

**Three-Channel CD-ROM Bridge Driver (BTL)****Overview**

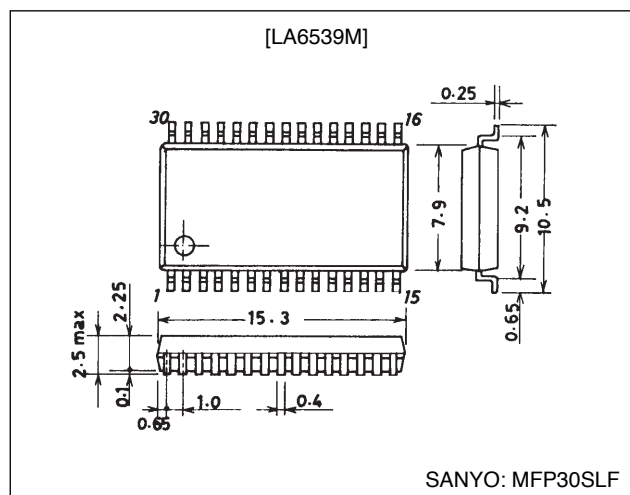
The LA6539M is a three-channel bridge driver (BTL) developed for use in CD-ROM drives.

Functions

- Three-channel balanced transformerless (BTL) power amplifier
- I_O max: 1 A
- Muting circuit
- Thermal shutdown function
- Slew rate (SR): 0.5 V/ μ s (typical)

Package Dimensions

unit: mm

3073A-MFP30SLF**Specifications****Maximum Ratings at $T_a = 25^\circ\text{C}$**

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		14	V
	V_S max	Maximum rating for V_{S1} and V_{S2}	14	V
Maximum input voltage	V_{IN}	V_{IN1} to V_{IN3}	13	V
Mute pin voltage	V_{MUTE}	MUTE1, 2	13	V
Allowable power dissipation	P_d max		0.9	W
Operating temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		4 to 13	V
Operating voltage 2-1	V_{S1}	The channel U operating voltage	4 to 13	V
Operating voltage 2-2	V_{S2}	The channel U and W operating voltage	4 to 13	V

SANYO Electric Co., Ltd. Semiconductor Business Headquarters

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

33197HA(OT) No. 5630-1/4

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{ V}$, $V_{S1} = V_{S2} = 5\text{ V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
V_{CC} no-load current drain	I_{CC1}	All outputs on (mute 1 and 2: high) *1, 2	4	8	15	mA
	I_{CC2}	All outputs off (mute 1 and 2: low) *1		4	10	mA
V_{S1} no-load current drain	I_{S1-1}	Channel U: on (mute 1: high)		5	10	mA
	I_{S1-2}	Channel U: off (mute 1: low)			1	mA
V_{S2} no-load current drain	I_{S2-1}	Channels V and W: on (mute 2: high) *2		10	20	mA
	I_{S2-2}	Channels V and W: off (mute 2: low)			1	mA
Output offset voltage	V_{OF1} to V_{OF3}	Voltage differential between the channel U and W outputs	-50		+50	mV
Input voltage range	V_{IN}	Voltage range for V_{IN1} to V_{IN3}	0.5		5	V
Buffer amplifier output voltage	$V_{BUFFER1}$	Voltage difference relative to $1/2 V_{S1}$	-50	0	+50	mV
	$V_{BUFFER2}$	Voltage difference relative to $1/2 V_{S2}$	-50	0	+50	mV
Output source voltage	V_{O1}	Output high, $I_O = 700\text{ mA}$, all + outputs	4.4	4.7		V
Output sink voltage	V_{O2}	Output low, $I_O = 700\text{ mA}$, all + outputs		0.3	0.6	V
Closed circuit voltage gain	V_G	Bridge amplifier		6		dB
Slew rate	SR			0.5		V/ μs
Mute on voltage	$V_{MUTE1, 2}$	The voltage applied to MUTE1 or MUTE2 at the point where the output goes on.		1.5	2	V
Mute on current	$I_{MUTE1, 2}$	The influx current to MUTE1 or MUTE2 at the point where the output goes on.		6	10	μA

Notes: 1. When MUTE1 is high, the channel U output will be on.
2. When MUTE2 is high, the channel V and W outputs will be on.

