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M57951L

HYBRID IC FOR DRIVING TRANSISTOR MODULES

DESCRIPTION

M57951L is a Hybrid Integrated Circuit designed for driving Transistor Modules QM30DY, QM50DY, 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, and includes three independent circuits.

FEATURES

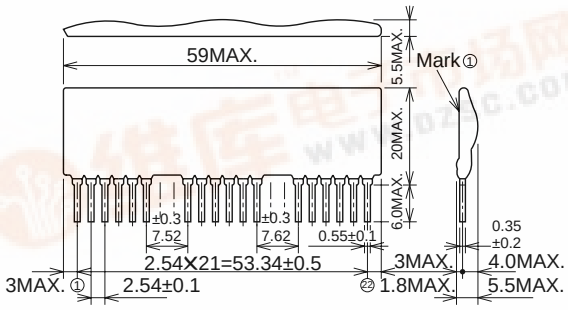
- Three independent circuits are included.
  Isolation voltage: V_{iso}=2500Vrms
- Each circuit can be driven by single power supply

APPLICATION

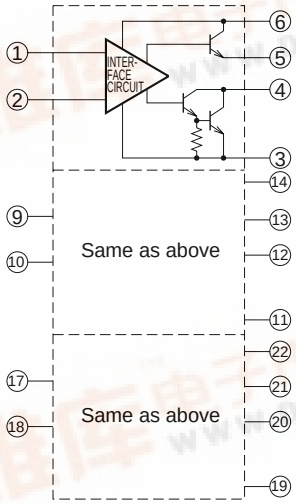
To drive Transistor Modules for Inverter applications

