Ordering number: EN 3473 LB1673M供应商 捷多邦，专业PCB打样工厂，24小时加急出货

Monolithic Digital IC

SANYO No. 3473

LB1673M

3-Phase Brushless, Sensorless Motor Driver

Applications

· Rotational control of brushless, sensorless motors for use in audio applications such as headphone stereos, micro-cassette recorders, mini-casssette recorders.

Functions and Features

· Brushless, sonsorless motor drive (3-phase half-wave drive)
· Bidirectional motor drive
· On-chip speed control function (V servo type)
· On-chip reference voltage
· On-chip one comparator (PNP input, NPN open collector output)

Absolute Maximum Ratings at Ta = 25°C

			unit
Maximum Supply Voltage	V_{CC} max	5	V
Output Transistor Breakdown Voltage	V_{SUS} max	10	V
Output Current	I_M	1	A
Allowable Power Dissipation	Pd max	0.58	W
Operating Temperature	**Topr**	0 to +80	°C
Storage Temperature	Tstg	−40 to +125	°C

Allowable Operating Conditions at Ta = 25°C,

			unit
Supply Voltage	V_{CC}	1.0 to 3.5	V

Electrical Characteristics at Ta = 25°C, V_{CC} = 1.5V unless otherwise specified

			min	typ	max	unit
Supply Current 1	$I_{CC}(L)$	START pin 'L'		0	10	mA
Supply Current 2	$I_{CC}(H)$	START pin 'H'		4.8	10	μA
Reference Voltage	Vref		0.49	0.52	0.55	V
Voltage Characteristic of Reference Voltage	$\frac{\Delta Vref}{Vref/\Delta V_{CC}}$	V_{CC} = 1 to 3.5V		0.3	1.0	%/V

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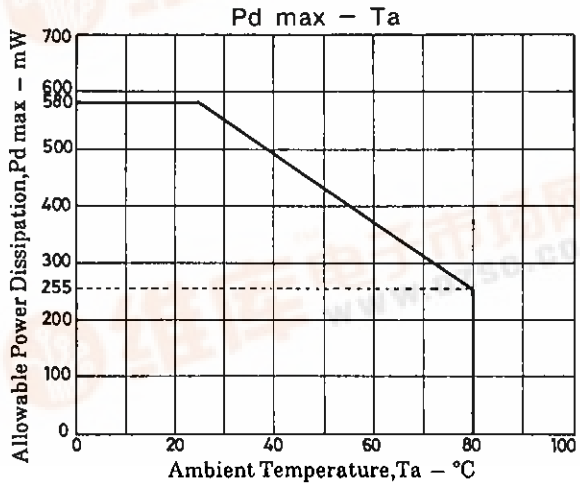
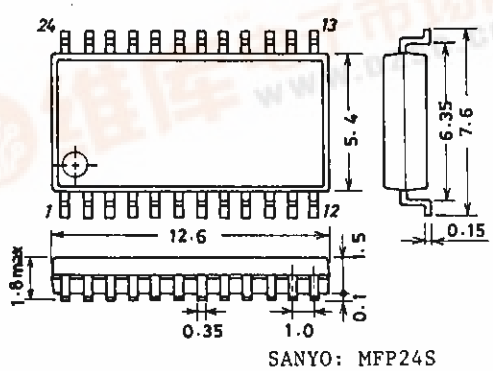


Package Dimensions 3112

(unit: mm)



