

Features

- Independent 2-Channel H-Bridge
- Low voltage operation (VCC = 2.0V)
- Low on-resistance <1.25 Ω
- Low operating current.
- Built-in Thermal shutdown protection
- MSOP-10 & DFN-10 Package

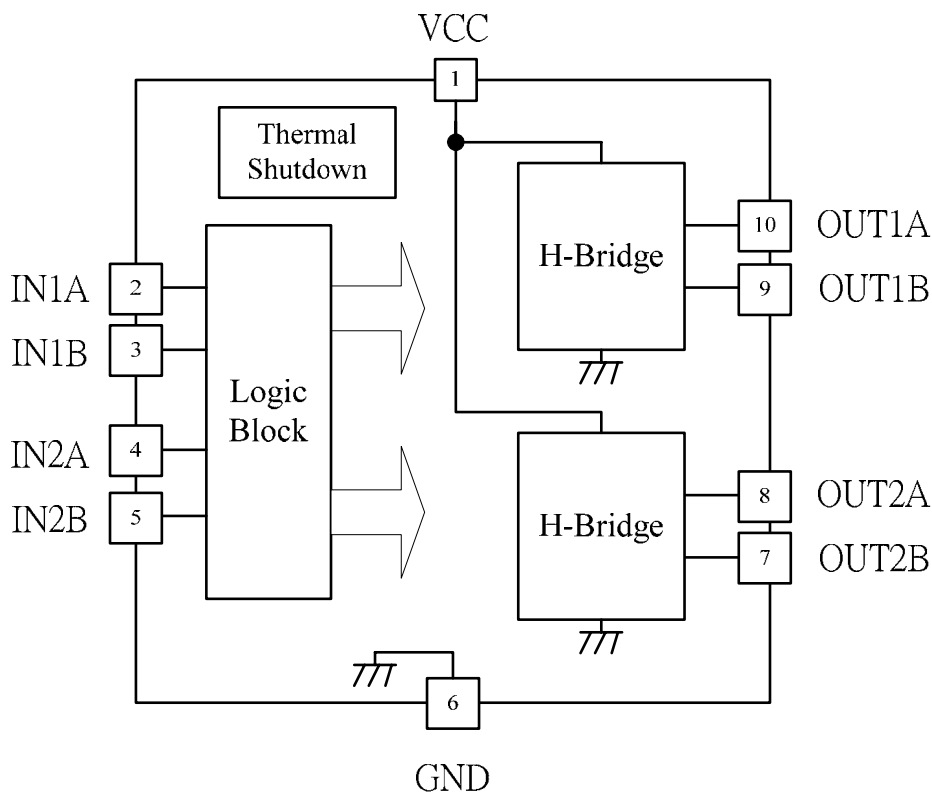
General Description

The AT5550 is a 2-channel low-saturation, low-voltage H-bridge motor driver IC for DSC motor application.

Applications

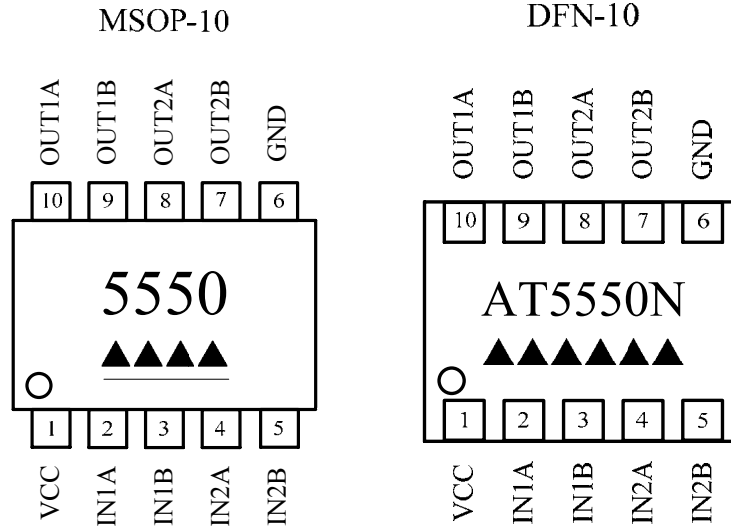
- DC motor, stepping motor

Block Diagram



Aimtron reserves the right without notice to change this circuitry and specifications.

