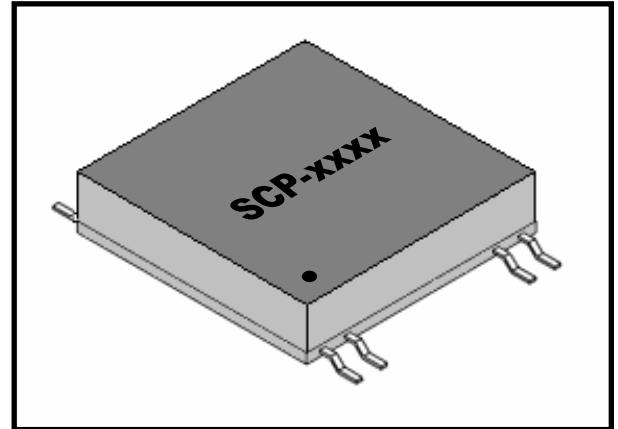


# SCP-6212/ SCP-6212ADJ 1.25A EFFICIENT SOLENOID DRIVER

## FEATURES

- Input voltage range 21V – 40V (12V – 40V for SCP-6212ADJ)
- 1.25A drive capability
- At  $V_{in} = 28V$ ,  $I_{load} = 1.25A$ 
  - $V_{out} = 28V$  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



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.

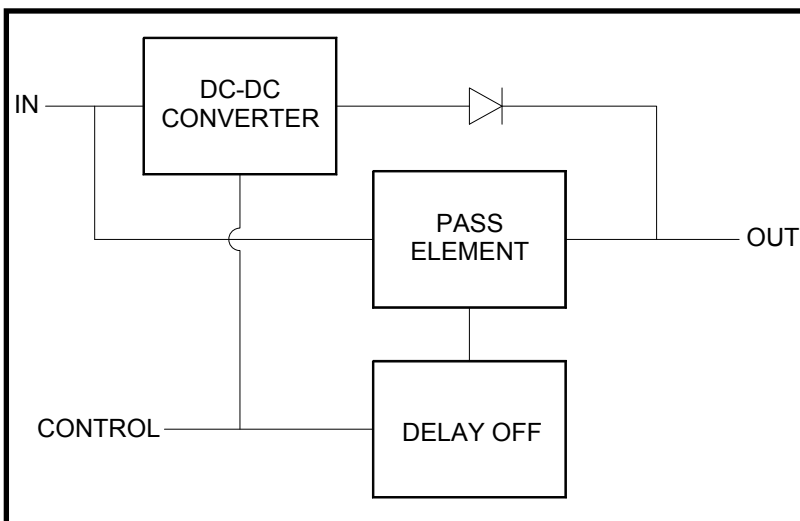


Figure 1. Block diagram

## 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°C to 85°C

## ELECTRICAL CHARACTERISTICS

$T_A = 25^{\circ}\text{C}$  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 ( $V_{in} - V_{out}$ )	$I_{out} = 0.25\text{A}$		0.25	0.40	V
	$I_{out} = 0.50\text{A}$		0.45	0.60	V
	$I_{out} = 1.25\text{A}$		0.85	1.00	V
time delay to hold-current mode	$V_{CMD} = 5.0\text{V}$	1.0	1.2	1.4	s
efficiency in hold-current mode	$I_{out} = 0.25\text{A}$	85	89		%
PWM frequency <sup>1</sup>			2.2		MHz

<sup>1</sup> 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.

