



UFC1973

Preliminary

LINEAR INTEGRATED CIRCUIT

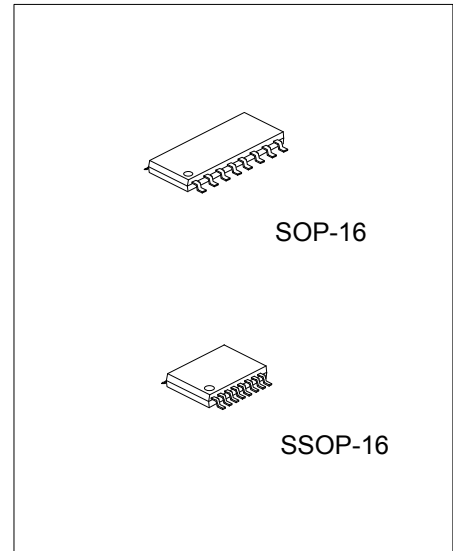
TWO-CHANNEL H-BRIDGE DRIVER

DESCRIPTION

The UTC **UFC1973** is a two-channel H-bridge driver that supports for low saturation draive operation. It is optimal for H-bridge drive of stepping motors in portable equipment such as camera cell phones.

FEATURES

- * Two-channel H-bridge driver
- * The range of the operation voltage is wide. (1.8V~7.5V)
- * 2ch simultaneous connection is possible
- * Parallel input interface
- * 2 phase excitation, 1-2 phase excitation drive are possible
- * Built-in thermal protection

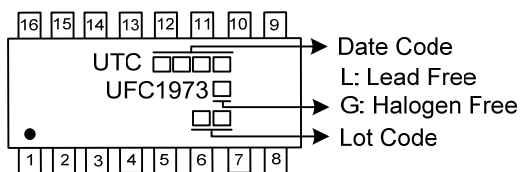


ORDERING INFORMATION

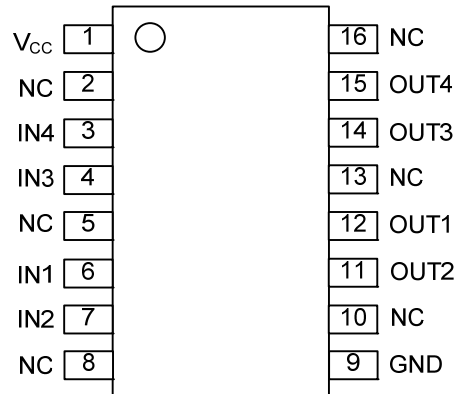
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UFC1973L-S16-R	UFC1973G-S16-R	SOP-16	Tape Reel
UFC1973L-R16-R	UFC1973G-R16-R	SSOP-16	Tape Reel

<p>UFC1973G-S16-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) R: Tape Reel (2) S16: SOP-16, R16: SSOP-16 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



