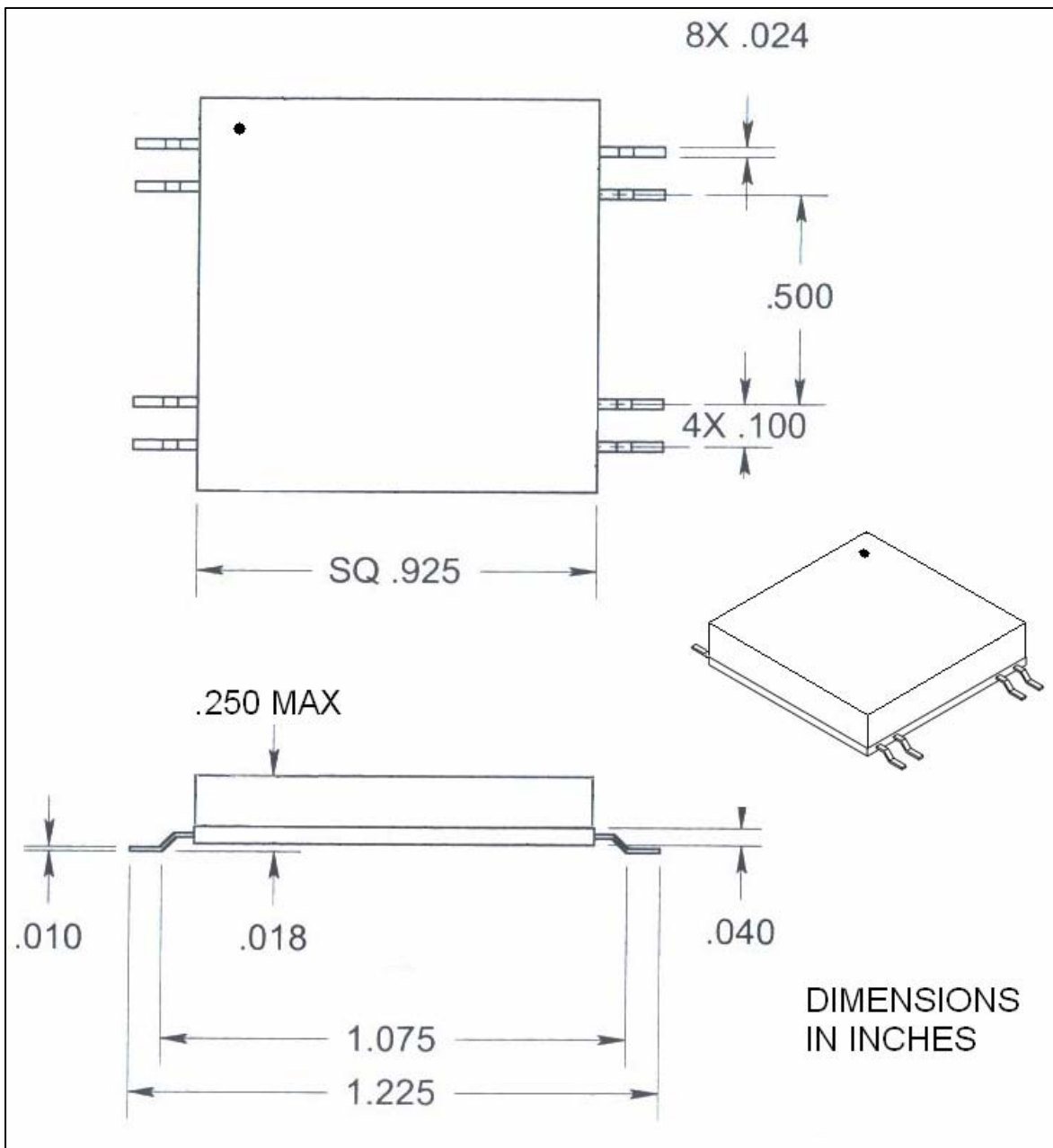**Figure 6.** Output under short-circuit conditions.

Figure 7. Mechanical outline

DATASHEET SCP-6212 Preliminary

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