Omnirel 205 Crawford St. Leominster, MA 01453 (978)534-5776 Fax(978)537-4246, www.omnirel.com

OM9406SM

Preliminary Data Sheet

IGBT GATE DRIVER

For Driving IGBT Modules
up to 2500V and 1200A

FEATURES

- Out of Saturation/Short Circuit Protection of the IGBT
- Positive and Negative Gate Drive Voltage
- High Output Gate Current (±17A peak, Rgate=1.5Ω)
- Guaranteed Minimum On/Off Pulse Width for IGBT protection
- Internal Power Supply Monitoring with Undervoltage Lockout
- Fiber Optic Input Command and Status Feedback
- Negative Gate Voltage Monitoring with Overvoltage Lockout
- Duty Cycle from 0% to 100%
- Wide Ambient Temperature Range (-40°C to +85°C)

DESCRIPTION

This gate driver was specially designed for driving the new family of high voltage/high current IGBT Power Modules. Its high performance, high reliability and mounting concept insure overall system performance. Developed for traction inverters, switching power supplies, choppers and high energy pulse circuits for transportation and industrial applications.

ABSOLUTE MAXIMUM RATINGS (T_A=85°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	UNIT
Operating Temperature	T_A	-40	-	85	°C
Gate Peak Output Current *	$I_{O(PEAK)}$	-	-	±17	A
Output Switching Frequency	f_{out}			5	kHz
Isolation Voltage	Vis	5000			VAC

* Gate Resistors equal to 1.5 ohms

Omnirel 205 Crawford St. Leominster, MA 01453 (978)534-5776 Fax(978)537-4246, www.omnirel.com

Preliminary Data Sheet

ELECTRICAL CHARACTERISTICS: OM9406SM (T_A= 25°C unless otherwise specified)

Parameter	Test Condition	Min.	Typ.	Max	Unit
SWITCHING CHARACTERISTICS					
t_{PLH} Command to High Level Output Propagation Delay Time (Note 1)	R_G=1.5Ω, C_G=0.5uF f_{PWM}=5kHz Duty=50%		0.8		µS
t_{PHL} Command to Low Level Output Propagation Delay Time (Note 1)			1.3		µS
(t_{PHL}-t_{PLH}) Propagation Delay Difference Between Any Two Parts			0.5		µS
tr Rise Time (Note 2)			1.9		µS
tf Fall Time (Note 2)			0.7		µS
Gate Output Voltage (high) (Note 3)		+14.5	+14.8	+15.1	V
Gate Output Voltage (low) (Note 3)		-14.2	-14.8	-15.4	V
Gate Output Voltage (Note 3) (w/o Command input)		-14.2	-14.8	-15.4	V
Gate Output Minimum On Time			10		µS
Gate Output Minimum Off Time			10		µS
Output Duty Cycle		0		100	%

INPUT/OUTPUT CHARACTERISTICS

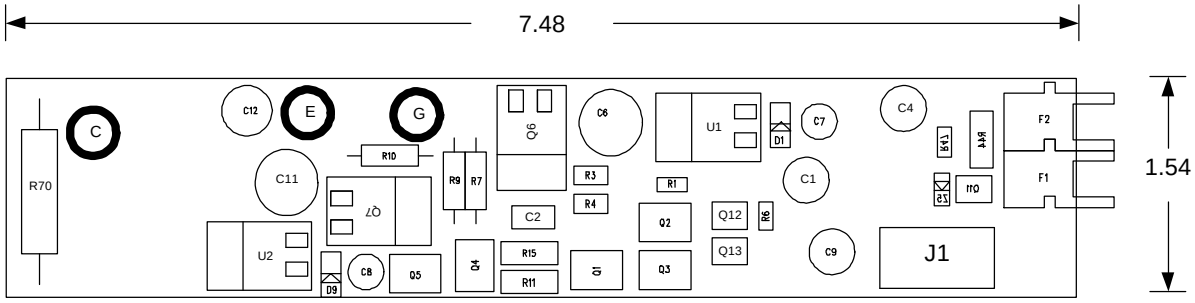
Characteristic	Symbol	Min.	Typ.	Max.	UNIT
Supply Voltage (Note 4)	+Vcc	+16	+18	+19	V
	-Vcc	-17	-18	-19	V
Supply Current (no load)	+Icc			70	mA
	-Icc			20	mA
Supply Current (full load) (Note 5)	+Icc			180	mA
	-Icc			160	mA
Command Input (Optical) (Note 6)		-19.5 -21.5			dBm
Status Output (Optical) (Note 7)		-16.8	-9.0	-0.7	dBm

Omnirel 205 Crawford St. Leominster, MA 01453 (978)534-5776 Fax(978)537-4246, www.omnirel.com

Preliminary Data Sheet

Notes:
1. Delay from Command to 10% change in output voltage, includes fiber optic link delay
2. Measured between 0 volts to 90% points
3. Measured with respect to IGBT Emitter connection
4. Over the temperature range of -40°C to +85°C
5. C_G=0.5uF, f_{PWM}=5kHz at 50% Duty Cycle
6. Guaranteed minimum input required for recognition, -19.5dBm for 1mm POF and -21.5dBm for 200um HCS fiber over the temperature range of -40°C to +85°C
7. Light output for a No Fault condition over the temperature range of -40°C to +85°C

MECHANICAL OUTLINE



Preliminary Data Sheet

FUNCTIONAL BLOCK DIAGRAM