SANYO: MFP24S

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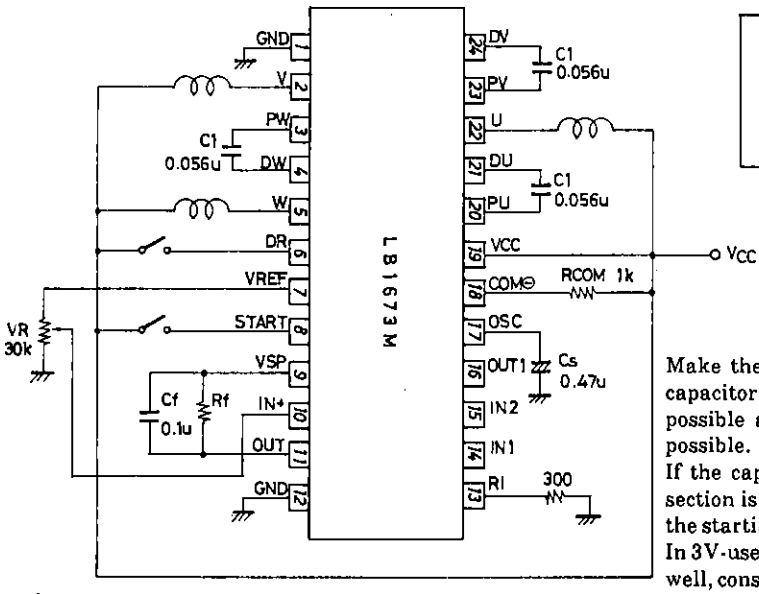
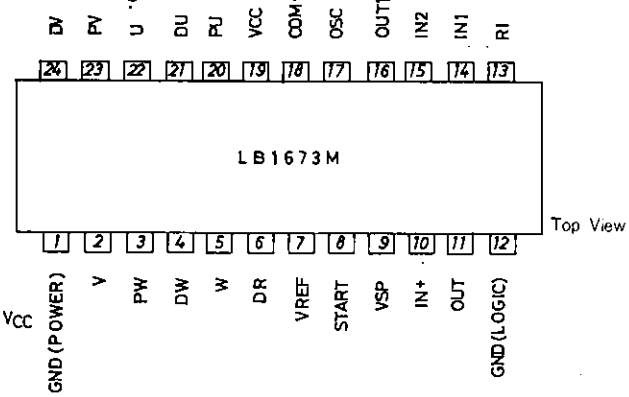
Sample Peripheral Circuit

Unit (resistance: Ω, capacitance: F)



Pin Assignment



Make the capacitance of the oscillation blocking capacitor (C_1) in the output section as small as possible and the capacitance of C_2 as large as possible.
If the capacitance of the capacitor in the output section is large and the capacitance of C_S is small, the starting voltage may rise at low temperatures.
In 3V-use, reverse rotation of a motor would not be well, consider the resistance of Rcom.

Pin Description

Pin No.	Pin Name	Description
1	GND	GND pin for the whole circuit
2	V	V phase output pin
3	PW	W phase output drive transistor base
4	DW	W phase output transistor base
5	W	W phase output pin
6	DR	Pin for selecting the direction of rotation (H : forward)
7	Vref	Reference voltage (0.5V)
8	START	High active
9	Vsp	Speed signal (induced voltage) detection
10	IN⊕	Speed signal error amp reference input
11	OUT	Speed signal error amp output. The motor current is fed back.
12	GND	GND pin for logic circuit.
13	R_I	Pin for detecting the motor current
14	IN1	⊖ input of internal comparator (PNP base input)
15	IN2	⊕ input of internal comparator (PNP base input)
16	OUT1	Output of internal comparator (NPN open collector)
17	OSC	Pin for setting the starting pulse width
18	COM⊖	Pin for providing a supplementary function for the current control circuit at the time of start or selection of direction of rotation
19	V_{CC}	Power supply pin
20	PU	U phase output drive transistor base
21	DU	U phase output transistor base
22	U	U phase output pin
23	PV	V phase output drive transistor base
24	DV	V phase output transistor base