OUTLINE DRAWING

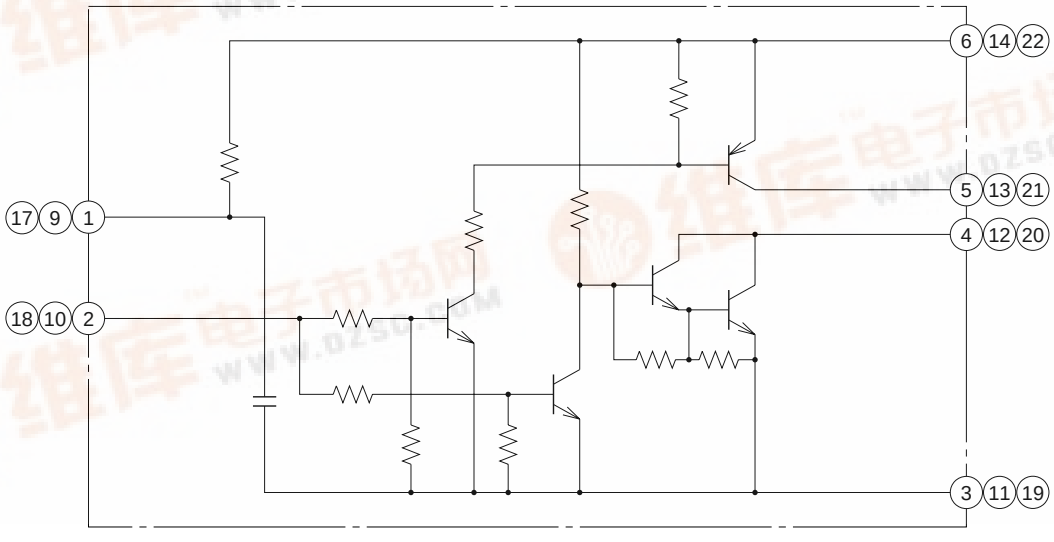
Dimensions in mm



BLOCK DIAGRAM



CIRCUIT DIAGRAM



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

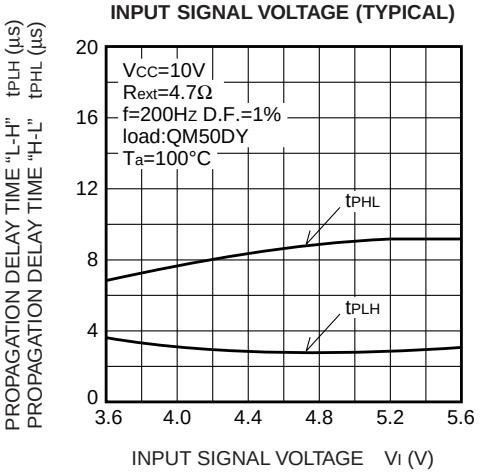
Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage	DC	14	V
I_{OH}	Output current	DC	–0.8	A
I_{OLP}		Pulse width 10µs, Freq. 2kHz, peak value	4	A
V_{iso}	Isolation voltage	Sinewave voltage 60Hz/min. T_a=25°C	2500	Vrms
T_j	Junction temperature		125	°C
T_{opg}	Operating temperature		–20 ~ +70	°C
T_{stg}	Storage temperature		–25 ~ +100	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C, V_{CC}=10V, unless otherwise noted)

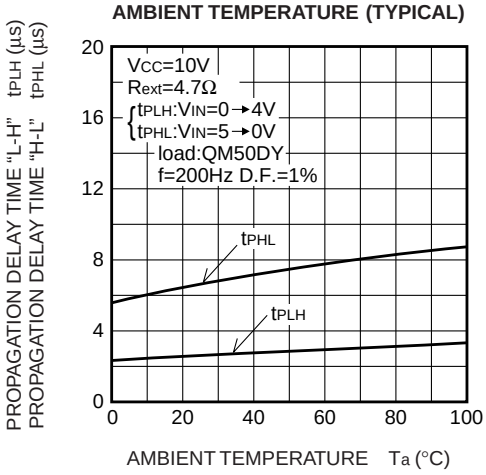
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{OH}	"H" output current	R_{ext}=9Ω	–	–0.65	–	A
I_{OLP}	"L" output peak current	C_{ext}=47µF	–	3	–	A
P_D	Internal power dissipation	I_{OH}=–0.65A, I_{OLP}=2A, f=2kHz, D.F.=50%	–	2.1	–	W
t_{PLH}	"L-H" propagation delay time	V_I=0→4V, T_j=100°C	–	5	10	µs
t_r	"L-H" rise time	V_I=0→4V, T_j=100°C	–	–	1	µs
t_{PHL}	"H-L" propagation delay time	V_I=5→0V, T_j=100°C	–	8	15	µs
t_f	"H-L" fall time	V_I=5→0V, T_j=100°C	–	–	1	µs

PERFORMANCE CURVES

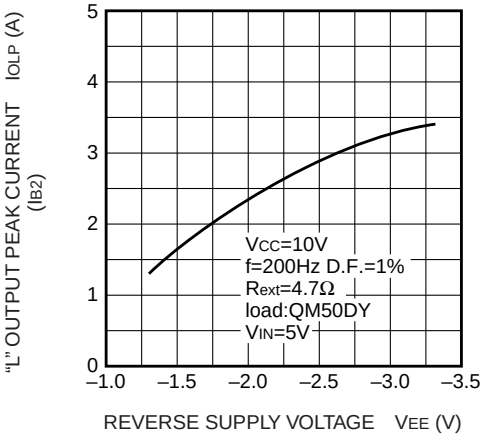
PROPAGATION DELAY TIME VS. INPUT SIGNAL VOLTAGE (TYPICAL)



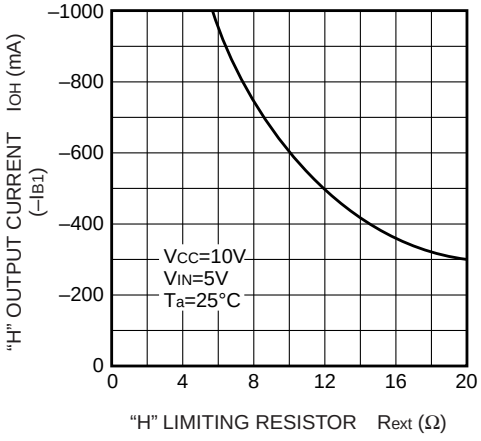
PROPAGATION DELAY TIME VS. AMBIENT TEMPERATURE (TYPICAL)



