M54549L

DUAL BI-DIRECTIONAL MOTOR DRIVER

DESCRIPTION

The M54549L, DUAL BI-DIRECTIONAL MOTOR DRIVER, consists of two separated full bridge power drivers designed for use in a D-C motor control circuit.

FEATURES

- Two separated full bridge driver
- Wide operating voltage range (V_{CC} =4~16V)
- TTL, PMOS and CMOS compatible input
- Low output saturation voltage
- Integral diodes for transient suppression
- 2A output current
- Braking mode input
- Internal thermal shutdown protection

APPLICATION

Audio, video cassette recorder

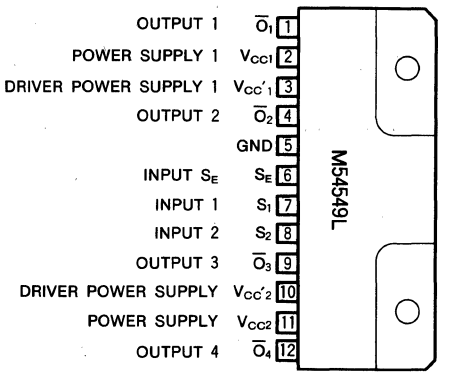
FUNCTION

The M54549L, dual full bridge power drivers, has the logic circuitry and dual quasi-darlington power drivers for bi-directional control of D-C motors operating at currents up to 1.2A. The input SE selects the one of the bridges and the inputs S_1 and S_2 determines the output polarity of the designated bridge.

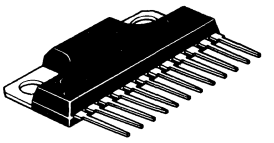
LOGIC TRUTH TABLE

Input			Output				Note	
S_E	S_1	S_2	$\overline{O}_1$	$\overline{O}_2$	$\overline{O}_3$	$\overline{O}_4$	Output $\overline{O}_1,\overline{O}_2$	Output $\overline{O}_3,\overline{O}_4$
0	0	0	OFF	OFF	OFF	OFF	Open	Open
0	1	0	1	0	OFF	OFF	Ω	Open
0	0	1	0	1	OFF	OFF	Ω	Open
0	1	1	0	0	OFF	OFF	Braking	Open
1	0	0	OFF	OFF	OFF	OFF	Open	Open
1	1	0	OFF	OFF	1	0	Open	Ω
1	0	1	OFF	OFF	0	1	Open	Ω
1	1	1	OFF	OFF	0	0	Open	Braking

PIN CONFIGURATION (TOP VIEW)

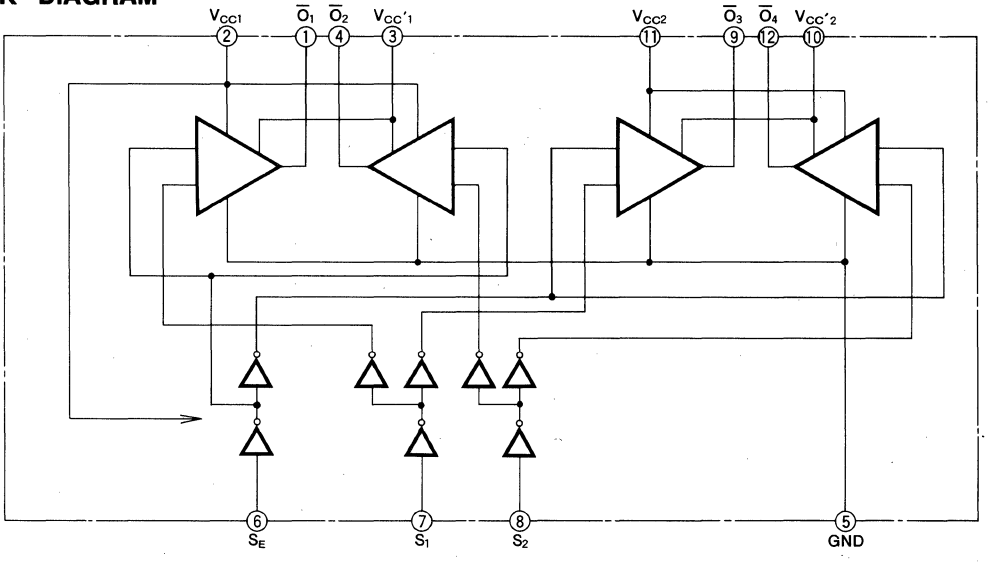


Outline 12P9



12-pin molded plastic SIL

BLOCK DIAGRAM



MITSUBISHI ELECTRIC

ABSOLUTE MAXIMUM RATINGS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC} (1)	Supply voltage (1)		−0.5～+18	V
V_{CC} (2)	Supply voltage (2)	With an external heat sink(3000mm²×1.5mm)	−0.5～+18	V
V_{CC}'	Driver supply voltage		−0.5～+18	V
V_I	Input voltage		0～V_{CC}	V
V_O	Output voltage		−2～V_{CC}'+2.5	V
$I_{O(max)}$	Output peak current	Top=10ms. repetitive cycle 0.2Hz max	±2	A
$I_{O(1)}$	Continuous output current (1)		±330	mA
$I_{O(2)}$	Continuous output current (2)	With an external heat sink(3000mm²×1.5mm)	±600	mA
P_d	Power dissipation	T_a=75℃	1.20	W
T_{opr}	Operating ambient temperature range		−10～+75	℃
T_{stg}	Storage temperature range		−55～+125	℃

RECOMMENDED OPERATING CONDITIONS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage		4	12	16	V
I_O	Output current				±300	mA
V_{IH}	"H"Input voltage	Inputs S_1, S_2 and S_E	2		V_{CC}	V
V_{IL}	"L"Inputs voltage	Input S_1, S_2 and S_E	0		0.4	V
t_S	Input switching interval	It is prohibited to switch the inputs at the same time.	100			ms
T_{OFF}	Thermal shutdown temperature	Junction temperature		150		

ELECTRICAL CHARACTERISTICS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ	Max	
$I_{O(leak)}$	Output leakage current	V_{CC}=V_{CC}'=18V	V_O=18V			100	μA
		V_{S1}=V_{S2}=0V, V_{SE}=0Vor2V	V_O=0V			−100	
$V_{OH(1)}$	"H"Output saturation voltage (1)	V_{CC}=V_{CC}'=12V	$I_{OH(1)}$=−200mA	10.8			V
			$I_{OH(1)}$=−500mA	10.7			
$V_{OL(1)}$	"L"Output saturatcn voltage	V_{CC}=V_{CC}'=12V	I_{OL}=200mA			0.5	V
			$I_{OL(1)}$=500mA			1.35	
I_{IH}	"H"Input current	V_{CC}=V_{CC}'=12V, V_I=2V		70		200	μA
I_{IL}	"L"Input current	V_{CC}=V_{CC}'=12V, V_I=0V		70		200	μA
I_{CC}	Supply current	V_{CC}=V_{CC}'=12V	V_{SE}=0V, V_{S1}=V_{S2}=0V			10	mA
			V_{SE}=0V, V_{S1}=V_{S2}=0V				
			V_{SE}=0V, V_{S1}=0V, V_{S2}=2V			20	mA

TYPICAL APPLICATION