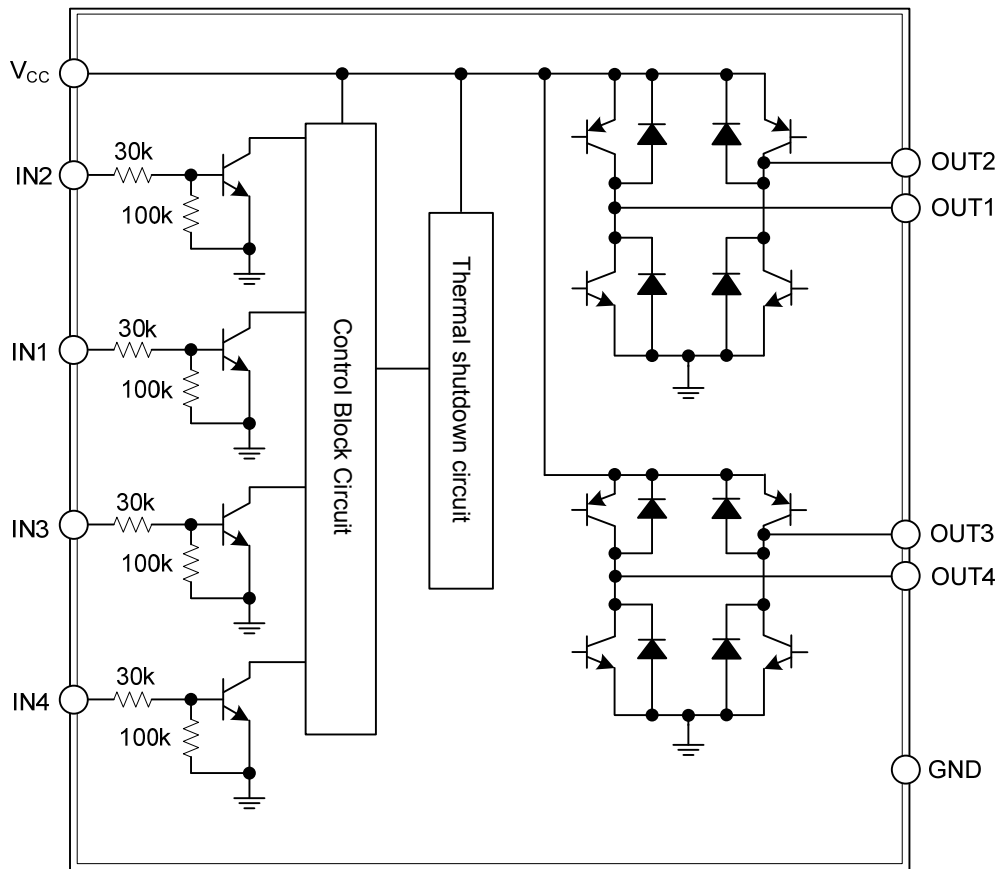
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V _{CC}	Power supply
2, 5, 8, 10, 13, 16	NC	No connection
3	IN4	The input of the channel 2
4	IN3	The input of the channel 2
6	IN1	The input of the channel 1
7	IN2	The input of the channel 1
9	GND	Ground
11	OUT2	The output of the channel 1
12	OUT1	The output of the channel 1
14	OUT3	The output of the channel 2
15	OUT4	The output of the channel 2

■ BLOCK DIAGRAM



■ TRUTH TABLE

Input				Output				Mode
IN1	IN2	IN3	IN4	OUT1	OUT2	OUT3	OUT4	
Low	Low	Low	Low	Off	Off	Off	Off	Standby mode
High	Low	-	-	High	Low	-	-	Channel 1, forward
Low	High			Low	High			Channel 1, reverse
-	-	High	Low	-	-	High	Low	Channel 2, forward
		Low	High			Low	High	Channel 2, reverse
High	High	-	-	The logic output for the first high-level input is produced.				
-	-	High	High					

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Maximum Supply Voltage		V _{CC MAX}	-0.3 ~ +8.0	V
Output Voltage		V _{OUT MAX}	-V _{SF} ~ V _{CC} +V _{SF}	V
Input Voltage		V _{IN MAX}	-0.3~ +8.0	V
Spark Killer Di Order Direction Electric		I _{SF MAX}	1000	mA
Ground pin Source Current	Per Channel	I _{GND}	1000	mA
Allowable Power Dissipation	Mounted on a Board (Note 2)	P _{D MAX}	800	mW
Operating Temperature		T _{OPR}	-20 ~ +85	°C
Storage Temperature		T _{STG}	-40~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Mounted on a Specified board : (114.3mm×76.1mm×1.6mm, glass epoxy).

