

### Hybrid Integrated Circuit For Driving IGBT Modules

#### Description:

M57962L-71R-02 is a hybrid integrated circuit designed for driving n-channel IGBT modules in any gate amplifier application. This device operates as an isolation amplifier for these modules and provides the required electrical isolation between the input and output with an opto-coupler.

Short circuit protection is provided by a built-in desaturation detector. A fault signal is provided if the short circuit protection is activated.

#### Features:

- Built-in high CMRR opto-coupler ( $V_{CMR}$ : Typical 30 kV/ $\mu\text{s}$ , Min. 15 kV/ $\mu\text{s}$ )
- Electrical Isolation between input and output with opto-couplers ( $V_{ISO} = 2500\text{ V}_{RMS}$  for 1 min.)
- TTL compatible input interface
- Two supply drive topology
- Built-in short circuit protection circuit with a pin for fault output

#### Application:

To drive IGBT modules for inverter, AC Servo systems, UPC, CVCF inverter, and welding applications.

#### Recommended Modules:

$V_{CES} = 600\text{ V Series}$   
(up to 600A Class)

$V_{CES} = 1200\text{ V Series}$   
(up to 400A Class)

**Absolute Maximum Ratings,  $T_a \sim 20^\circ\text{C}$  to  $70^\circ\text{C}$  unless otherwise specified**

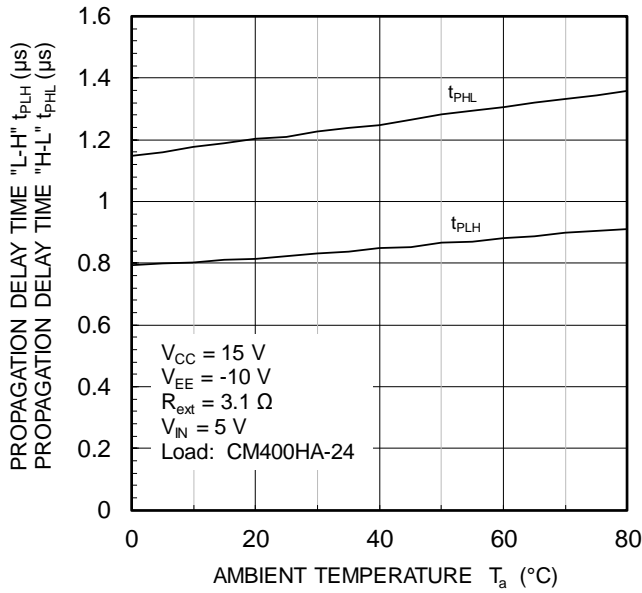
Item	Symbol	Test Conditions	Limit	Units
Supply Voltage*	$V_{CC}$	DC	18	Volts
	$V_{EE}$	DC	-15	Volts
Input Voltage	$V_I$		-1 ~ 7	Volts
Output Voltage	$V_O$	Output Voltage "H"	$V_{CC}$	Volts
Output Current	$I_{OHP}$	Pulse Width 2 $\mu\text{s}$ , $f = 20$ kHz	-5	Amperes
	$I_{OLP}$	Pulse Width 2 $\mu\text{s}$ , $f = 20$ kHz	5	Amperes
Output Current	$I_{OH}$	$f = 20$ kHz, 50% Duty Cycle	0.5	Amperes
Isolation Voltage	$V_{RMS}$	Sine wave Voltage 60 kHz, 1 min.	2500	Volts
Junction Temperature	$T_J$		85	$^\circ\text{C}$
Operating Temperature	$T_{opg}$		-20 ~ 60	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	(Differs from H/C Condition)	-25 ~ 100	$^\circ\text{C}$
Fault Output Current	$I_{FO}$		20	mA
Input Voltage	$V_{R1}$		50	Volts

**Electrical Characteristics,  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 15\text{V}$ ,  $-V_{EE} = 10\text{V}$  unless otherwise specified**