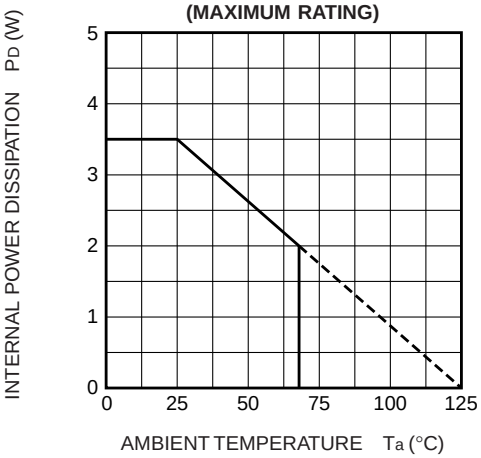
"L" OUTPUT PEAK CURRENT VS. REVERSE SUPPLY VOLTAGE (TYPICAL)



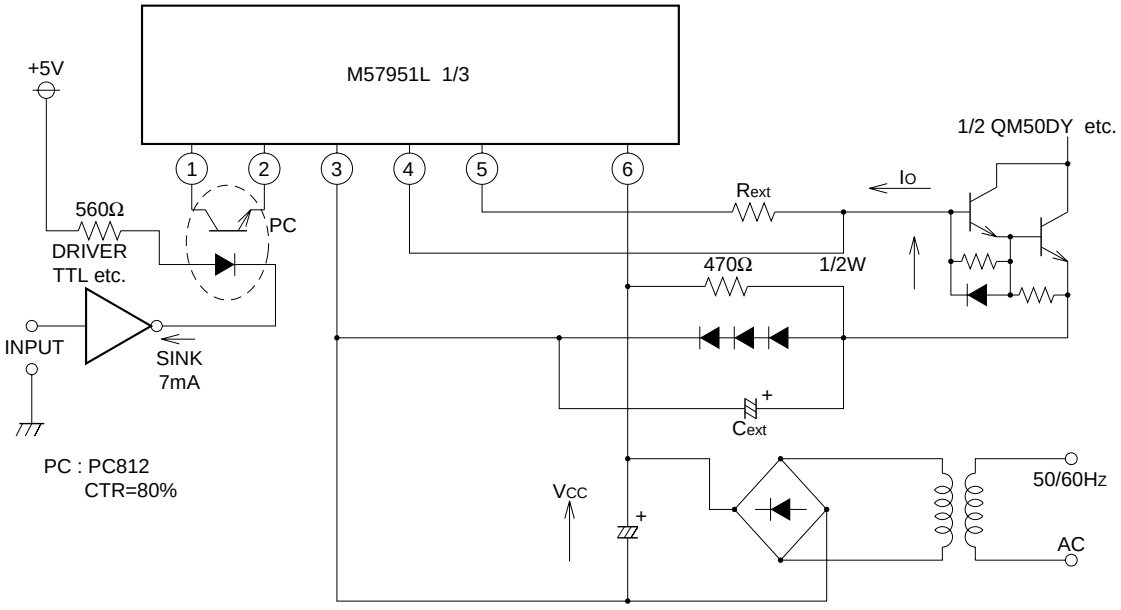
"H" OUTPUT CURRENT VS. "H" LIMITING RESISTOR (TYPICAL)

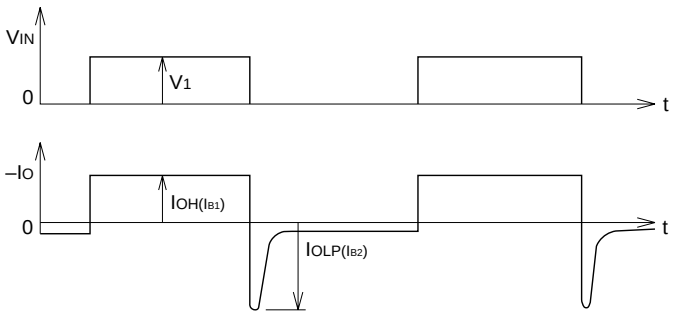


INTERNAL POWER DISSIPATION VS. AMBIENT TEMPERATURE (MAXIMUM RATING)



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 modules to be driven respectively.