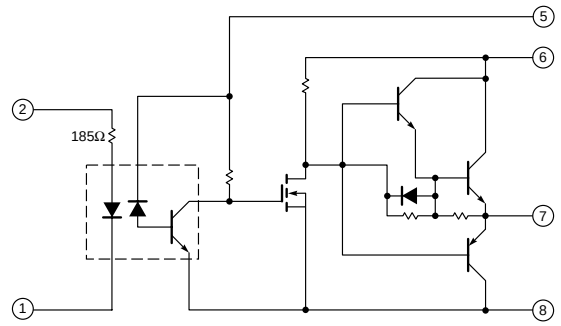
M57957L

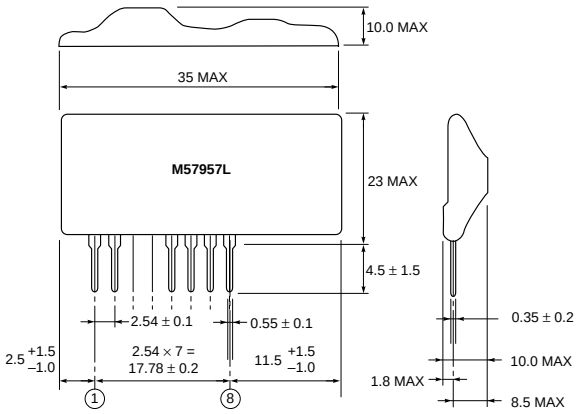
HYBRID IC FOR DRIVING IGBT MODULES

Block Diagram

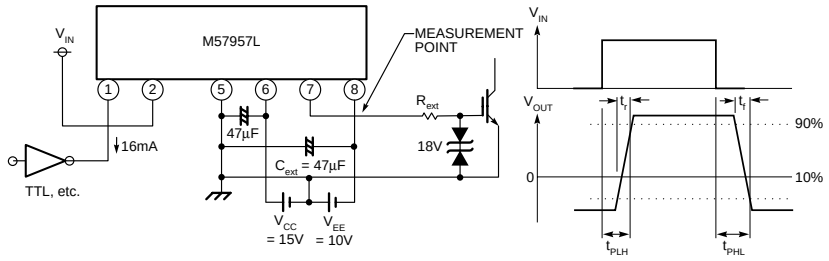


Outline Drawing

Dimensions in mm



Test Circuit



Precaution:
The value of "R_{ext}" should be selected according to the guidelines in Section 4.6.2 of Application Notes.

Also, the value of "R_{ext}" should be selected so that maximum limits, I_{OHP} and I_{OLP} are not exceeded.

Hybrid Integrated Circuit For Driving IGBT Modules

Description:
M57957L 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.

Features:

- ☐ Built in high CMRR opto-coupler (V_{CMR} : Typical 30kV/µs, Min. 15kV/µs)
- ☐ Electrical Isolation between input and output with opto-couplers (V_{iso} = 2500, V_{RMS} for 1 min.)
- ☐ TTL compatible input interface
- ☐ Two supply drive topology
- ☐ Short differential of propagation time (t_{PLH}, t_{PHL} to Max. 1.5µs, Typical 1.0µs)

Application:
To drive IGBT modules for inverter, AC Servo systems, UPS, CVCF inverter, and welding applications.

Recommended Modules:
V_{CES} = 600V Series
(up to 200A Class)

V_{CES} = 1200V Series
(up to 100A Class)

V_{CES} = 1400V Series
(up to 100A Class)

MITSUBISHI ELECTRIC

Absolute Maximum Ratings, T_a = 25°C unless otherwise specified

Item	Symbol	T_a (°C)	Test Conditions	Limit	Units
Supply Voltage	V_{CC}	25	DC	18	Volts
	V_{EE}	25	DC	-12	Volts
Input Voltage	V_I	25	Between Terminal 1 and 2	-1 ~ 7	Volts
Output Voltage	V_O	25	Output Voltage "H"	V_{CC}	Volts
Output Current	I_{OHP}	25	Pulse Width 2µs, f = 30kHz	-2	Amperes
	I_{OLP}	25	Pulse Width 2µs, f = 30kHz	2	Amperes
Output Current	I_{OH}	25	f = 30kHz, DF = 50%	0.2	Amperes
Isolation Voltage	V_{iso}	25	Sinewave Voltage 60Hz, 1 min.	2500	V_{rms}
Junction Temperature	T_j	—		100	°C
Operating Temperature	T_{opr}	—	No Condensation	-20 ~ 60	°C
Storage Temperature	t_{stg}	—	No Condensation	*-25 ~ 100	°C

*But differs from H/C condition.

Electrical Characteristics, T_a = 25°C, V_{CC} = 15V, V_{EE} = –10V unless otherwise specified

Characteristics	Symbol	V_{CC}/V_{EE} (°C)	T_a (°C)	Test Conditions	Min.	Typ.	Max.	Units
Supply Voltage	V_{CC}	—	25	Recommended Range	14	15	—	Volts
	V_{EE}	—	25	Recommended Range	-9	-10	—	Volts
Pull-up Voltage on Input Side	V_{IN}	—	25	Recommended Range	4.75	5.00	5.25	Volts
"H" Input Current	I_{IH}	15/-10	25	V_{IN} = 5V	—	16	—	mA
"H" Output Voltage	V_{OH}	15/-10	25		13	14	—	Volts
"L" Output Voltage	V_{OL}	15/-10	25		-8	-9	—	Volts
Internal Power Dissipation	P_D	15/-10	25	f = 30kHz, DF = 50%, Module 200A, 600V IGBT	—	1.2	—	Watts
"L-H" Propagation Time	t_{PLH}	15/-10	—	V_I = 0 to 4V, T_j = 100°C	—	1.0	1.5	µs
"L-H" Rise Time	t_r	15/-10	—	V_I = 0 to 4V, T_j = 100°C	—	0.6	1.0	µs
"H-L" Propagation Time	t_{PHL}	15/-10	—	V_I = 5 to 0V, T_j = 100°C	—	1.0	1.5	µs
Fall Time	t_f	15/-10	—	V_I = 5 to 0V, T_j = 100°C	—	0.4	1.0	µs