Pin Configuration



Ordering Information

Part number	Package	Marking
AT5550M_GRE	MSOP-10, Green	, Date Code with one bottom line
AT5550N	DFN-10, Green	, Date Code

**For more marking information, contact out sales representative directly*

Pin Description

Pin NO.	Symbol	I/O	Description
1	VCC	P	Power supply
2	IN1A	I	Input pin to decide the state of driver1
3	IN1B	I	Input pin to decide the state of driver1
4	IN2A	I	Input pin to decide the state of driver2
5	IN2B	I	Input pin to decide the state of driver2
6	GND	P	Ground
7	OUT2B	O	Output pin of driver2
8	OUT2A	O	Output pin of driver2
9	OUT1B	O	Output pin of driver1
10	OUT1A	O	Output pin of driver1

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage VCC	VCC	5.5	V
Input voltage	VIN	VCC+0.4	V
Maximum output current	Iout	800	mA
Power dissipation	Pd	870	mW
Operating temperature	Topr	-20 ~ +85	°C
Junction temperature	Tj	~ +150	°C
Storage temperature range	Tstg	-55 ~ +150	°C
ESD Susceptibility *2	HBM	2	KV
	MM	200	V

1. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.
2. Device are ESD sensitive. Handling precaution recommended. The Human Body model is a 100pF capacitor discharged through a 1.5KΩ resistor into each pin.

Recommended Operating Conditions (Ta=25°C)

Item	Symbol	Ratings	Unit
Supply voltage VCC	VCC	+2.0 ~ +5.5	V
Control input voltage	VIN	0 ~ VCC	V
H Bridge output current	Iout	-400 ~ +400	mA
Logic input frequency	Fin	0 ~ 100	kHz

Electrical Characteristic

(Unless otherwise noted Ta=25 °C , VCC= 3.0V)

Parameter	Symbol	Condition	Values			Unit
			Min.	Typ.	Max.	
Whole circuits						
Circuit current at standby	ICCST	IN1A=IN1B=IN2A=IN2B=L	-	0.1	10	μA
Circuit current	ICC	IN1A=IN2B=L, IN2A=IN1B=H, No load	-	0.2	0.5	mA
Control input						
H level input voltage	VINH		2.0	-	-	V
L level input voltage	VINL		-	-	0.8	V
H level input current	IINH	VIN=3V	-	5	20	μA
L level input current	IINL	VIN=0V	-1	0	-	μA
Pull-down resistance	RIN		-	1.5	-	MΩ
Driver1,2						
Output ON Resistance	RON	Io=+-200mA, Sum of on-resistance		1.25	1.80	Ω
Thermal Protection Circuit						
Protection Temperature	TSD			150		°C

Input-output logic table

Input				Output				Mode
IN1A	IN1B	IN2A	IN2B	OUT1A	OUT1B	OUT2A	OUT2B	
L	L	L	L	Z	Z	Z	Z	Standby
H	L			H	L			
L	H			L	H			
		H	L			H	L	
		L	H			L	H	
H	H			Keep the previous output state				
		H	H					

Input				Output				Mode
IN1A	IN1B	IN2A	IN2B	OUT1A	OUT1B	OUT2A	OUT2B	
L	L	L	L	Z	Z	Z	Z	Standby
H	L	L	L	H	L	Z	Z	1,2 phase excitation
H	L	H	L	H	L	H	L	
L	L	H	L	Z	Z	H	L	
L	H	H	L	L	H	H	L	
L	H	L	L	L	H	Z	Z	
L	H	L	H	L	H	L	H	
L	L	L	H	Z	Z	L	H	
H	L	L	H	H	L	L	H	
H	H			Keep the previous output state				
		H	H					