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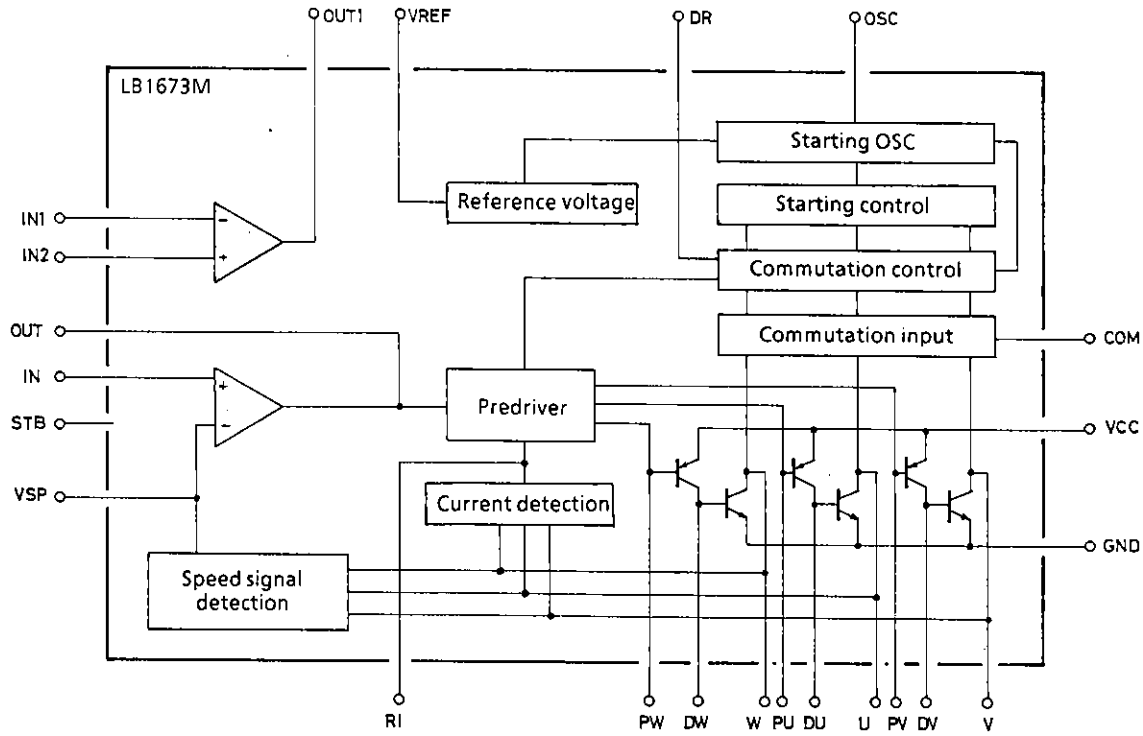
			min	typ	max	unit
Load Characteristic of Reference Voltage	$\frac{\Delta Vref}{\Delta Iref}$	Iref = 0 to −60μA		−0.03		mV/μA
Temperature Characteristic of Reference Voltage	$\frac{\Delta Vref}{\Delta Vref}/\Delta Ta$	Ta = 0 to +80°C		0		%/°C
Speed Signal Detection Accuracy	Vsp	V_{IN} = 500mV	135	145	155	mV
Speed Signal Correlation Error			−5		5	%
Voltage Characteristic of Speed Signal	$\frac{\Delta Vsp}{Vsp}/\Delta V_{CC}$	V_{CC} = 1 to 3.5V		0.2	1.0	%/V
Temperature Characteristic of Speed Signal	$\frac{\Delta Vsp}{Vsp}/\Delta Ta$	Ta = 0 to +60°C		0		%/°C
Current Detection Accuracy	V_{RI}	V_{IN1} = 0.3V, V_{IN2} = 1V	50	65	80	mV
Current Detection Ratio	K_I	V_{IN2} = 1 to 1.3V	0.14	0.17	0.25	
Pin OSC Flow-out Current	I_{OSC}	Measured as pin OSC is 0.4V.	2.6	3.8	5.0	μA
Starting Pulse Width	T_{OSC}	C_S = 0.47μF		60		ms
COM Pull-in Current	V_{COM} ⊖	Short V_{CC} with COM	20	30	40	μA
Output Saturation Voltage	Vsat	V_{CC} = 1V, I_m = 0.2A		0.09	0.25	V
Logic Input 'H'-Level Voltage	V_H		0.9			V
Logic Input 'L'-Level Voltage	V_L				0.3	V
Comparator Offset Voltage	V_{OFF}		−10		10	mV
Comparator Output Current	I_{OFF}	V_{CC} = 1V, OUT1 = V_{CC}	100			μA

Equivalent Circuit Block Diagram



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