MITSUMI

Motor Driver
Monolithic IC MM1036

Outline

This is a motor driver IC developed for video movie use. It has four modes : open, forward, reverse and brake. It can be used with power supply voltages of 4~16V.

Features

1. Operating voltage range   4~16V
2. Current consumption during standby   2μA max
3. Built-in 2.2V stable power supply
4. Can operate on single power supply
5. Control pins D0 and D1 have TTL interface
6. Built-in thermal shutdown
7. Built-in counter-electromotive clamp diode
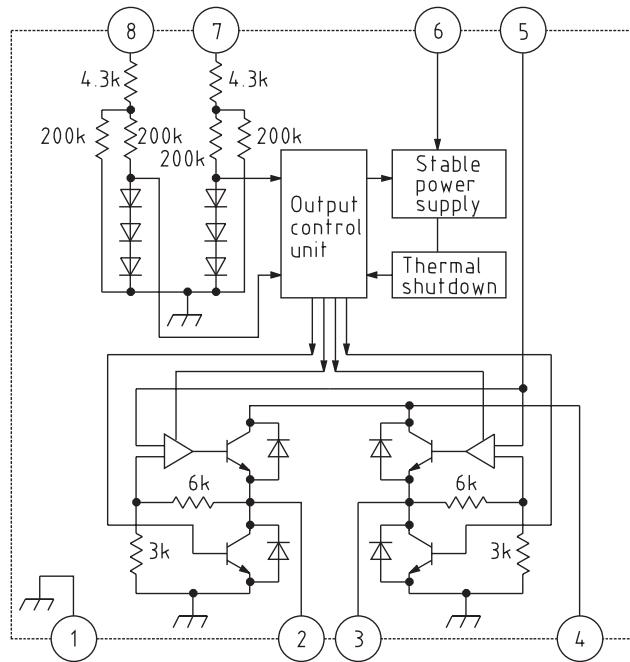
Package

SOP-8B (MM1036XF)
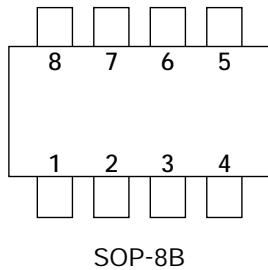
Applications

Video movies (auto-focus, zoom)

Equivalent Circuit Diagram

Pin Description

SOP-8B

Pin no.	Pin name	Function
1	GND	GND
2	M0	M0 output pin
3	M1	M1 output pin
4	V_{CC}	V_{CC}
5	V_C	Output voltage control
6	V_{REF}	Stable power supply
7	D0	D0 control pin
8	D1	D1 control pin

Mode Settings

D0	D1	Mode	M0	M1
L	L	Open	L	L
H	L	Forward	H	L
L	H	Reverse	L	H
H	H	Brake	L	L

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Ratings	Units	Conditions
Storage temperature	T_{STG}	−40~+125	°C	
Operating temperature	T_{OPR}	−15~+75	°C	
Power supply voltage	V_{CC}	20	V	
Stable power supply	Pd	350 ＊1	mW	
		470 ＊2		
Output current	I_O	100 ＊3	mA	
D0, D1 applied voltages	VD_{IN}	−0.3~+7.0	V	$VD_{IN} \leq V_{CC}+0.7$
Voltage applied to VC	VC_{IN}	−0.3~+7.0	V	

Notes :

＊1 Loss tolerance for unit of C

＊2 Loss tolerance when mounted on 20×38×1 [mm] glass epoxy board
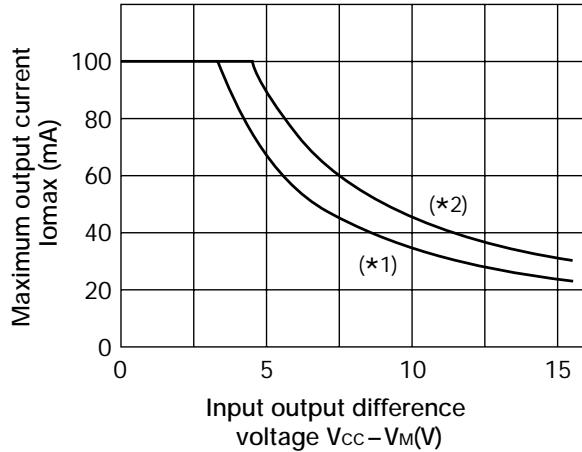
＊3 Within 100ms [Refer to materials]

Electrical Characteristics (Except where noted otherwise, Ta=25°C, Vcc=6.0V, VM=4.5V)

Item	Symbol	Measurement conditions	Min.	Typ.	Max.	Units
Operating voltage	V_{CC}		4.0		16	V
Consumption current 1	$I_{CC}1$	VD0, VD1=0V, Vcc=16V			2.0	μA
Consumption current 2	$I_{CC}2$	VD0, VD1=2.4V, Vcc=16V		9.5	15	mA
Output saturation voltage (L)	Vsat	IM=60mA			250	mV
Output voltage (L) Load fluctuation 1	Lreg1 (L)	IM=10~60mA			200	mV
Output voltage (L) Load fluctuation 2	Lreg2 (L)	IM=10~100mA			350	mV
M0, M1 I/O ratio	K	K=VM/VC, IM=0mA	2.85	3.00	3.15	
Output voltage range	V_M	IM=−60mA	2.0		Vcc-1.1	V
Output voltage (H) Load fluctuation 1	Lreg1 (H)	IM=0~−65mA			100	mV
Output voltage (H) Load fluctuation 2	Lreg2 (H)	IM=−10~−100mA			200	mV
Reference voltage	Vref	Iref=1mA	2.10	2.20	2.30	V
D0, D1 threshold voltages	V_{TH}		0.6		2.4	V
D0, D1 input currents	I_D	VD0, VD1=5V		40	100	μA
Thermal shutdown operating temperature				150		°C
Thermal shutdown hysteresis temperature				50		°C

■ Maximum output current-Input/output difference voltage characteristics (25°C)
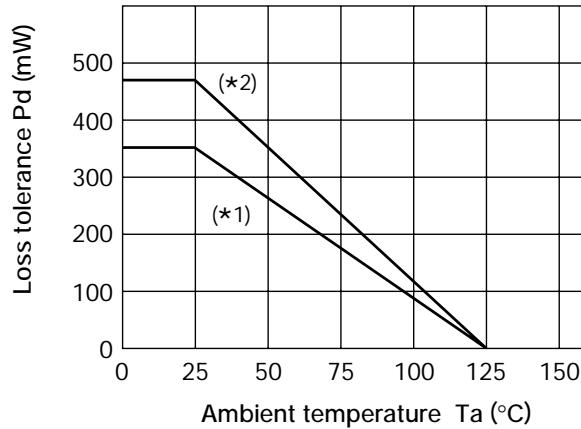
Note : Calculate from Io max.=Pd/(Vcc −VM+0.3)
*1 Unit : IC
*2 When mounted on glass epoxy board
　20×38×1 [mm]

■ Loss tolerance-Temperature characteristics

*1 Unit : IC
*2 When mounted on glass epoxy board
　20×38×1 [mm]

Measuring Circuit