Typical Application Circuit

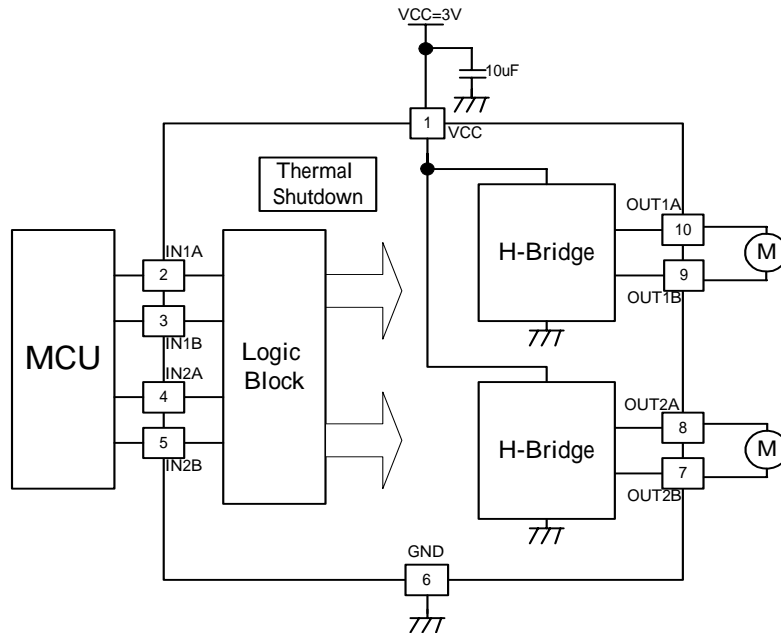


Figure 1

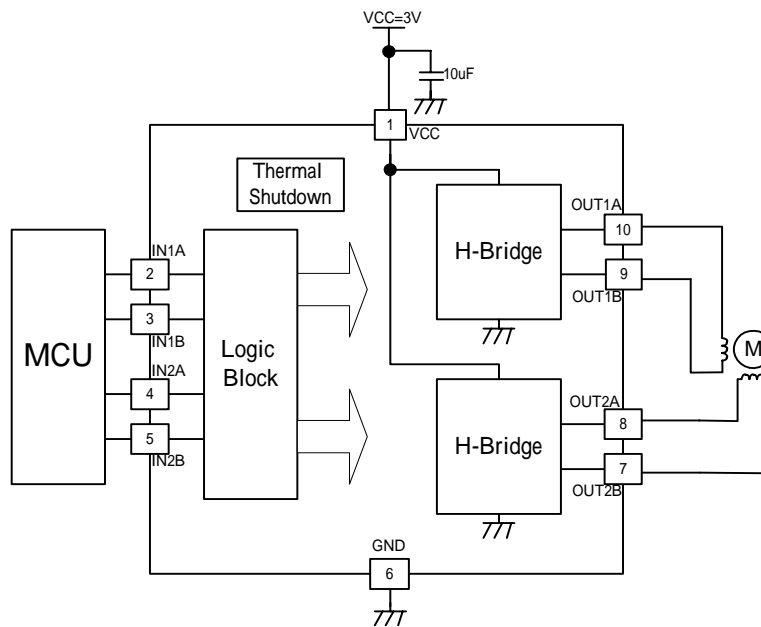
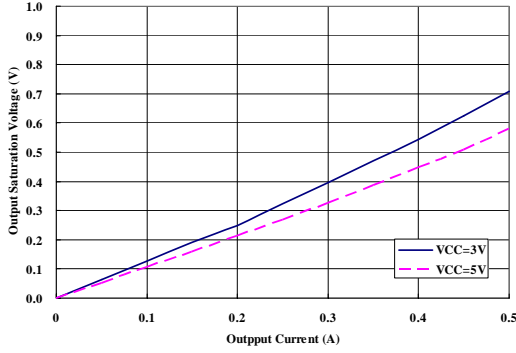


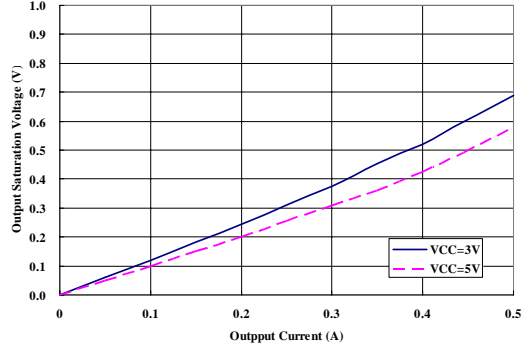
Figure 2

Typical characteristics :

