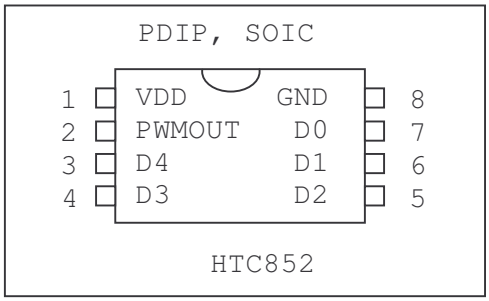
GENERAL PURPOSE PWM

1.0 General Description

HTC852 is a general-purpose PWM controller with a fixed output frequency of 31250Hz. It requires a minimum number of external components and provides a wide range of power control (32 possible settings).
It's very easy to use and provides a general DC power control solution to wide range of applications. The output pulse width is determined by the input voltage value on D[0:4] (Refer to the Output Period selection table).



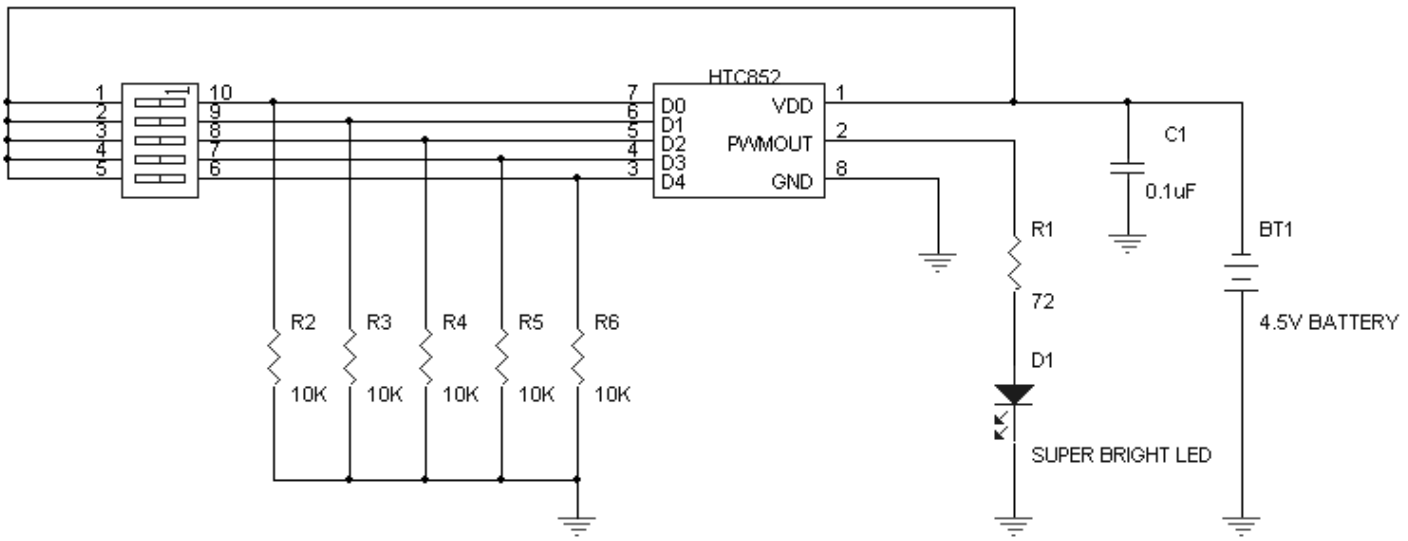
Features

- Low power consumption
- Single chip solution
- High output frequency of 31250Hz
- Sleep mode of operation with power consumption in the range of uA

2.0 Applications

- DC motor controllers including model airplanes and electric cars
- LED and LED display brightness control
- Instrumental panel illumination control

Typical connection diagram



With this application we can control the brightness of a super bright LED by changing the dip switch settings. There are 32 different brightness settings (See output period selection table for dip switch settings). Please note that if only some settings of the dip switch are used, connect the unused D[0:4] pins directly to the ground or VDD. C1 is used as a de-coupling capacitor and is not required for HTC852 operation. Setting the dip switch to all on positions, will set the highest brightness of LED and will cause HTC852 to enter into Sleep mode to preserve power. Setting the dip switch to all off positions will turn off the LEDs and HTC852 will enter into SLEEP mode to preserve power. In Sleep mode, power consumption of HTC852 is in micro amp range and that allows us to power it directly from the battery without a power switch. Note that HTC852 is monitoring its D[0:4] inputs constantly. Any change of input will be reflected in an output setting in about 32uS.

