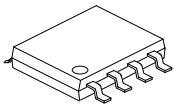
UMD9120 **Advance** ***CMOS IC***

LOW VOLTAGE H BRIDGE DRIVER



SOP-8

■ DESCRIPTION

UTC **UMD9120** is an integrated circuit driven by DC motor which is designed for low-voltage operated system. It has H bridge driver and uses the PMOS and NMOS power transistors with low output resistance. Low on-resistance ensures the circuit to consume lower power in operating at a continuous current, and ensures the circuit to operate stably for a long time.

UTC **UMD9120** has on-chip temperature protection function. When load motor with low internal resistance is in locked rotor, UTC **UMD9120** output current will increase momentarily, power dissipation of the circuit will go up sharply, and the chip temperature will soar. But, when the chip temperature exceeds a maximum temperature point (typically 150°C) set by internal temperature protection circuit, the internal circuit will switch off the on-chip power switching transistor of UTC **UMD9120**, and switch off load current, preventing potential safety hazards such as fuming, igniting, etc. Of plastic package caused by over temperature .Only after having confirmed that the circuit has returned to safety temperature, can the on-chip temperature hysteresis circuit be allowed to re-control the circuit.

■ FEATURES

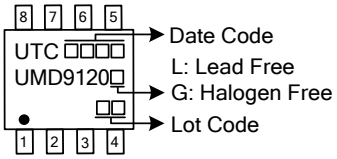
* H bridge driver of internal PMOS/NMOS power switches
* Can realize 4 functions (forward、backward、standby、brake) of load motor
* Low output impedance
* Low standby current (typ.0.1μA)
* Low static operational current (typ.300μA, V_{CC}=5V)
* On-chip thermal shut down (TSD) with hysteresis

■ ORDERING INFORMATION

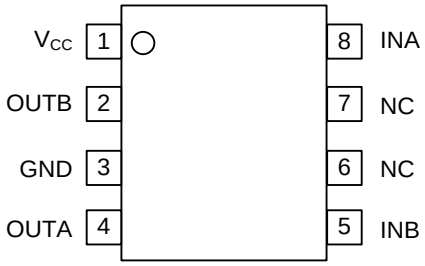
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UMD9120L-S08-R	UMD9120G-S08-R	SOP-8	Tape Reel

UMD9120G-S08-R
- (1)Packing Type — (1) R: Tape Reel
- (2)Package Type — (2) S08: SOP-8
- (3)Green Package — (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



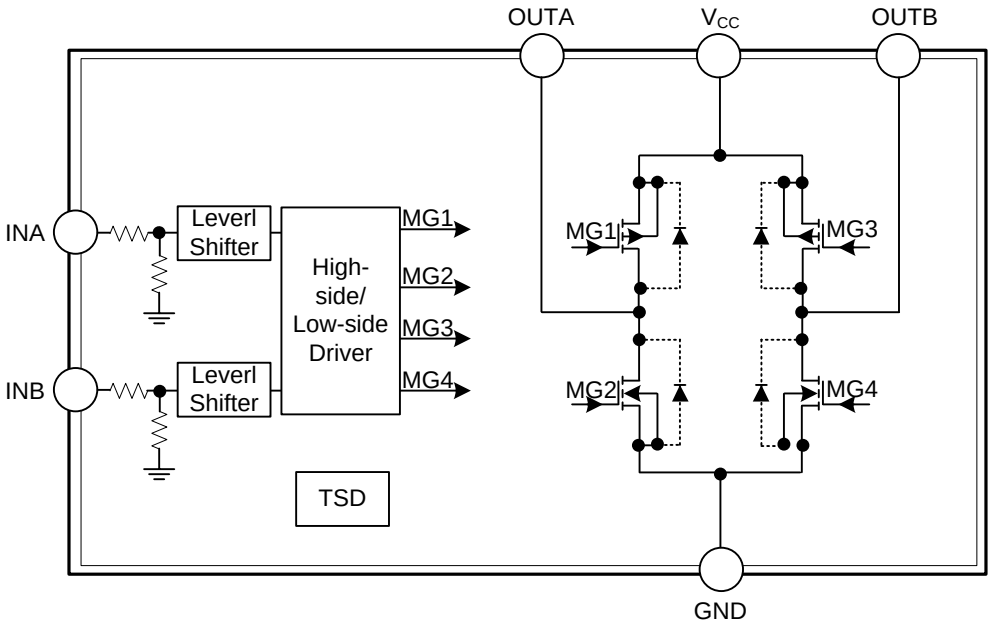
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{CC}	Power input pin, connect 1uF or more capacitor between V_{CC} and ground
2	OUTB	Output OUTB
3	GND	Ground
4	OUTA	Output OUTA
5	INB	Logic input INB
6, 7	NC	No connection
8	INA	Logic input INA