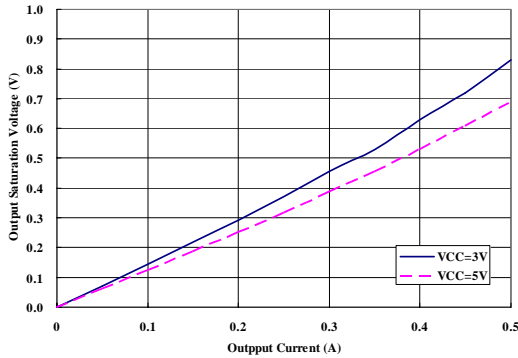
CH1 Forward Rotation :
 Output Saturatin Voltage vs. Output Current



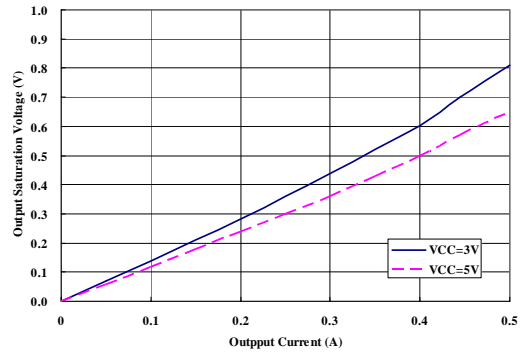
CH2 Forward Rotation :
 Output Saturatin Voltage vs. Output Current



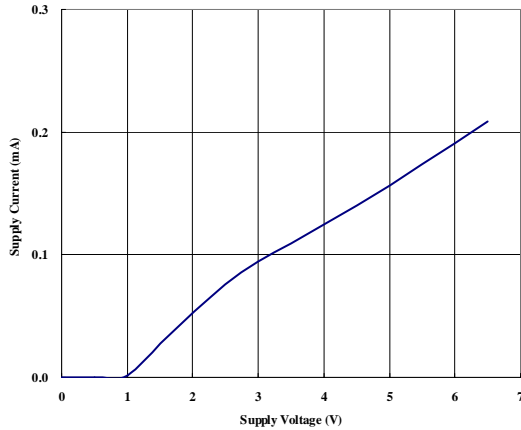
CH1 Reverse Rotation :
 Output Saturatin Voltage vs. Output Current



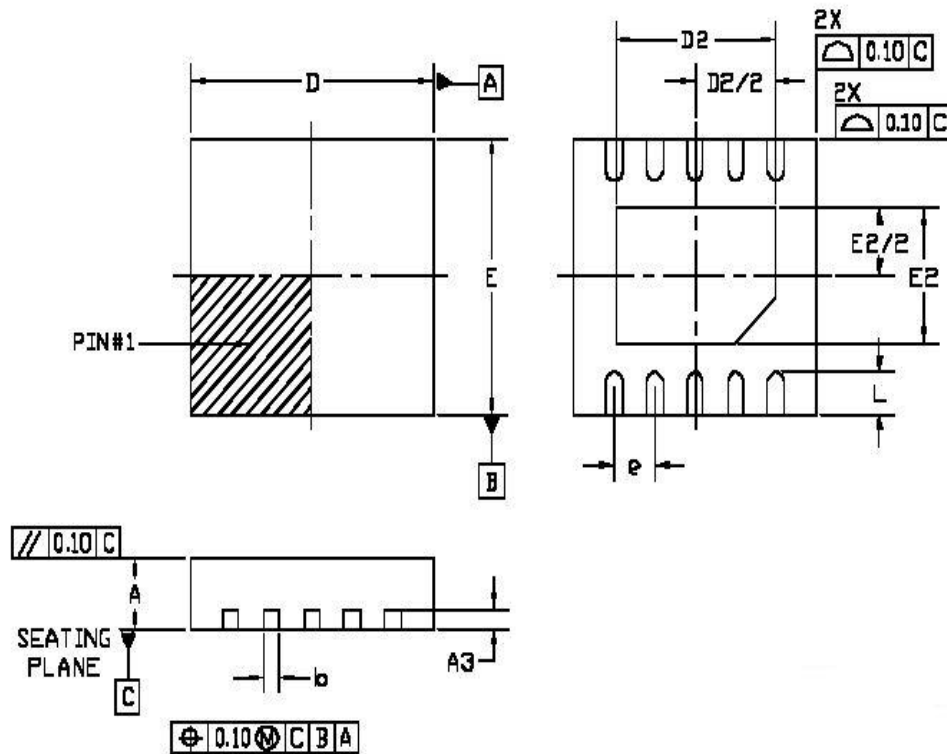
CH2 Reverse Rotation :
 Output Saturatin Voltage vs. Output Current



