

MITSUBISHI (DGTL LOGIC)

**M54542L****BI-DIRECTIONAL MOTOR DRIVER****DESCRIPTION**

The M54542L, BI-DIRECTIONAL MOTOR DRIVER, consists of a full bridge power driver designed for D-C motor control.

**FEATURES**

- 9-pin single inline package with heat sink
- Integral diodes for transient suppression
- 1.2A output current
- PMOS compatible input

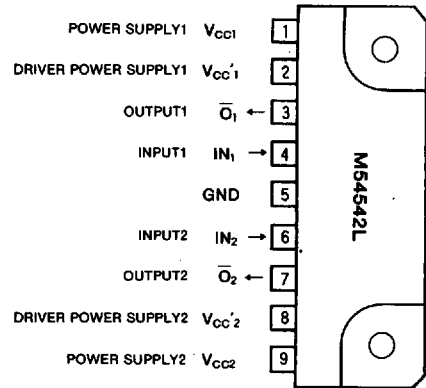
**APPLICATION**

Audio, video cassette recorders, Floppy disk driver

**FUNCTION**

The M54542L, 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 1.2A.

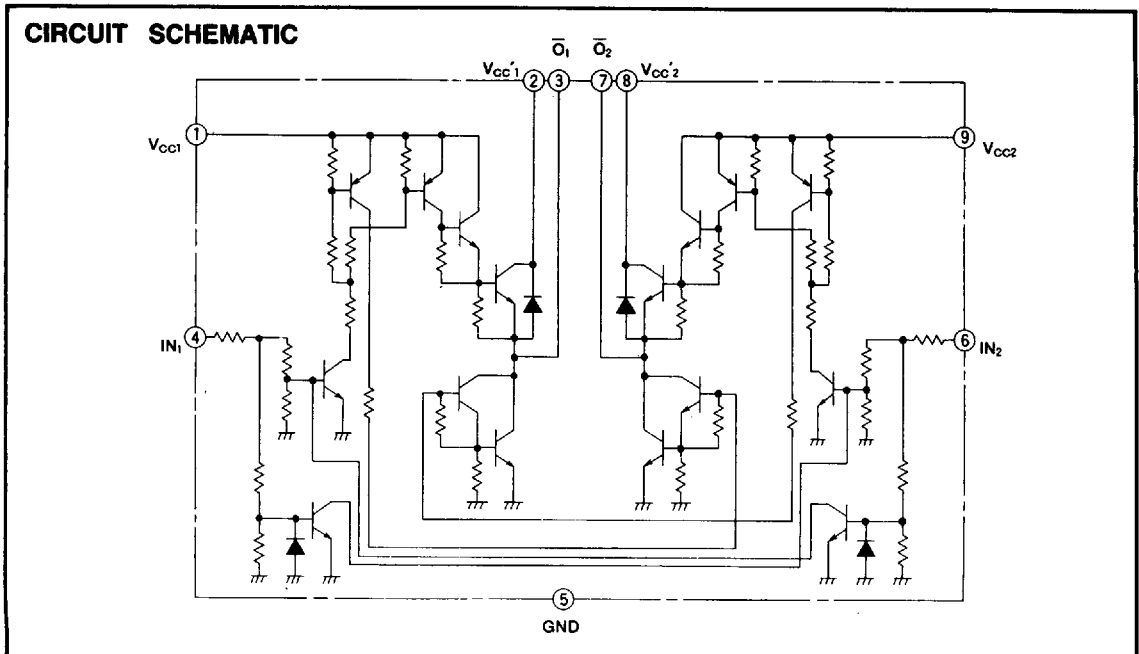
The power supplies for the logic circuitry and the drivers are separated so that the applied voltage to the motor can be controlled by the  $V_{CC}$  of the driver power supply voltage.

**PIN CONFIGURATION (TOP VIEW)**

Outline 9P9

**LOGIC TRUTH TABLE**

INPUT		OUTPUT		NOTE
IN <sub>1</sub>	IN <sub>2</sub>	$\bar{O}_1$	$\bar{O}_2$	
L	L	"OFF" state	"OFF" state	Open
H	L	H	L	○
L	H	L	H	○
H	H	"OFF" state	"OFF" state	Open

**CIRCUIT SCHEMATIC**

**BI-DIRECTIONAL MOTOR DRIVER**

**ABSOLUTE MAXIMUM RATINGS** ( $T_a=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CC}$	Supply voltage		-0.5~+16	V
$V_{CC'}$	Driver 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
$I_o(\text{max})$	Peak output current	$I_{op}=10\text{ms}$ Repetitive cycle 0.2Hz max	$\pm 1200$	mA
$I_o$	Continuous output current		$\pm 330$	mA
$P_d$	Power dissipation	$T_a=60^\circ\text{C}$	1000	mW
$T_{opr}$	Operating temperature		-10~+60	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55~+125	$^\circ\text{C}$

**RECOMMENDED OPERATING CONDITIONS** ( $T_a=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
$V_{CC}$	Supply voltage		6	14	15	V
$I_o$	Continuous output current				$\pm 300$	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

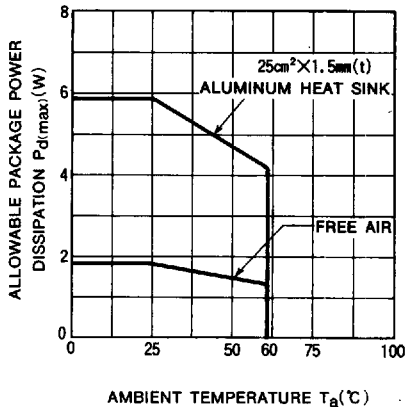
**ELECTRICAL CHARACTERISTICS** ( $T_a=25^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ*	Max	
$I_o(\text{leak})$	Output leakage current	$V_{CC}=V_{CC'}=20\text{V}$ $V_{i1}=V_{i2}=3\text{V}$			100 -100	$\mu\text{A}$
$V_{OH}$	"H" Output saturation voltage	$V_{CC}=V_{CC'}=12\text{V}$ $I_{OH}=-300\text{mA}$	9.7	10.2		V
$V_{OL}$	"L" Output saturation voltage	$V_{CC}=V_{CC'}=12\text{V}$ $I_{OL}=300\text{mA}$				0.9
$I_{IH}$	"H" Input current	$V_{CC}=V_{CC'}=12\text{V}$			500	$\mu\text{A}$
$I_{CC}$	Supply current	$V_{CC}=V_{CC'}=16\text{V}$		7	10	mA
				0		

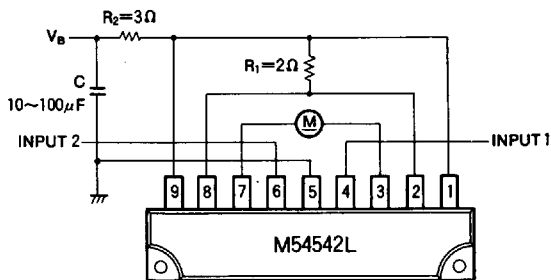
\* : A typical value at  $T_a=25^\circ\text{C}$ .

**TYPICAL CHARACTERISTICS**

ALLOWABLE AVERAGE  
POWER DISSIPATION



**APPLICATION EXAMPLE**



**Note**

1. It is prohibited to switch the both inputs 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.