■ BLOCK DIAGRAM



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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.3 ~ 7.0	V
Input Voltage	INA, INB	-0.3 ~ 7.0	V
HBM	V_{CC}, INA, INB, OUTA, OUTB	2	kV
Junction Temperature	T_J	-40 ~ +150	°C
Storage Temperature	T_{STG}	-65 ~ +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.

■ RECOMMENDED OPERATIONAL CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Power Supply Voltage	V_{CC}	2.1 ~ 6.8	V
Input Voltage	INA, INB	2.1 ~ 6.8	V
Output Current	IOUTA, IOUTB	0 ~ 1	A

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	260	°C/W

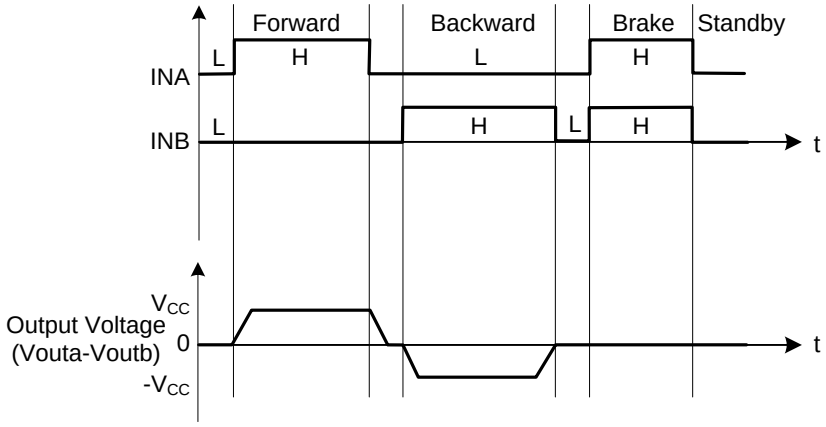
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, V_{CC}=5V, R_{LOAD}=20, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
The Power Tube Leads to Internal Resistance						
Output Resistance	R_{DSON}	I_{OUT}=400mA		0.6	1.3	Ω
INA/INB						
Input High Level	V_{INH}		0.8×V_{CC}		V_{CC}	V
Input Low Level	V_{INL}		0		0.2×V_{CC}	V
Input High Level Current	I_{INH}			2.5	8.0	uA
Input Low Level Current	I_{INL}			0	1	uA
Input the Pull-Down Resistor	R_{PD}			1.3	2.0	MΩ
Working Current						
VCC Standby Current	I_{DD_OFF}	INA=INB=0		0	2	uA
VCC Static Supply Current	I_{DD_ON}			300	1000	uA
Protection Function Parameters						
Protection Temperature	T_{OTSD}			150		°C
TSD Hysteresis	T_{HYS}			30		°C

■ LOGIC TRUTH TABLE

INA	INB	OUTA	OUTB	Working State	Working Current
L	L	Hi-Z	Hi-Z	Standby	$I_{CC\ OFF}$
H	L	H	L	Forward rotation	$I_{CC\ ON}$
L	H	L	H	Backward rotation	$I_{CC\ ON}$
H	H	L	L	Brake	$I_{CC\ ON}$

■ TYPICAL WAVEFORM



■ TYPICAL APPLICATION CIRCUIT