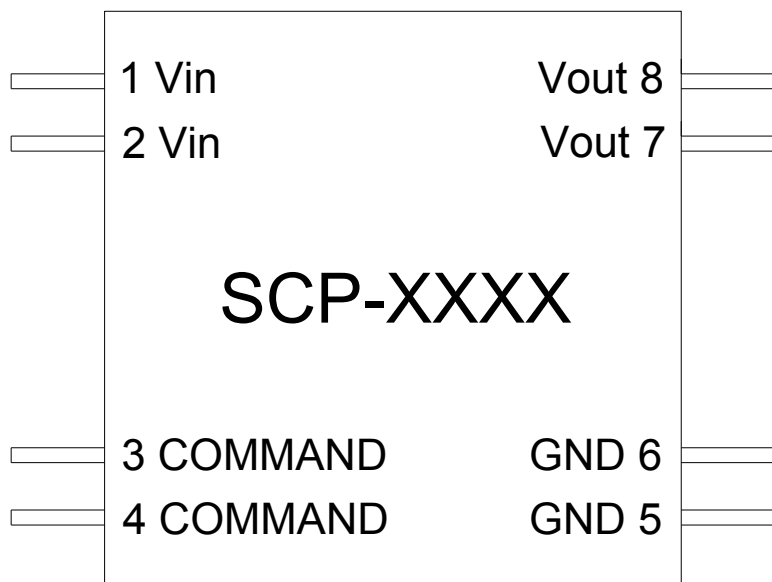


Figure 2. SCP-6212 pinout

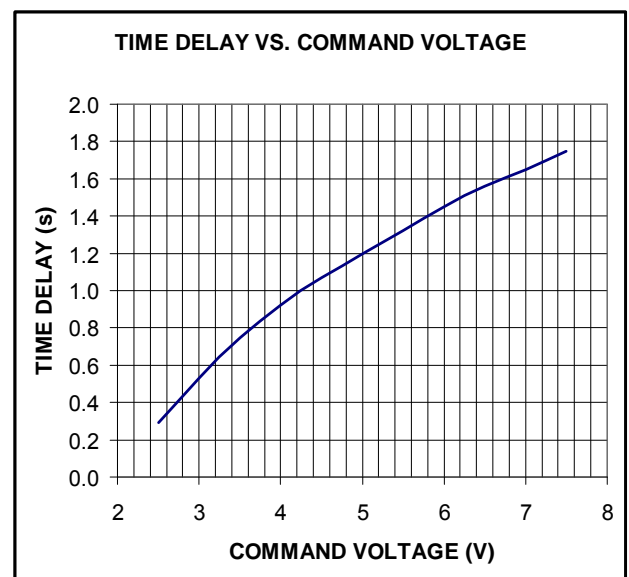
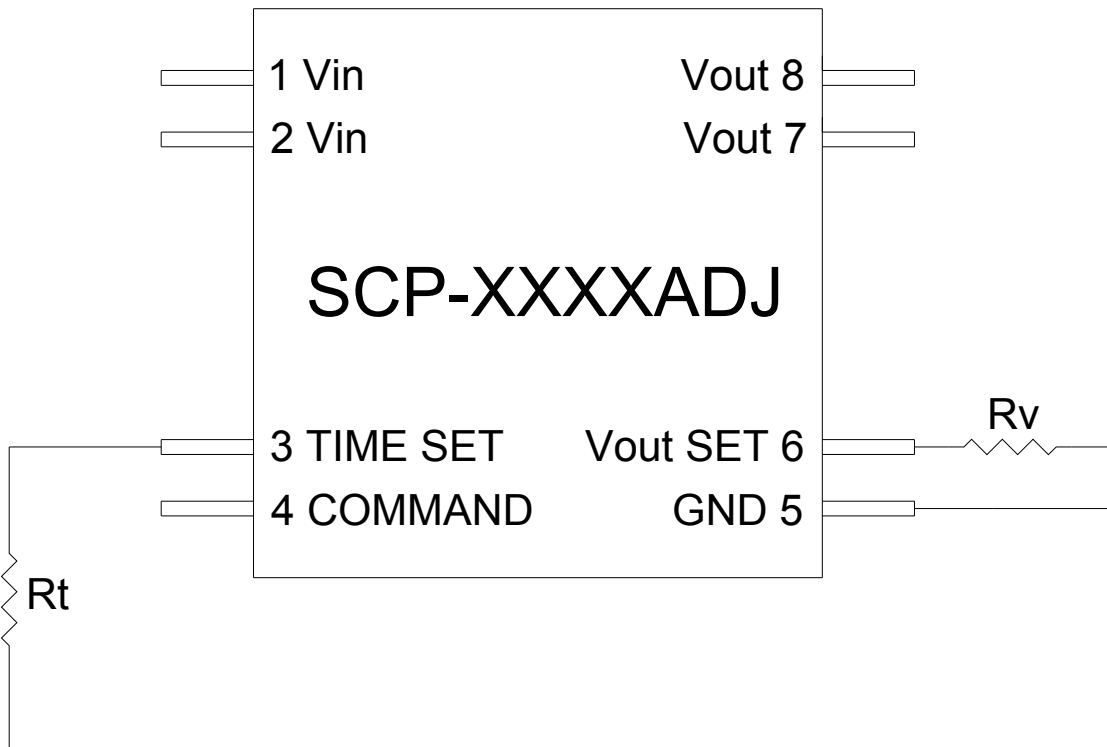
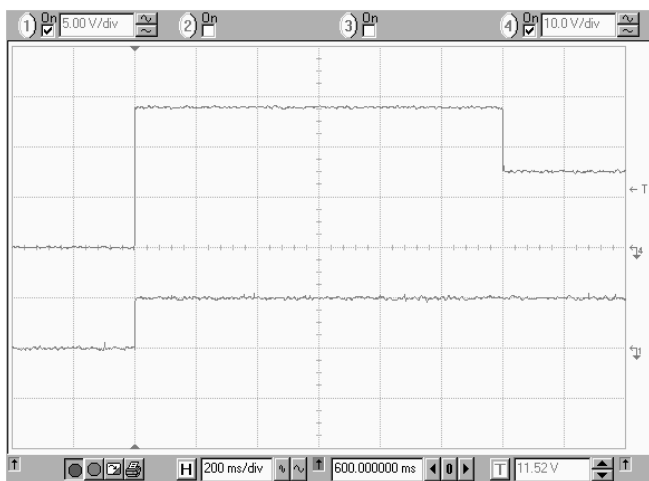