Truth Table

Input (V_{IN} pins)	MUTE (MUTE1, 2)	CH-U		CH-V		CH-W	
		U_{OUT+}	U_{OUT-}	V_{OUT+}	V_{OUT-}	W_{OUT+}	W_{OUT-}
H	H	H	L	H	L	H	L
	L	—	—	—	—	—	—
L	H	L	H	L	H	L	H
	L	—	—	—	—	—	—

Note: MUTE1 only operates for channel U, and MUTE2 only operates for channels V and W. MUTE1 and MUTE2 operate independently.

Pin Functions

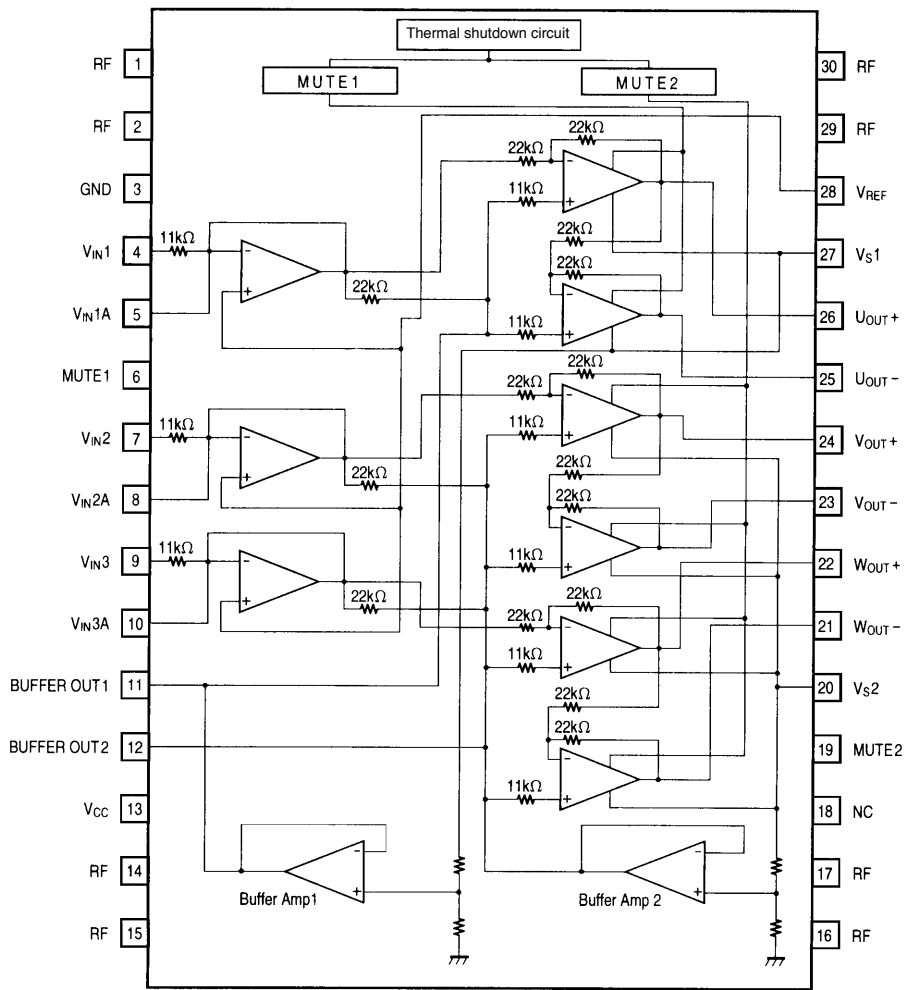
Pin No.	Pin	Function	Equivalent circuit
1, 2, 14, 15, 16, 17, 29, 30	RF	Substrate (lowest potential)	
3	GND	Ground	
4	V_{IN1}	Channel U input	
5	V_{IN1A}	Channel U input (for gain adjustment)	
7	V_{IN2}	Channel V input	
8	V_{IN2A}	Channel V input (for gain adjustment)	
9	V_{IN3}	Channel W input	
10	V_{IN3A}	Channel W input (for gain adjustment)	
6	MUTE1	Channel U output on/off control	
11	BUFFER OUT1	Buffer amplifier 1 output ($1/2 V_{S1}$: typical), Generates the output stage reference voltage for channel U.	
12	BUFFER OUT2	Buffer amplifier 2 output ($1/2 V_{S2}$: typical), Generates the output stage reference voltage for channels V and W.	
13	V_{CC}	Power supply	
18	NC	Unused	
19	MUTE2	Channels V and W on/off control	
20	V_{S2}	Channels V and W output stage power supply	