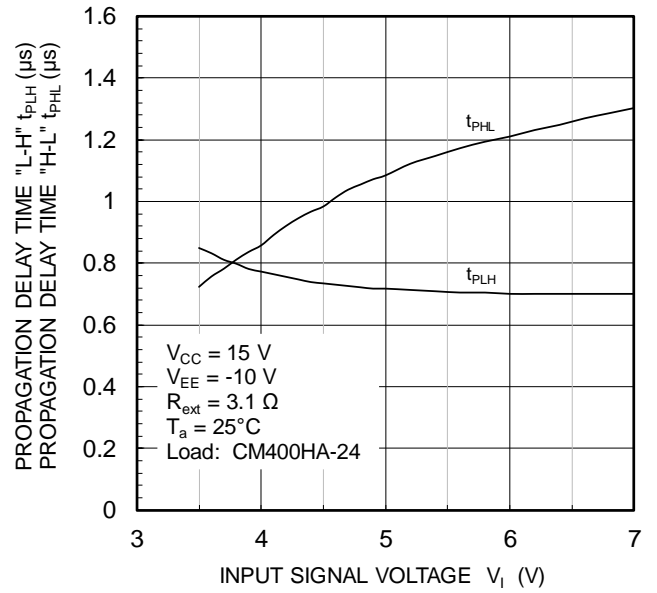
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Supply Voltage	$V_{CC}$	Recommended Range	14	15	—	Volts
	$V_{EE}$	Recommended Range	-7	—	-10	Volts
Pull-up Voltage on Input Side	$V_{IN}$	Recommended Range	4.75	5.00	5.25	Volts
Switching Frequency	$f$	Recommended Range	—	—	20	kHz
"H" Input Current	$I_H$	$V_{IN} = 5\text{V}$	—	16	—	mA
Gate Resistance	$R_G$	Recommended Range	2	—	—	$\Omega$
"H" Output Voltage	$V_{OH}$	Recommended Range	13	14	—	Volts
"L" Output Voltage	$V_{OL}$	Recommended Range	-8	-9	—	Volts
"L-H" Propagation Time	$t_{PLH}$	$I_H = 16$ mA	—	1.0	1.5	$\mu\text{s}$
"L-H" Rise Time	$t_r$	$I_H = 16$ mA	—	0.6	1.0	$\mu\text{s}$
"H-L" Propagation Time	$t_{PHL}$	$I_H = 16$ mA	—	1.0	1.5	$\mu\text{s}$
"H-L" Rise Time	$t_f$	$I_H = 16$ mA	—	0.4	1.0	$\mu\text{s}$
Reset Time of Protection	$t_{RESET}$	Between start and cancel (under input sign "L")	1	—	2	Ms
Fault Output Current	$I_{FO}$		—	5	—	mA
SC Detect Voltage	$V_{SC}$		15	—	—	Volts

Information presented is based upon manufacturers testing and projected capabilities.  
 This information is subject to change without notice.  
 The manufacturer makes no claim as to the suitability of use, reliability, capability,  
 or future availability of this product.

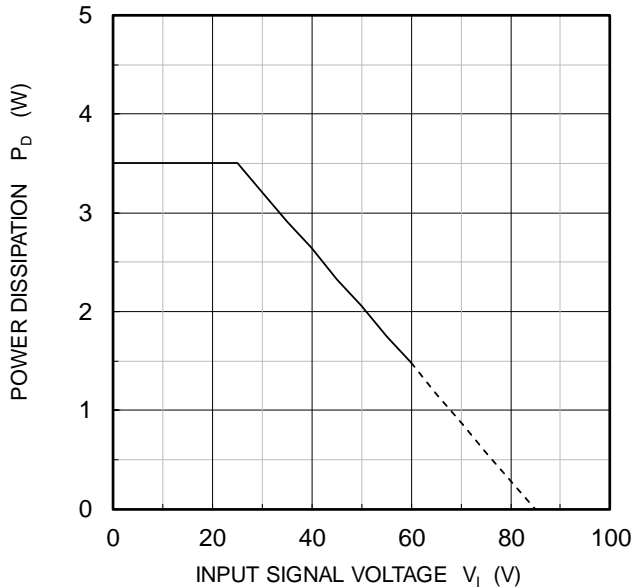
**$t_{PLH}$ ,  $t_{PHL}$  -  $T_a$  CHARACTERISTICS  
(TYPICAL)**



**$t_{PLH}$ ,  $t_{PHL}$  -  $V_i$  CHARACTERISTICS  
(TYPICAL)**



**POWER DISSIPATION VS.  
AMBIENT TEMPERATURE  
(MAXIMUM RATING)**



**DISSIPATION CURRENT VS.  
SUPPLY VOLTAGE  
INPUT SIGNAL "L" (TYPICAL)**

