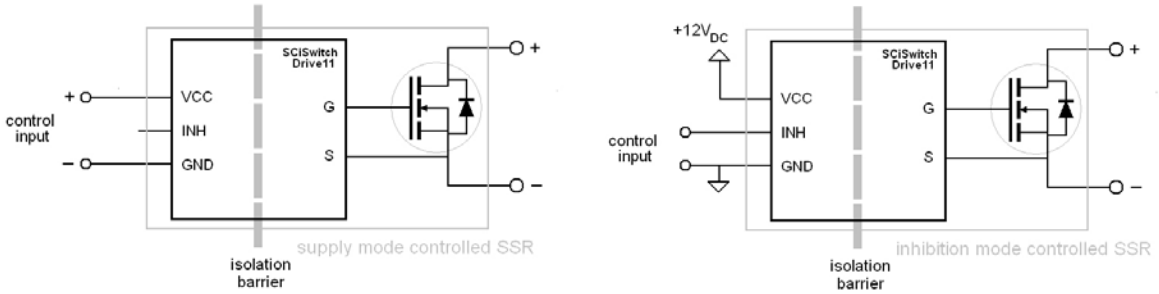
Preliminary Information

Photo non-contractual

HIGHLIGHTS

-For driving up to 1200V IGBT or MOSFET
-2 control modes
-Trigger-schmidt logic inhibition input for high noise inmunity
-Wide spread of supply voltage: 7-20V
-Configurable rise and fall times
-Electrical isolation of 3000Vac
-Easy to use

TYPICAL APPLICATIONS



SCi*Switch*^{Drive}**11** is a MOSFET & IGBT firing board which implements the usual gate driver functions. It has been designed for making DC solid state relays (thanks to the connection of a power MOSFET in the output). It provides a galvanic isolation up to 3000V$_{AC}$ between input and output.

SCi*Switch*^{Drive}**11** is capable of generate enough output peak current to switch the MOSFET in a few microseconds, it allows firing the MOSFET in parallel configuration.

The switching time of the MOSFET can be set by changing inner resistors (R1 & R2).

SCi*Switch*^{Drive}**11** turns on the MOSFET at a constant voltage of 13V, regardless of the supply voltage level. For easier using, the triggering can be done by switching the power supply of the board (supply mode control), as well, with logic inhibition signal and permanent input supplied (inhibition mode control). Includes a LED that monitors the MOSFET status.

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ELECTRICAL CHARACTERISTICS

Description	*symbol*	*notes/test conditions*	*Min*	*Typ*	*Max*	*Units*
Supply voltage	V_{CC}		7	12	20	V
Current consumption	Icc				120	mA
Inhibition input high logic state	V_{INH_HIGH}				5	V
Inhibition input low logic state	V_{INH_LOW}		0			V
Inhibition high-going treshold voltage	$V_{INH\_H-->L}$			3,3		V
Inhibition low-going treshold voltage	$V_{INH\_L-->H}$			1,8		V
Gate-source output voltage	V_{GS}		12,2	13	13,5	V
Gate-source voltage ripple					5	%
Output Peak current	I_{PEAK}				250	mA
Resistor R1 value	R1	**note 1**	50		470	Ω
Resistor R2 value	R2	**note 1**	2,2		100	kΩ
Input-to-output isolation	V_{ISO}	1 min @ 50Hz	3000			KV_{AC}
Supply-to-output delay	t_{dON_vcc}	supply mode control		6		µs
Supply-to-output delay	t_{dOFF_vcc}	supply mode control		10		µs
Inhibition-to-output delay	t_{dON_INH}	inhibition mode control		1		µs
Inhibition-to-output delay	t_{dOFF_INH}	inhibition mode control		1		µs
Output voltage rise time	t_{rise}	10% to 90% V_{GS} **note 2**				µs
Output voltage fall time	t_{fall}	10% to 90% V_{GS} **note 2**				µs

TRIGGER MODE

There are 2 ways to switch the output voltage: the supply mode control and the inhibition mode control. In the supply mode control, only 1 signal (VCC) is required to control the entire SSR.This signal supplies the circuit board and turns the output to high state (13V) while the voltage level (VCC) is over 7V, otherwise the output remains to low state (0V). In this mode the INH input must remain no connected. In the inhibition mode control, a permanent supply is required (VCC>7V) and the INH signal (TTL compatible and low sinked current) controls the output. In this mode some SSRs could be controlled directly by digital master system. In each mode the output state is monitorized by the on state LED.

	VCC	*INH*	*LED*	*V_{GS}*
Supply mode control	**L**	**N.C.**	**OFF**	**L**
	H	**N.C.**	**ON**	**H**
Inhibition mode control	**H**	**L**	**OFF**	**L**
	H	**H**	**ON**	**H**

note 1: Allways respecting the proportion: R2>20xR1 in order to mantain V_{GS} level and ripple into his margins.
note 2: rise time and fall time depens on the value of the resistors R1 and R2