Figure 3.

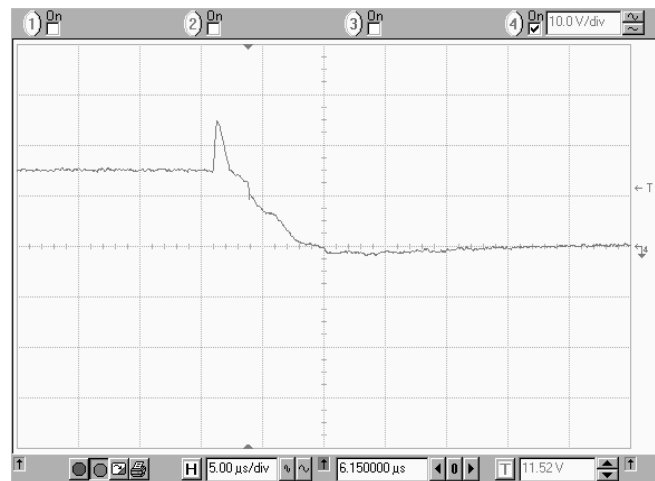


**Figure 4.** SCP-6212ADJ pinout and external program resistors

Resistor selection  $R_t$  for time delay from command signal to output voltage reduction is made by setting  $R_t \approx 6667t$ , where  $t$  is time in seconds. Resistor selection  $R_v$  for output voltage selection is made by  $R_v \approx 144000/(V_{out}-0.49)$ .