VCC No-load Supply Current vs. Supply Voltage



Package Outline: DFN-10



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.027	0.031	0.70	0.80	-
A3	0.006	0.010	0.15	0.25	-
b	0.007	0.012	0.18	0.30	-
D	0.12 BSC		3 BSC		-
D2	0.075	0.082	1.90	2.10	-
E	0.12 BSC		3 BSC		-
E2	0.043	0.051	1.10	1.30	-
e	0.020 BSC		0.50 BSC		-
L	0.017	0.026	0.45	0.65	-

Reflow Profiles

7F, NO.9, Park Avenue II, Science-Based Industrial Park, Hsinchu 300, Taiwan, R.O.C.

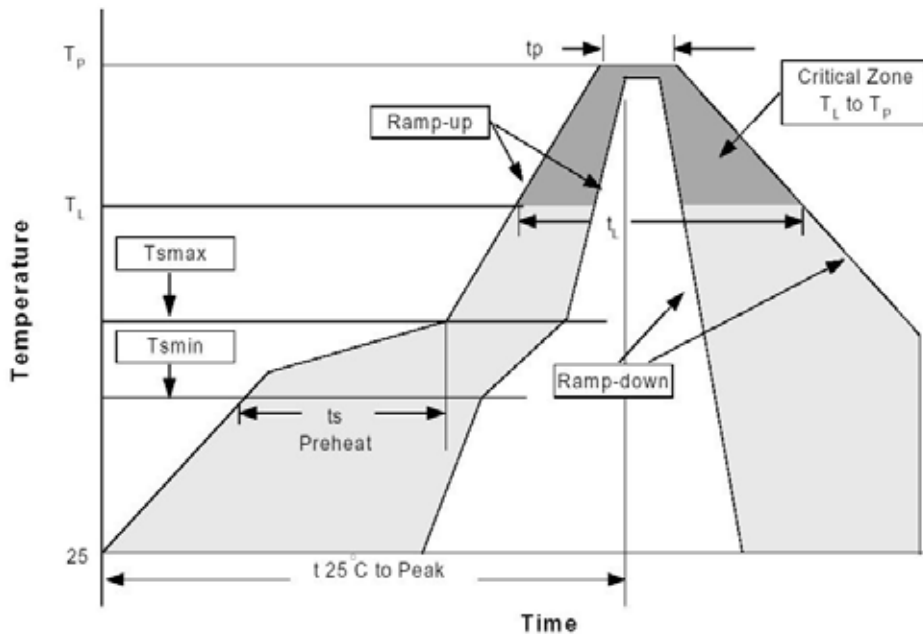
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8/7/2006 REV:1.2

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Profile Feature	Sn-Pb Eutectic Assembly		Pb-Free Assembly	
	Large Body Pkg. thickness ≥2.5mm or Pkg. volume ≥350mm ³	Small Body Pkg. thickness <2.5mm or Pkg. volume <350mm ³	Large Body Pkg. thickness ≥2.5mm or Pkg. volume ≥350mm ³	Small Body Pkg. thickness ≥2.5mm or Pkg. volume ≥350mm ³
Average ramp-up rate (TL to TP)	3°C/second max.		3°C/second max.	
Preheat -Temperature Min(Tsmin) -Temperature Max (Tsmax) -Time (min to max)(ts)	100°C 150°C 60-120 seconds		150°C 200°C 60-180 seconds	
Tsmax to TL -Ramp-up Rate			3°C/second max.	
Time maintained above: -Temperature (TL) -Time (tl)	183°C 60-150 seconds		217°C 60-150 seconds	
Peak Temperature(Tp)	225+0/-5°C	240+0/-5°C	245+0/-5°C	250+0/-5°C
Time within 5°C of actual Peak Temperature (tp)	10-30 seconds	10-30 seconds	10-30 seconds	20-40 seconds
Ramp-down Rate	6°C/second max.		3°C/second max.	
Time 25°C to Peak Temperature	6 minutes max.		8 minutes max.	

*All temperatures refer to topside of the package, measured on the package body surface.