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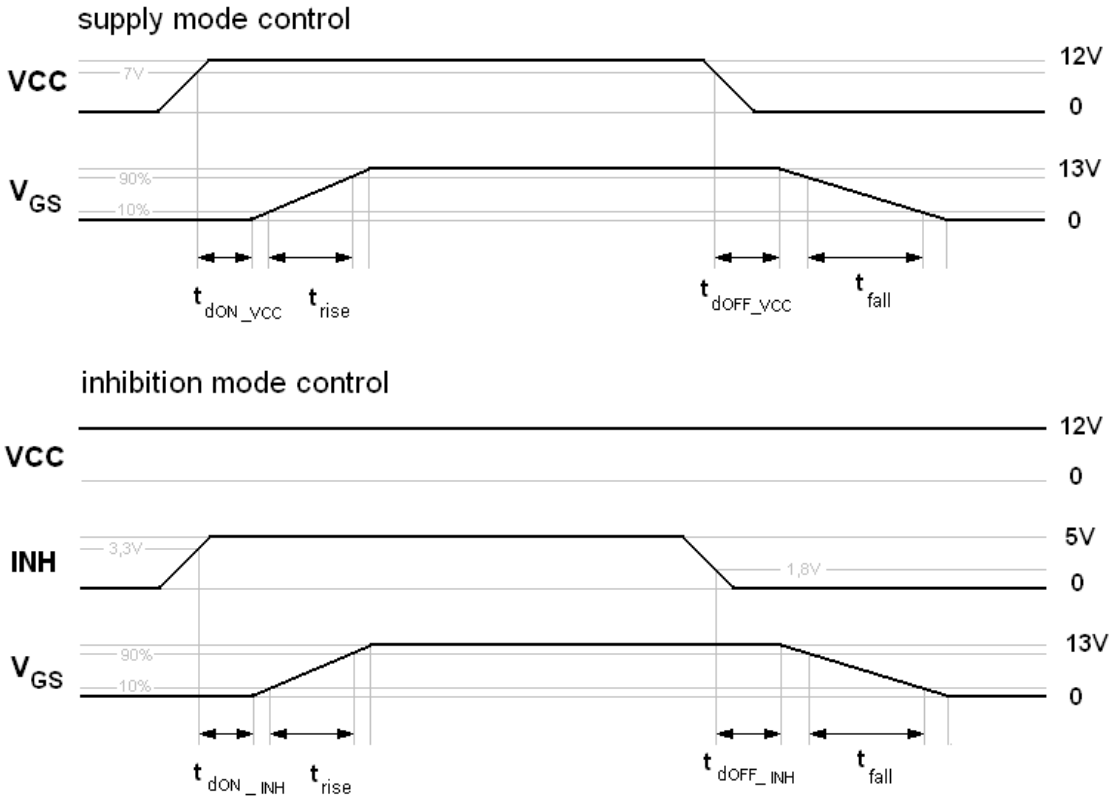


RISE & FALL TIME CONFIGURATION

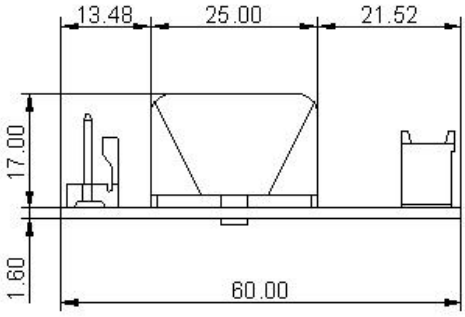
In order to obtain softer or harder switching of the outer MOSFET, rise and fall times can be set by changing the value of the resistors R1 and R2. The equivalent gate capacitance of the outer MOSFET (C_G) must be known. An aproximated way to obtain the times is:

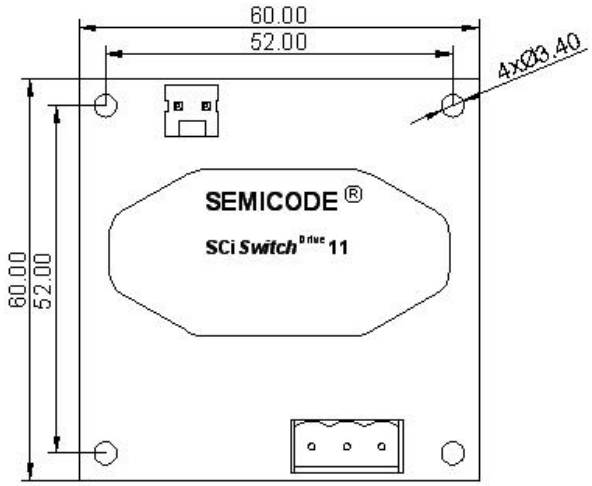
$$t_{rise}[\mu s] \approx 2 \cdot R1[\Omega] \cdot (C_G[uF] + 0{,}22)$$
$$t_{fall}[\mu s] \approx 2 \cdot R2[\Omega] \cdot (C_G[uF] + 0{,}22)$$

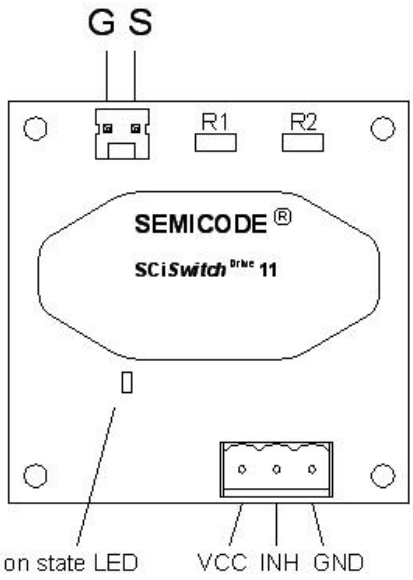
FIRING MOSFET IN PARALEL CONFIGURATION

SCi*Switch*^{Drive}**11** hasn't limitation by MOSFET gate charge. It allows to connect more than one MOSFET at the **SCi***Switch*^{Drive}**11** output in order to get a larger drain current SSR. In that case C_G for rise and fall time calculations must be the sum of each individual gate capacitance.

MECHANICAL DIMENSIONS & PINOUT







All dimensions are in milimeters

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MECHANICAL DIMENSIONS & PINOUT

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Preliminary Information: The product is in design and development. The datasheet represents the product as it is understood but details may change.
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