

**LB1684****3-Phase DD Motor Driver****Overview**

The LB1684 is a 3-phase DD motor driver IC ideally suited for use in low-supply VCR capstan motor drive, drum motor drive, and floppy disk motor drive applications.

**Features**

- Designed for 5V-supply control system.
- Voltage-control system/current-control system available.
- Speed control available.
- Bidirectional control available.
- 20V/1.5A rating.

**Specifications****Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$** 

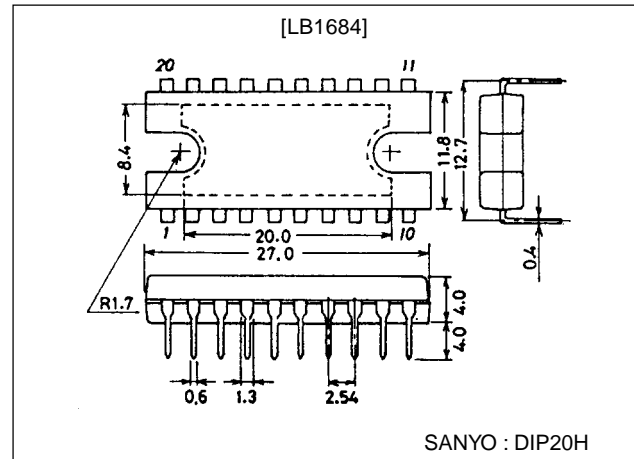
Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC1}$		22	V
	$V_{CC2}$		7	V
Output current	$I_O$		1.5	A
Allowable power dissipation	$P_d \text{ max}$		2.2	W
Operating temperature	$T_{opr}$		-20 to +75	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	$V_{CC1}$		7.0 to 2.0	V
	$V_{CC2}$		4.3 to 6.3	V

**Package Dimensions**

unit:mm

**3037A-DIP20H**

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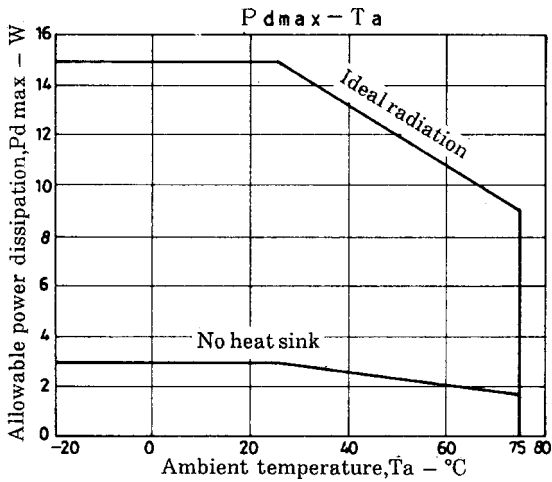
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Truth Table

	Source Sink	Input			Forward/Reverse Control
		U	V	W	F/RC
1	W phase → V phase	H	H	L	L
	V phase → W phase				H
2	W phase → U phase	H	L	L	L
	U phase → W phase				H
3	V phase → W phase	L	L	H	L
	W phase → V phase				H
4	U phase → V phase	L	H	L	L
	V phase → U phase				H
5	V phase → U phase	H	L	H	L
	U phase → V phase				H
6	U phase → W phase	L	H	H	L
	W phase → U phase				H



Pin Description

Pin name	Pin No.	Description
$U_{IN1}$ , $U_{IN2}$ $V_{IN1}$ , $V_{IN2}$ $W_{IN1}$ , $W_{IN2}$	13, 14 15, 16 17, 18	U phase Hall element input pin. High of logic : $V_{IN1} > V_{IN2}$ V phase Hall element input pin. High of logic : $V_{IN1} > V_{IN2}$ W phase Hall element input pin. High of logic : $V_{IN1} > V_{IN2}$
$U_{OUT}$ $V_{OUT}$ $W_{OUT}$	3 2 1	U phase output pin V phase output pin W phase output pin
$V_{CC1}$	4	Power supply pin for applying output
$V_{CC2}$	19	Power supply pin for applying voltage to each section other than output section. The control point of control voltage is at approximately 1/2 of this voltage. This voltage must be stabilized to be free from ripple, noise, etc.
$R_f$	20	Output current detect pin. By connecting $R_f$ across this pin and GND pin, output current is detected as voltage.
$C_D$	10	Pin for fetching current (voltage) detected with $R_f$ . By connecting a resistor across $C_D$ pin and $R_f$ pin, speed control start voltage can be fine-adjusted.
STOP	9	Overcurrent protection pin. Voltage being lower than that on $C_D$ pin is taken to be identical to overcurrent flow, causing output to be cut off. For example, if STOP pin is set to 1.5V for $R_f=1\Omega$ , approximately 1.5A or more flows at output, causing output to be cut off.
FCU FCV FCW	5 6 7	Ferquency characteristic compensation pin. Closed-loop oscillation in current-controlled system (including motor, F-V converter) is stopped.
$V_C$	11	Speed/phase control pin. Control starts at approximately 1/2 of $V_{CC2}$ . Control is of current-controlled type that controls output current. For $R_f=1\Omega$ , LB1684 closed-loop has $g_m=0.44A/V$ typ, which can be adjusted by varying $R_f$ .
GND	8	GND for other than output. Minimum potential of current transistor is at $R_f$ pin.
F/R	12	Forward/reverse control pin. By setting this pin to high (more than 2.0V)/low (less than 0.3V), truth value is changed to perform forward/reverse rotation.

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