3.0 Pin out Description

Abbreviations used: O - output, I - input, P - power

Pin number	Name	I / O	Description	Notes
1	VDD	P	Power	+2.5V to + 5.5V
2	PWMOUT	O	Clock Output	Output frequency
3	D4	I	Period selector input(MSB)	Tie to GND or VDD
4	D3	I	Period selector input	Tie to GND or VDD
5	D2	I	Period selector input	Tie to GND or VDD
6	D1	I	Period selector input	Tie to GND or VDD
7	D0	I	Period selector input (LSB)	Tie to GND or VDD
8	GND	P	Ground	Connect to ground

Output Period Selection

Abbreviations used: 0 – connection to GND, 1 – connection to VDD

D4	D3	D2	D1	D0	PWMOUT High Pulse Period
0	0	0	0	0	Output is set to low and part is in sleep mode, wakes up at D[0:4] change.
0	0	0	0	1	1uS
0	0	0	1	0	2uS
0	0	0	1	1	3uS
0	0	1	0	0	4uS
0	0	1	0	1	5uS
0	0	1	1	0	6uS
0	0	1	1	1	7uS
0	1	0	0	0	8uS
0	1	0	0	1	9uS
0	1	0	1	0	10uS
0	1	0	1	1	11uS
0	1	1	0	0	12uS

0	1	1	0	1	13uS
0	1	1	1	0	14uS
0	1	1	1	1	15uS
1	0	0	0	0	16uS
1	0	0	0	1	17uS
1	0	0	1	0	18uS
1	0	0	1	1	19uS
1	0	1	0	0	20uS
1	0	1	0	1	21uS
1	0	1	1	0	22uS
1	0	1	1	1	23uS
1	1	0	0	0	24uS
1	1	0	0	1	25uS
1	1	0	1	0	26uS
1	1	0	1	1	27uS
1	1	1	0	0	28uS
1	1	1	0	1	29uS
1	1	1	1	0	30uS
1	1	1	1	1	Output is set high and part is in sleep mode, wakes up at D[0:4] change.

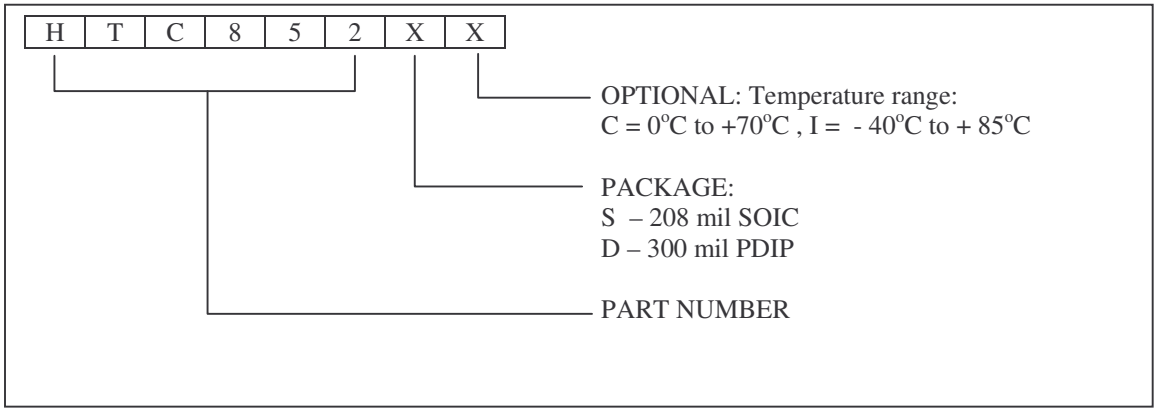
Notes:
Output periods specified in this table are about 1% accurate at room temperature and about 10% accurate in temperature range.