■ ALLOWABLE OPERATING RANGE (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V _{CC}		1.8 ~ 7.5	V
Input High-Level Voltage	V _{IH}	R _{IN} = 1kΩ	1.3 ~ 7.5	V
Input Low-Level Voltage	V _{IL}	R _{IN} = 1kΩ	-0.3 ~ +0.5	V

■ ELECTRICAL CHARACTERISTICS (V_{CC}=1.9V, T_A=25°C, unless otherwise specified)

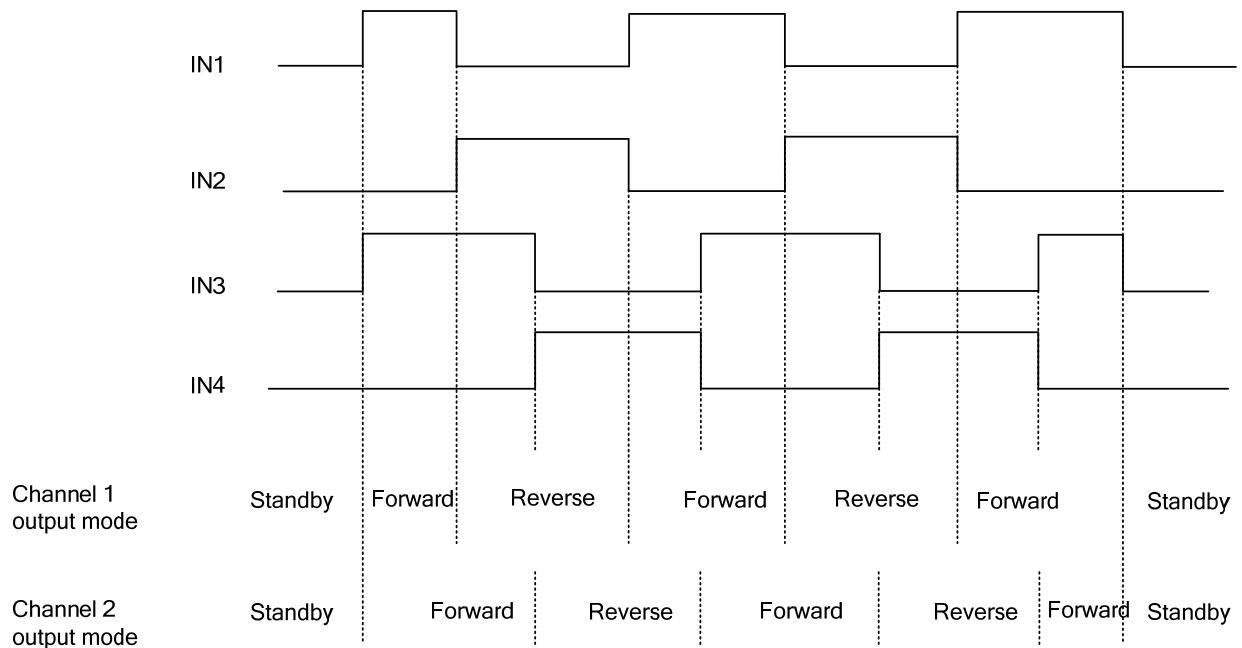
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Source Current	I _{CC01}	V _{CC} =1.9V, IN1 to IN4 = Low Level		0.01	1	μA
	I _{CC02}	V _{CC} = 3V, IN1 to IN4 = Low Level		0.01	1	μA
	I _{CC1}	IN1=High Level, IN2 to IN4 = Low Level		12	25	mA
	I _{CC2}	IN1=High Level, IN2 to IN4 =Low Level, V _{CC} =3V		15	27.5	mA
Output Saturation Voltage 1 (Single Connection)	V _{OUT11}	I _{OUT} =270mA, V _{CC} =1.9V~3.6V, V _{OUT} =Upper Tr and Under Tr IN1=High Level, IN2 to IN4 = Low Level Supplementation: Standard Similar as for IN2 to IN4 = High Level		0.30	0.40	V
	V _{OUT12}	I _{OUT} =350mA, V _{CC} =1.9V~3.6V, V _{OUT} =Upper Tr and Under Tr IN1=High Level, IN2 to IN4 = Low Level Supplementation: Standard Similar as for IN2 to IN4 = High Level		0.40	0.55	V
Output Saturation Voltage 2 (Parallel Connection)	V _{OUT21}	I _{OUT} =270mA, V _{CC} =1.9V~3.6V, V _{OUT} =Upper Tr and Under Tr OUT1-3, OUT2-4 Short, IN1 and IN3 = High Level, IN2 and IN4 = Low Level Supplementation: Standard Similar as for IN2 and IN4 = High Level		0.20	0.30	V
	V _{OUT22}	I _{OUT} =500mA, V _{CC} =1.9V~3.6V, V _{OUT} =Upper Tr and Under Tr OUT1-3, OUT2-4 Short. IN1 and IN3 = High Level, IN2 and IN4 = Low Level Supplementation: Standard Similar as for IN2 and IN4 = High Level		0.30	0.40	V

