M57915L

HYBRID IC FOR DRIVING TRANSISTOR MODULES

DESCRIPTION

M57915L is a Hybrid Integrated Circuit designed for driving Transistor Modules QM10XX, QM20XX, etc., in an Inverter application. This device operates as an isolation amplifier for Transistor Modules due to the electrical isolation between the input and output circuits with a opto-coupler, as well as its driving capability which only requires single power supply.

FEATURES

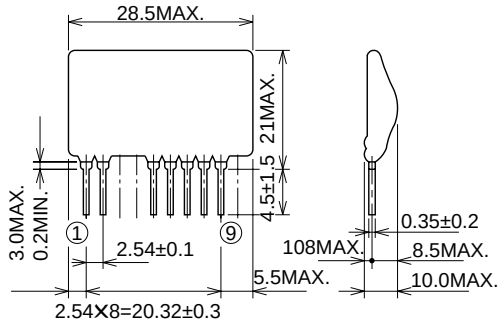
- Electrical isolation between input and output with integrated opto-coupler. V_{iso}=2500Vrms
- Applicable with single power supply (7 ~ 9V)
- Applicable with TTL input

APPLICATION

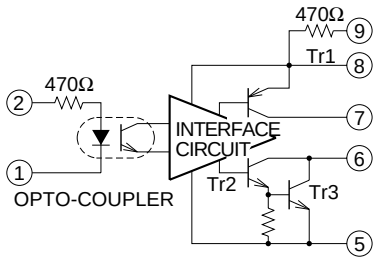
To drive Transistor Modules for Inverter applications

OUTLINE DRAWING

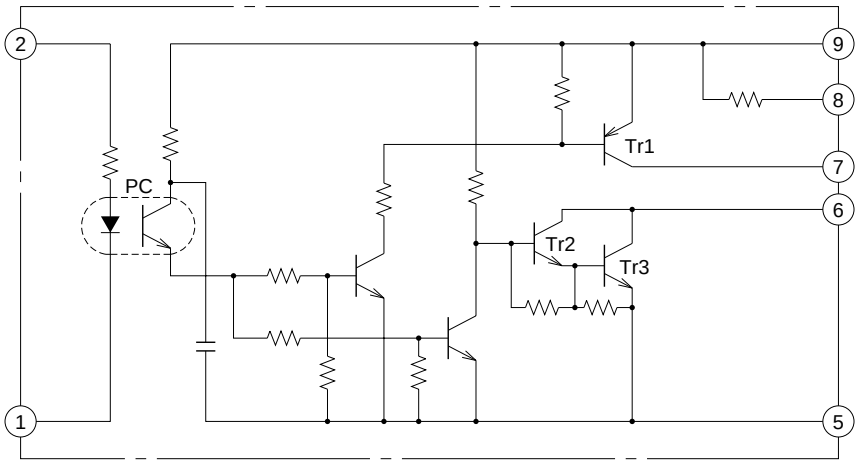
Dimensions in mm



BLOCK DIAGRAM



CIRCUIT DIAGRAM



MITSUBISHI ELECTRIC

ABSOLUTE MAXIMUM RATINGS (T_a=–20 ~ +70°C, unless otherwise noted)

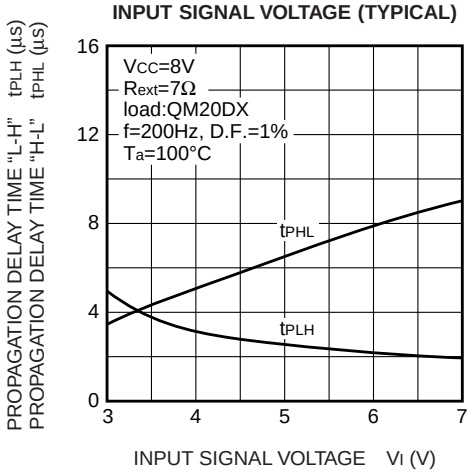
Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage	DC	14	V
V_I	Input voltage	Between terminals ① and ②	–1 ~ 7	V
I_{OH}	Output current		–1	A
I_{OLP}		Pulse width 10µs, Freq. 2kHz, peak value	3	A
V_{iso}	Isolation voltage	Sinewave voltage 60Hz/min. T_a=25°C	2500	Vrms
T_j	Junction temperature		100	°C
T_{opg}	Operating temperature		–20 ~ +70	°C
T_{stg}	Storage temperature		–25 ~ +100	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C, V_{CC}=8V, unless otherwise noted)

