M54541L

BI-DIRECTIONAL MOTOR DRIVER

DESCRIPTION

The M54541L, BI-DIRECTIONAL MOTOR DRIVER, consists of a full bridge power driver designed for D-C motor control.

FEATURES

- 9-pin single-in-line power tab package
- Integral diodes for transient suppression
- 800mA output current
- PMOS compatible input

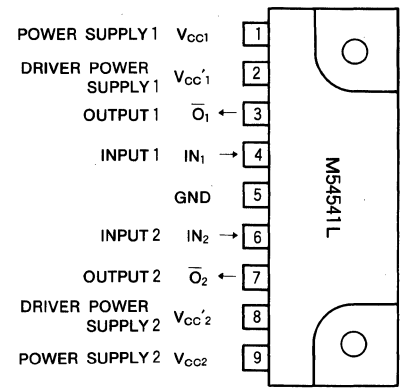
APPLICATIONS

- Audio cassette tape recorder
- Video cassette recorder

FUNCTION

The M54541L, full bridge motor driver, has the logic circuitry and darlington-pair power drivers for bidirectional control of D-C motors operating at currents up to 800mA. The power supplies for the logic circuitry and the drivers are separated so that the applied voltage to the motor can be controlled by the V_{CC}' of the driver power supply voltage.

PIN CONFIGURATION (TOP VIEW)

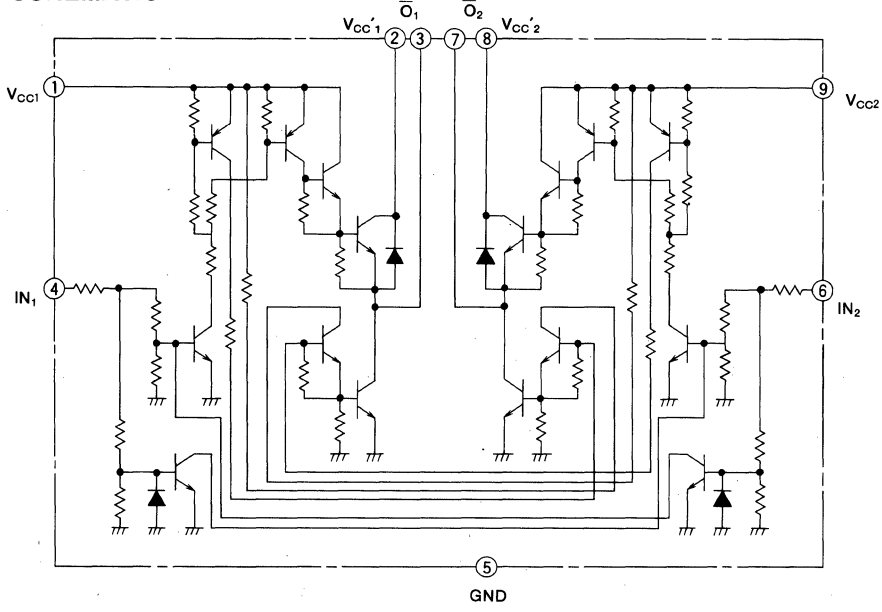


Outline 9P9

LOGIC TRUTH TABLE

Input		Output		Note
IN_1	IN_2	$\overline{O}_1$	$\overline{O}_2$	
L	L	"OFF" state	"OFF" state	Open
H	L	H	L	○
L	H	L	H	○
H	H	"OFF" state	"OFF" state	Open

CIRCUIT SCHEMATIC



MITSUBISHI ELECTRIC

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		−0.5～+16	V
V_{CC}'	Driver supply voltage		−0.5～V_{CC}	V
V_I	Input voltage		−0.5～V_{CC}	V
V_O	Output voltage		−0.5～V_{CC}+2.5	V
$I_{O(max)}$	Peak output current	t_{op}=10ms, Repetitive cycle 0.2Hz max	±800	mA
I_O	Continuous output current		±220	mA
P_d	Power dissipation	T_a=60℃	900	mW
T_{opr}	Operating ambient temperature range		−10～+60	℃
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		6	14	15	V
I_O	Continuous output current				±200	mA
V_{IH}	"H" Input voltage		3	5	V_{CC}	V
V_{IL}	"L" Input voltage			0	0.4	V
T_{off}	Input switching interval	It is prohibited to switch the inputs at the same time.	10	300		ms

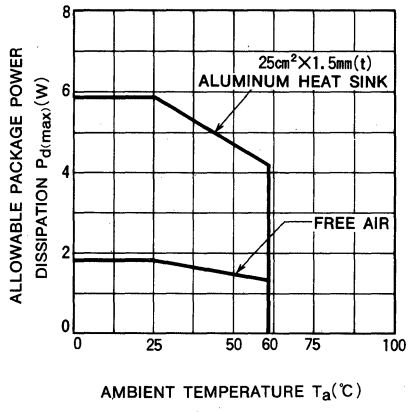
ELECTRICAL CHARACTERISTICS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ*	Max	
$I_{O(leak)}$	Output leakage current	V_{CC}=V_{CC}'=20V	V_O=20V			100	μA
		V_{I1}=V_{I2}=3V	V_O=0V			−100	
V_{OH}	"H" Output saturation voltage	V_{CC}=V_{CC}'=12V	V_{I1}=3V, V_{I2}=0V	9.9	10.4		V
		I_{OH}=−200mA	V_{I1}=0V, V_{I2}=3V				
V_{OL}	"L" Outuput saturation voltage	V_{CC}=V_{CC}'=12V	V_{I1}=3V, V_{I2}=0V		0.3	0.7	V
		I_{OL}=200mA	V_{I1}=0V, V_{I2}=3V				
I_{IH}	"H" Input current	V_{CC}=V_{CC}'=12V	V_{I1}=3V			500	μA
			V_{I2}=3V				
I_{CC}	Supply current	V_{CC}=V_{CC}'=16V	V_{I1}=3V, V_{I2}=0V		35	50	mA
			V_{I1}=0V, V_{I2}=3V				
			V_{I1}=0V, V_{I2}=0V		0		mA
			V_{I1}=3V, V_{I2}=3V				

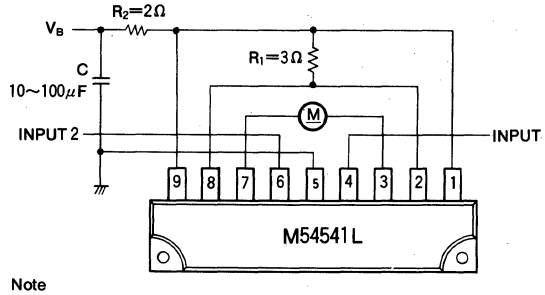
* : The all typical values are at T_a=25℃.

TYPICAL CHARACTERISTICS

ALLOWABLE AVERAGE POWER DISSIPATION



TYPICAL APPLICATION



Note

1. It is prohibited to switch the both input simultaneously. The inputs should be driven separately to avoid high crossover current.
2. The pins 1 , 9 and 2 , 8 are separated and shall be connected externally.