■ ELECTRICAL CHARACTERISTICS (Cont.)

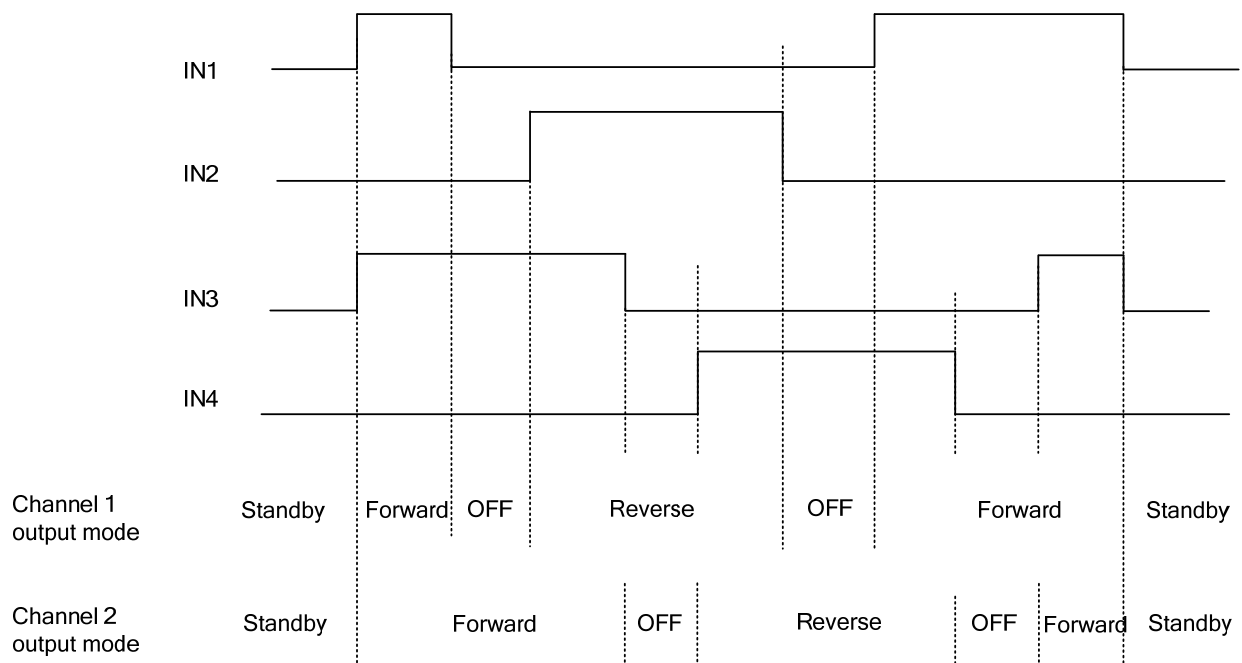
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Current	I_{IN}	$V_{IN}=1.9V$		35	70	μA
Thermal Shutdown Operation Temperature	T_{tsd}			140		$^{\circ}C$
Temperature Hysteresis Width	ΔT			20		$^{\circ}C$
Spark Killer Diode						
Reverse Current	$I_{S (leak)}$	$V_{CC-OUT}=8V, V_{IN} = \text{Low Level}$			10	μA
Forward Voltage	V_{SF}	$I_{SF} = 400mA, V_{IN} = \text{Low Level}$			1.7	V

■ TIMING CHART

(1) Timing chart for 2-phase drive



(2) Timing chart for 1-2 phase drive



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