

M57950L

HYBRID IC FOR DRIVING TRANSISTOR MODULES

DESCRIPTION

M57950L 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 features a small outline of 10-pin SIP.

FEATURES

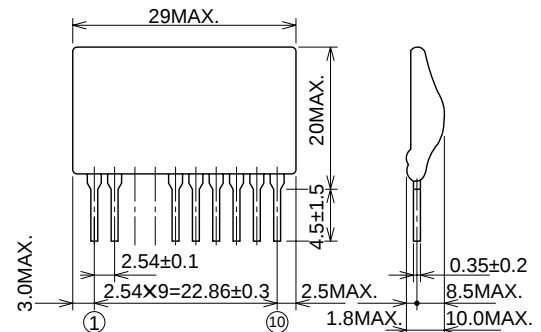
- Electrical isolation between input and output with integrated opto-coupler. $V_{iso}=2500V_{rms}$
Large load and sink current driving capability
..... $I_{OL}=-1A$ (MAX)
..... $I_{OLP}=-3A$ (MAX)
- Applicable with TTL input
- Small outline, 10-pin SIP package

APPLICATION

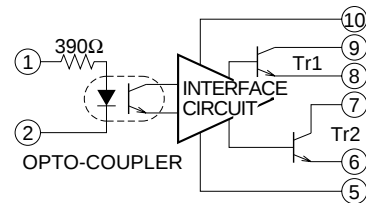
To drive Transistor Modules for Inverter applications