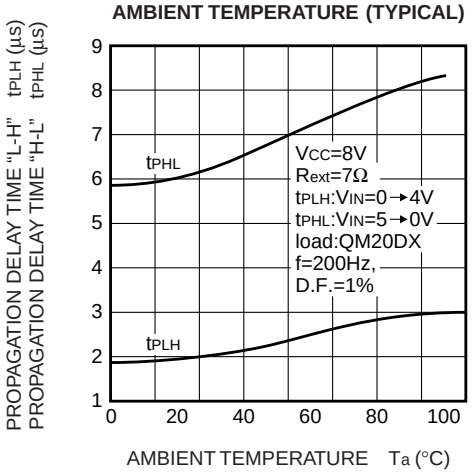
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{IH}	“H” input current	V_I=5V	–	7	–	mA
I_{OH}	“H” output current	R_{ext}=7Ω	–	–0.5	–	A
I_{OLP}	“L” output peak current	C_{ext}=47µF	–	1	–	A
P_D	Internal power dissipation	I_{OH}=–0.5A, I_{OLP}=1A, f=2kHz, D.F.=50%	–	0.8	–	W
t_{PLH}	“L-H” propagation delay time	V_I=0→4V, T_j=100°C	–	5	10	µs
t_{PHL}	“H-L” propagation delay time	V_I=5→0V, T_j=100°C	–	8	15	µs

PERFORMANCE CURVES

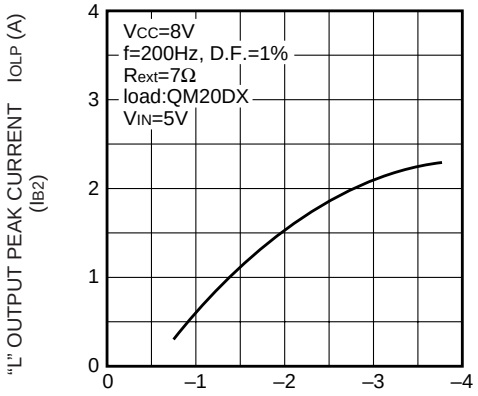
PROPAGATION DELAY TIME VS. INPUT SIGNAL VOLTAGE (TYPICAL)



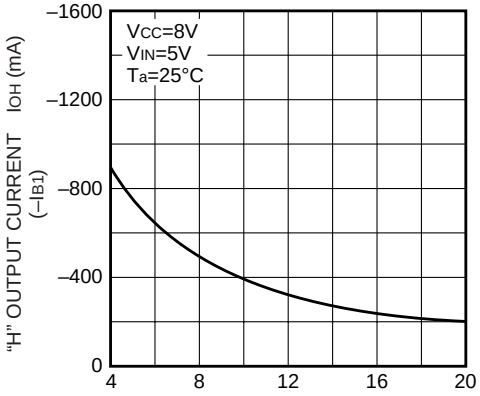
PROPAGATION DELAY TIME VS. AMBIENT TEMPERATURE (TYPICAL)



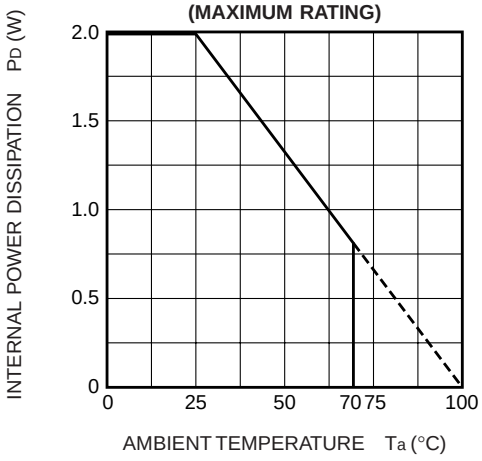
"L" OUTPUT PEAK CURRENT VS. REVERSE SUPPLY VOLTAGE (TYPICAL)