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



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

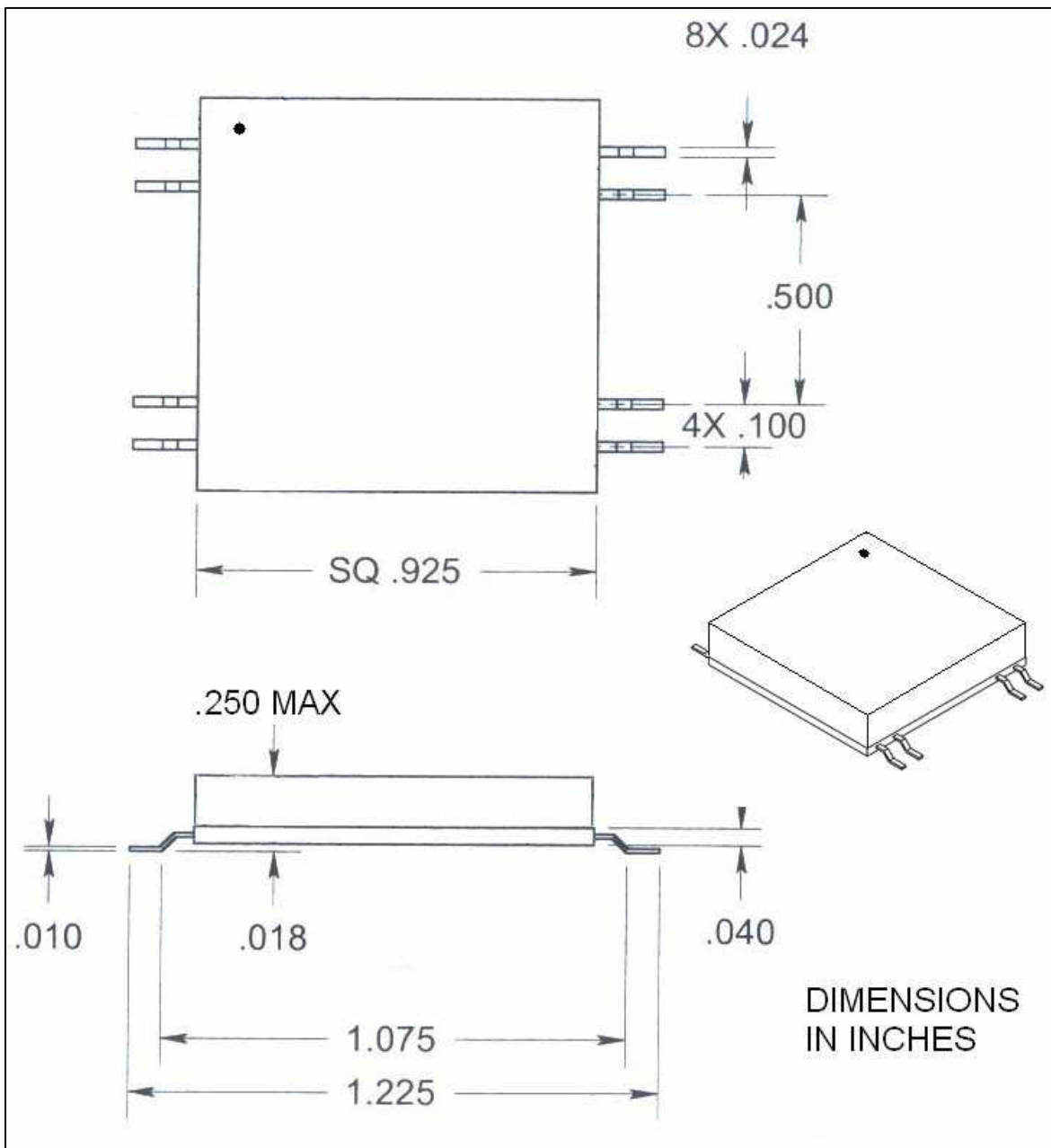


Figure 7. Mechanical outline

**DATASHEET SCP-6212 Preliminary**

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