OUTLINE DRAWING

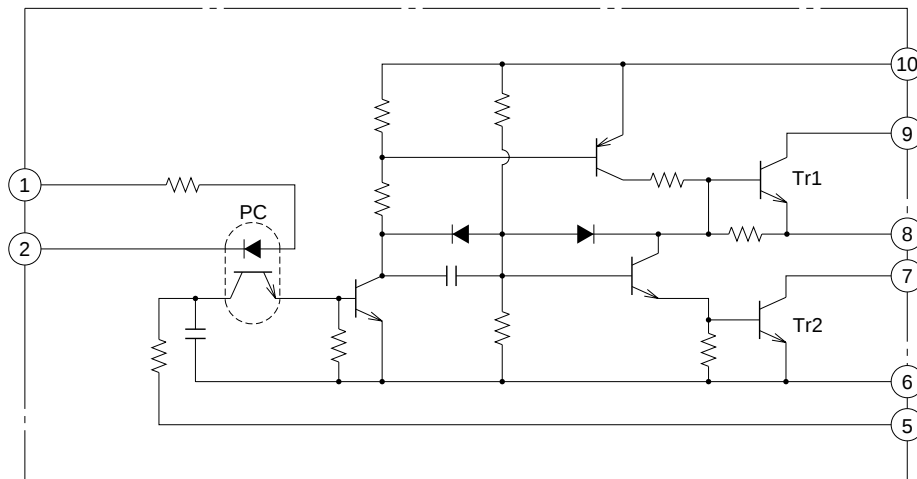
Dimensions in mm



BLOCK DIAGRAM



CIRCUIT DIAGRAM



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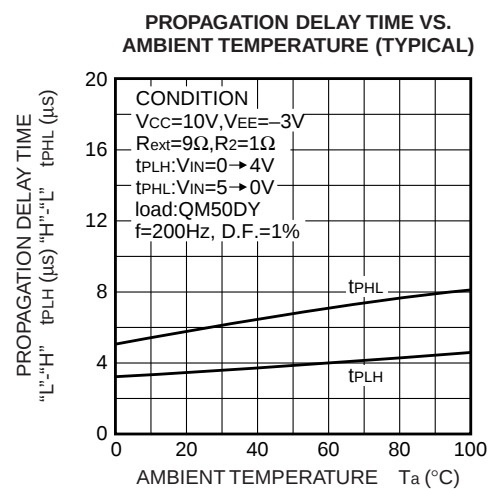
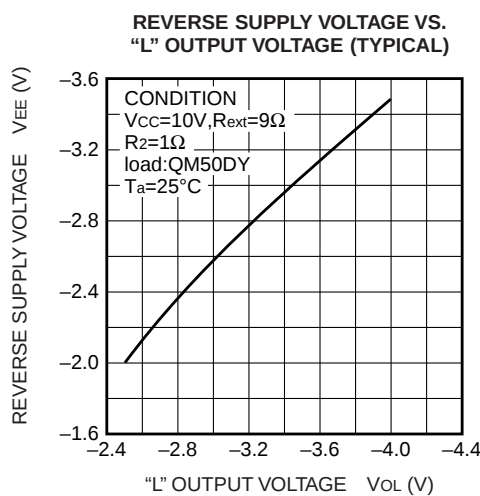
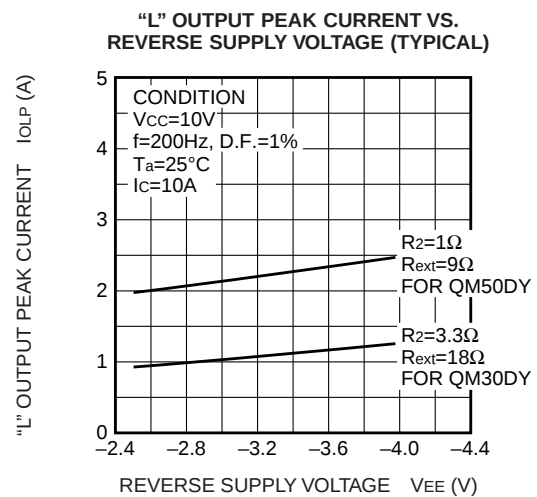
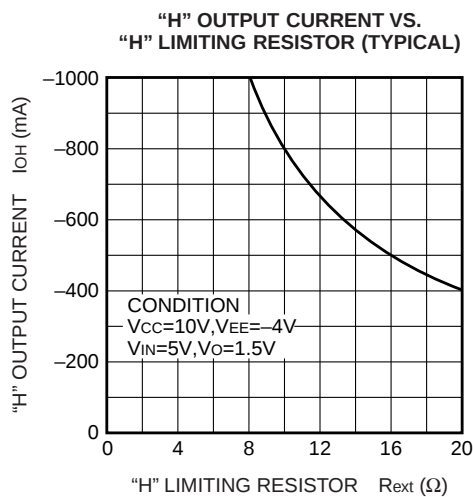
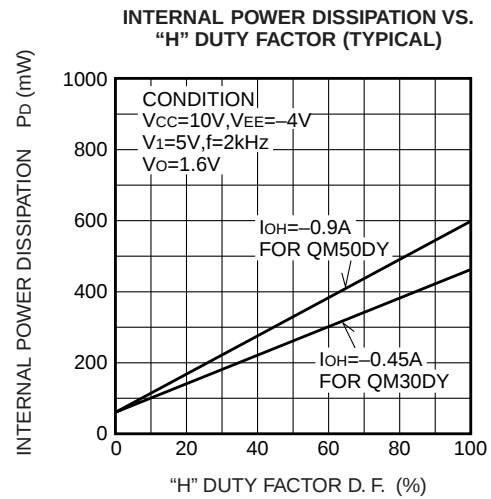
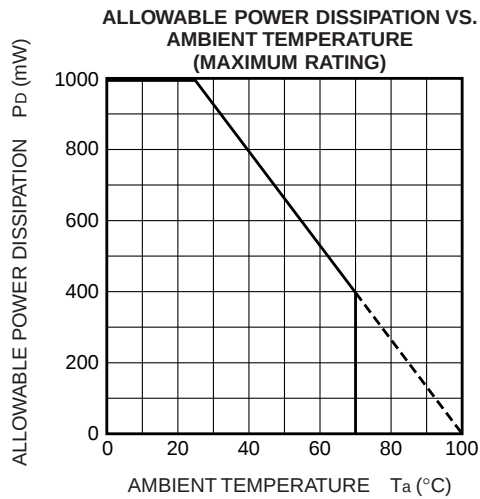
ABSOLUTE MAXIMUM RATINGS (Ta=-20 ~ +70°C, unless otherwise noted)