Continued on next page.

Continued from preceding page.

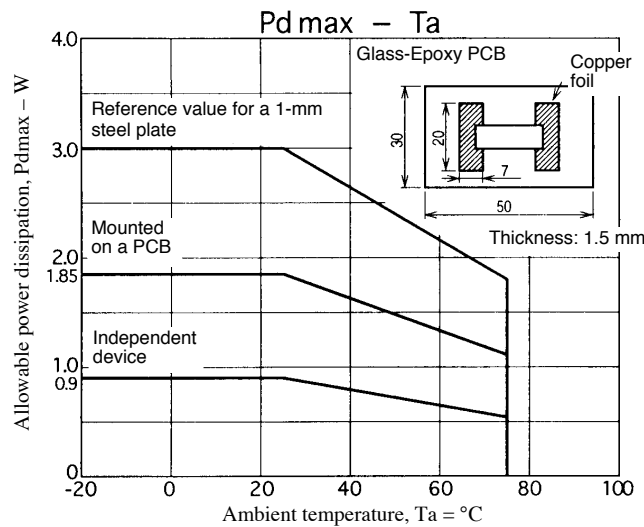
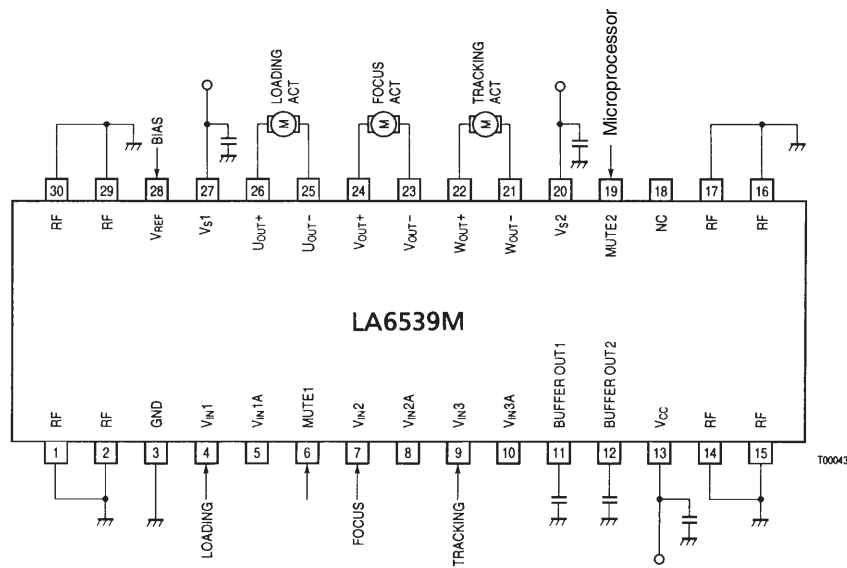
Pin No.	Pin	Function	Equivalent circuit
21	W _{OUT} -	Channel W inverting output	
22	W _{OUT} +	Channel W noninverting output	
23	V _{OUT} -	Channel V inverting output	
24	V _{OUT} +	Channel V noninverting output	
25	U _{OUT} -	Channel U inverting output	
26	U _{OUT} +	Channel U noninverting output	
27	V _{S1}	Channel U output stage power supply	
28	V _{REF}	Reference voltage for the level shifting circuit (shared by all channels)	

Block Diagram



T00042

Sample Application Circuit



- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of March, 1997. Specifications and information herein are subject to change without notice.