M54540AL

BI-DIRECTIONAL MOTOR DRIVER

DESCRIPTION

The M54540AL, BI-DIRECTIONAL MOTOR DRIVER, consists of a full bridge power driver designed for a low power D-C motor control.

FEATURES

- Small single-in-line package
- Integral diodes for transient suppression
- PMOS compatible input

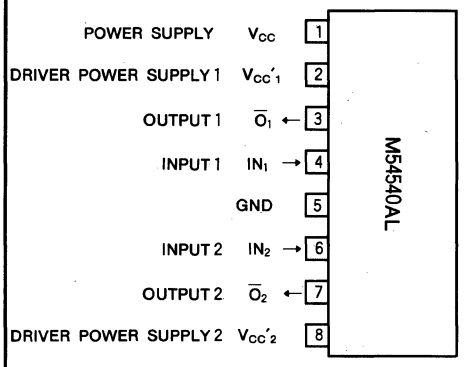
APPLICATION

Audio cassette tape recorder

FUNCTION

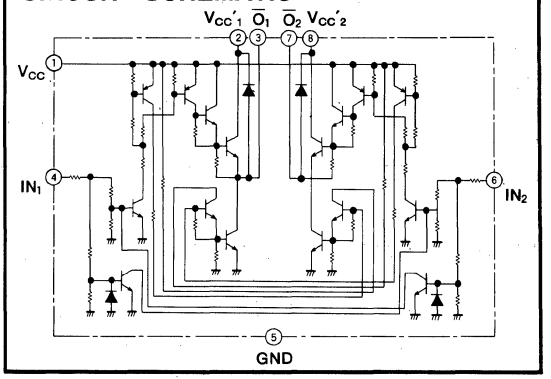
The M54540AL, full bridge motor driver, has the logic circuitry and non-darlington power drivers for bidirection control of D-C motors operating at currents of up to 600mA.
The power supplies for the logic circuitry and the drivers are separated so that the applied voltage to the motor can be controlled by the V_{CC}' of the driver supply voltage.

PIN CONFIGURATION (TOP VIEW)



Outline 8P5

CIRCUIT SCHEMATIC



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

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{CC}	Supply voltage		−0.3～+12	V
V_{CC}'	Driver supply voltage		−0.3～V_{CC}	V
V_I	Input voltage		−0.3～V_{CC}	V
V_O	Output voltage		−0.3～V_{CC}+2.5	V
$I_{O(max)}$	Peak output current	t_{op}=10ms, Repetitive cycle 0.2Hz max	±600	mA
I_O	Continuous output current		±120	mA
P_d	Power dissipation	T_a=60℃	850	mW
T_{opr}	Operating ambient temperature range		−10～+60	℃
T_{stg}	Storage temperature range		−55～+125	℃

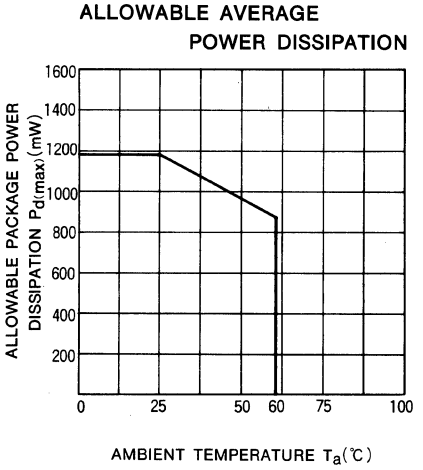
RECOMMENDED OPERATING CONDITIONS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
V_{CC}	Supply voltage		6	10	11	V
I_O	Continuous output current				±100	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

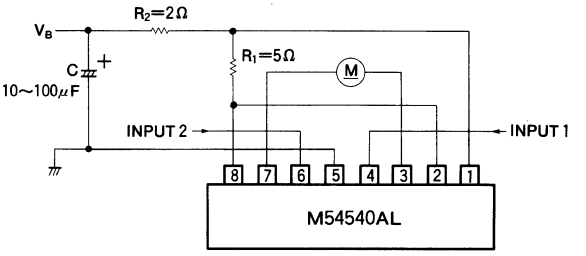
ELECTRICAL CHARACTERISTICS (T_a=25℃, unless otherwise noted)

Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ	Max	
$I_{O(leak)}$	Output leakage current	$V_{CC}=V_{CC}'$=20V	V_O=12V			100	μA
		$V_{I1}=V_{I2}$=3V	V_O=0V			−100	
V_{OH}	"H" Output saturation voltage	$V_{CC}=V_{CC}'$=10V	V_{I1}=3V, V_{I2}=0V	8			V
		I_{OH}=−100mA	V_{I1}=0V, V_{I2}=3V				
V_{OL}	"L" Output saturation voltage	$V_{CC}=V_{CC}'$=10V	V_{I1}=3V, V_{I2}=0V			0.6	V
		I_{OL}=100mA	V_{I1}=0V, V_{I2}=3V				
I_{IH}	"H" Input current	$V_{CC}=V_{CC}'$=10V	V_{I1}=3V			500	μA
			V_{I2}=3V				
I_{CC}	Supply current	$V_{CC}=V_{CC}'$=12V	V_{I1}=3V, V_{I2}=0V		28	40	mA
			V_{I1}=0V, V_{I2}=3V				
			V_{I1}=0V, V_{I2}=0V		0		mA
			V_{I1}=3V, V_{I2}=3V				

TYPICAL CHARACTERISTICS



TYPICAL APPLICATION



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 , 2 and 8 are separated and shall be connected externally.