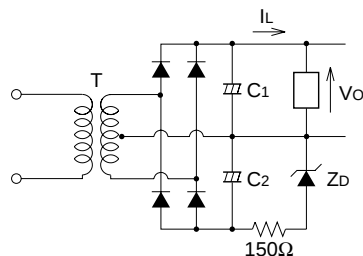
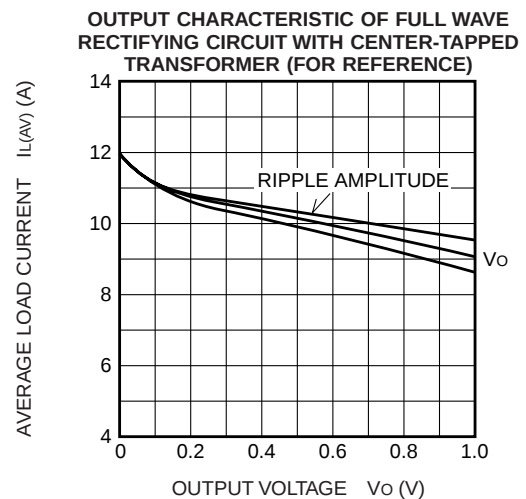
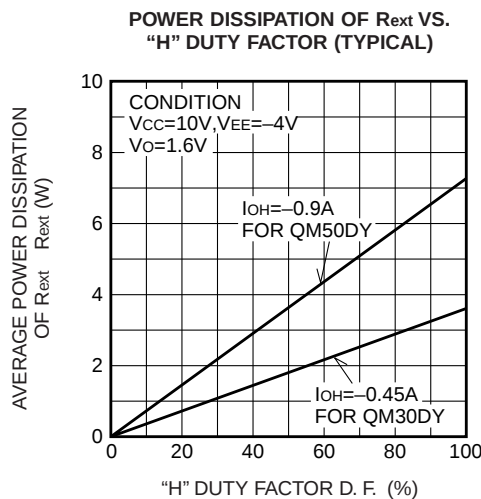
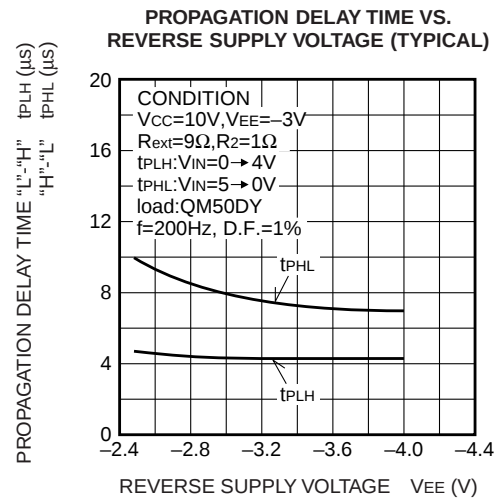
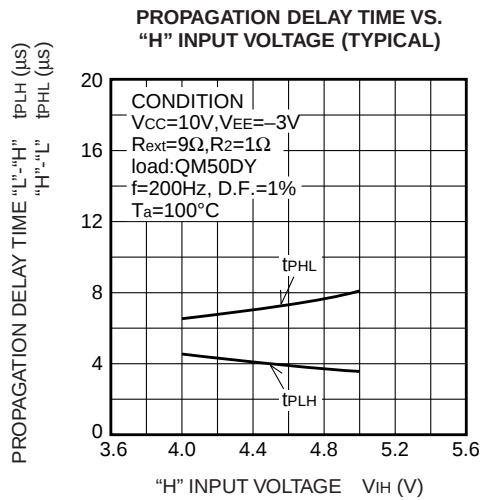
Symbol	Parameter	Conditions	Ratings	Unit
VCC	Supply voltage	DC	14	V
VEE	Supply voltage	DC	-5	V
Vi	Input voltage	Between terminals ① and ②	-1 ~ 7	V
IOH	Output current		-1	A
IOLP		Pulse width 10μs, Freq. 2kHz, peak value	3	A
Viso	Isolation voltage	Sinewave voltage 60Hz/min. Ta=25°C	2500	Vrms
Tj	Junction temperature		100	°C
Topg	Operating temperature		-20 ~ +70	°C
Tstg	Storage temperature		-25 ~ +100	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=8V, unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IiH	"H" input current	Vi=5V	-	10	-	mA
IOH	"H" output current	Rext=9Ω, V=1.6V	-0.8	-	-	A
IOLP	"L" output peak current	Cext=10μF, R2=2Ω	-	2	-	A
Pd	Internal power dissipation	IOH=-0.9A, IOLP=2A, f=2kHz, D.F.=50%	-	0.33	-	W
tPLH	"L-H" propagation delay time	Vi=0→4V, Tj=100°C	-	5	10	μs
tr	"L-H" rise time	Vi=0→4V, Tj=100°C	-	-	2	μs
tPHL	"H-L" propagation delay time	Vi=5→0V, Tj=100°C	-	8	15	μs
tf	"H-L" fall time	Vi=5→0V, Tj=100°C	-	-	3	μs