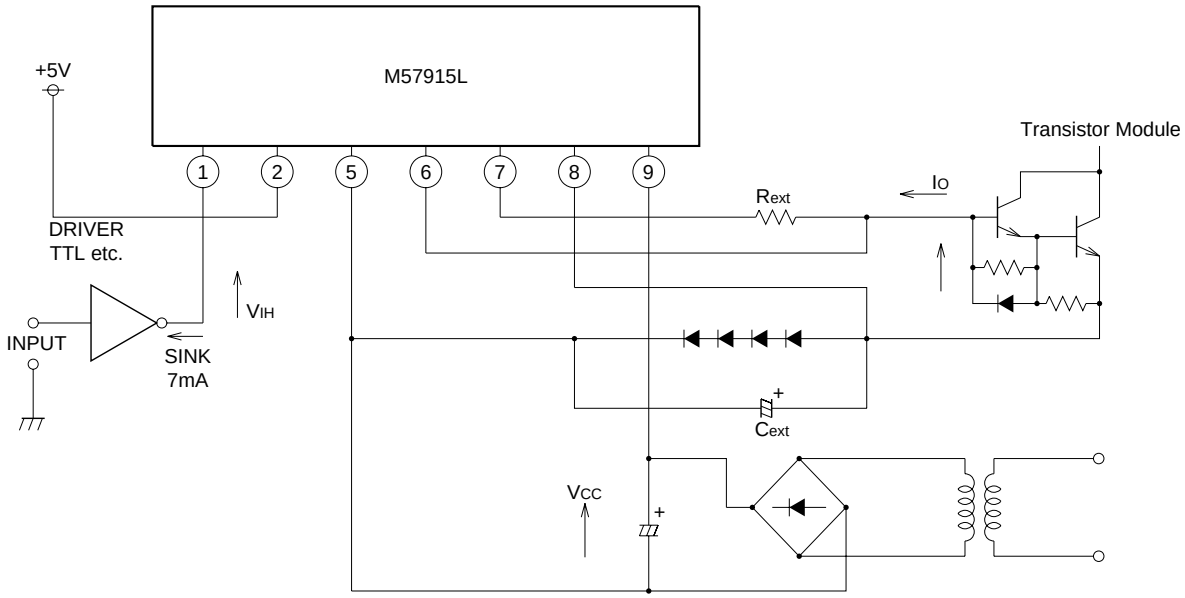
"H" OUTPUT CURRENT VS. "H" LIMITING RESISTOR (TYPICAL)

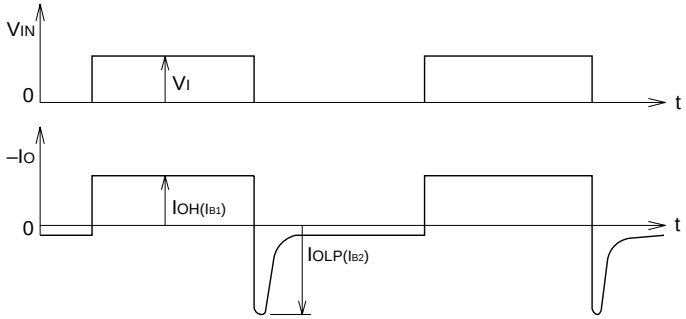


INTERNAL POWER DISSIPATION VS. AMBIENT TEMPERATURE (MAXIMUM RATING)



TEST CIRCUIT AND APPLICATION CIRCUIT EXAMPLE





Note: I_{OH} and I_{OLP} correspond to base forward current I_{B1} and base reverse current I_{B2} of the transistor module to be driven respectively.