PERFORMANCE CURVES





T: 8V, 1AX2 CENTER-TAPPED TRANSFORMER
 C1: 4700 μ F, C2: 470 μ F

EXPLANATION OF FUNCTION

(cf. Fig. 2, 3, 4, and 5)

(1) With low input level ($V_{in}=0 \sim 1V$)

Tr1 OFF, Tr2 ON

The base terminal of transistor module is reverse biased with respect to its emitter by reverse power supply V_{EE} .

(2) With high input level ($V_{in}=4 \sim 5V$)

Tr1 ON, Tr2 OFF

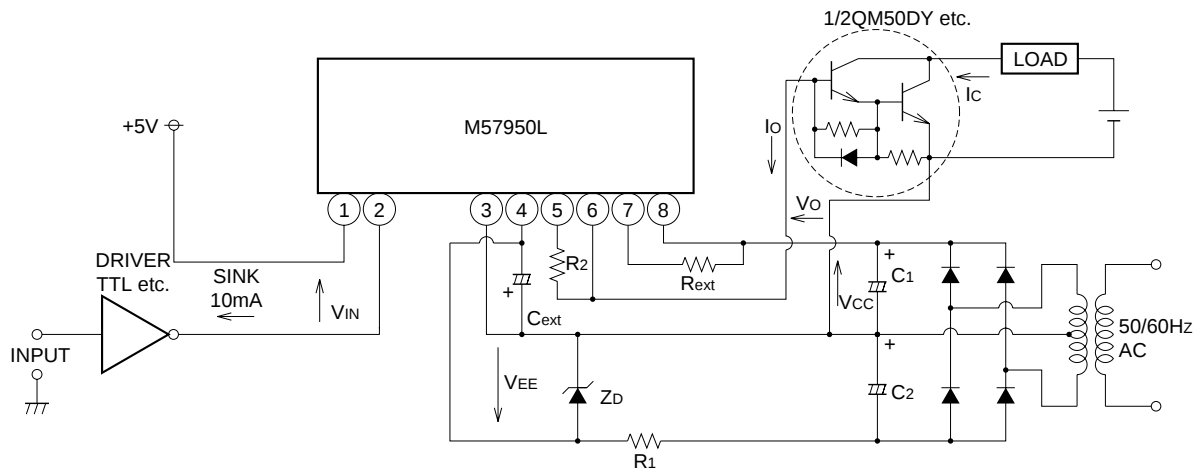
The base terminal of transistor module is forward biased and driven by the current I_{OH} through the resistor R_{ext} .

(3) With low input level ($V_{in}=0 \sim 1V$)

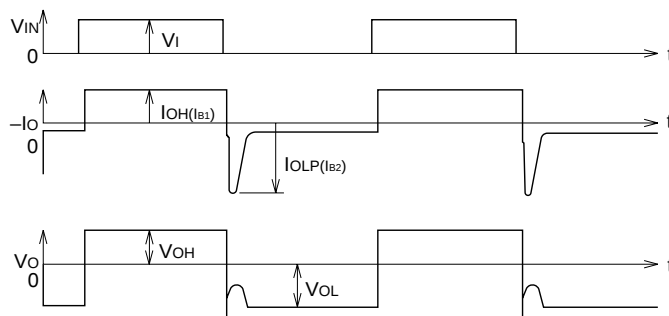
Tr1 OFF, Tr2 ON

The base terminal of transistor module is reverse biased as stated in (1) after flowing reverse recovery pulse current I_{OLP} . The steady reverse base current is limited by the internal base-emitter resistor R_{BE} of the transistor module.

M57950L Typical application circuit



M57950L Typical operating waveform



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.