4.0 Electrical Characteristics

Voltage on VDD pin in respect to GND	+2.5 to +5.5V
Current consumption with no load attached in active mode.	3 mA[1]
Current consumption with no load attached in sleep mode.	7 uA[1]
PWMOUT output low voltage (5mA load)	0.4V[1]
PWMOUT output low voltage (25mA load)	0.75V[1]
PWMOUT output high voltage (5mA source)	VDD-0.7V[1]
PWMOUT output source current max	25mA[1]
PWMOUT output sink current max	25mA[1]

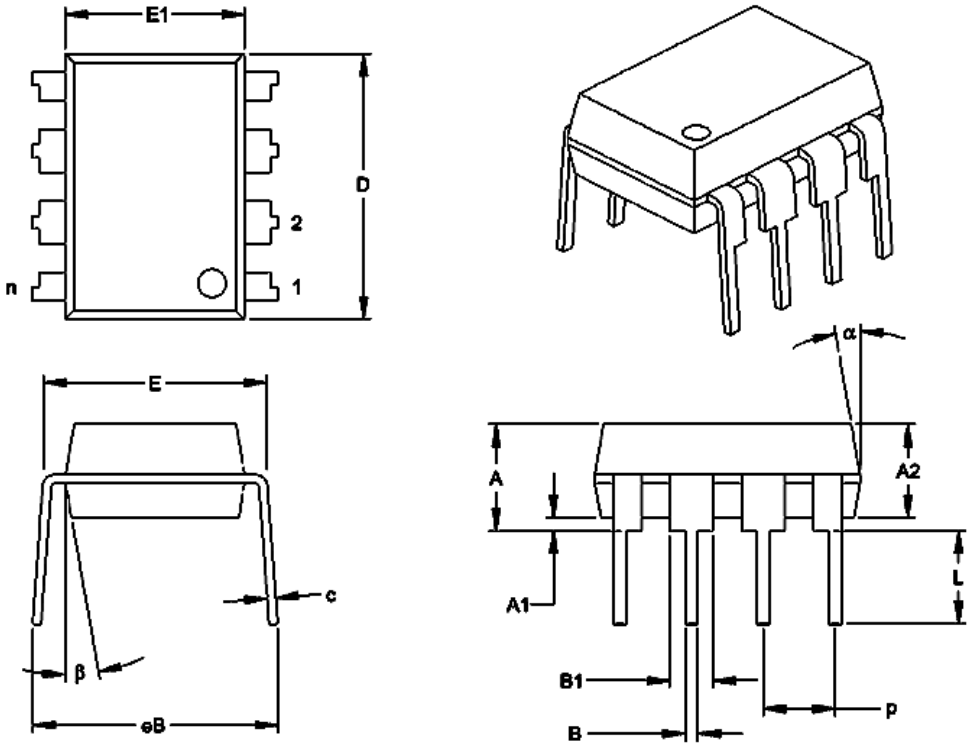
NOTES:
1. These values are characterized but not tested.

5.0 Ordering Information



6.0 Mechanical Information

8-Lead Plastic Dual In-line (P) – 300 mil (PDIP)



Units		INCHES*			MILLIMETERS		
Dimension Limits		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		8			8	
Pitch	p		.100			2.54	
Top to Seating Plane	A	.140	.155	.170	3.56	3.94	4.32
Molded Package Thickness	A2	.115	.130	.145	2.92	3.30	3.68
Base to Seating Plane	A1	.015			0.38		
Shoulder to Shoulder Width	E	.300	.313	.325	7.62	7.94	8.26
Molded Package Width	E1	.240	.250	.260	6.10	6.35	6.60
Overall Length	D	.360	.373	.385	9.14	9.46	9.78
Tip to Seating Plane	L	.125	.130	.135	3.18	3.30	3.43
Lead Thickness	c	.008	.012	.015	0.20	0.29	0.38
Upper Lead Width	B1	.045	.058	.070	1.14	1.46	1.78
Lower Lead Width	B	.014	.018	.022	0.36	0.46	0.56
Overall Row Spacing	eB	.310	.370	.430	7.87	9.40	10.92
Mold Draft Angle Top	α	5	10	15	5	10	15
Mold Draft Angle Bottom	β	5	10	15	5	10	15

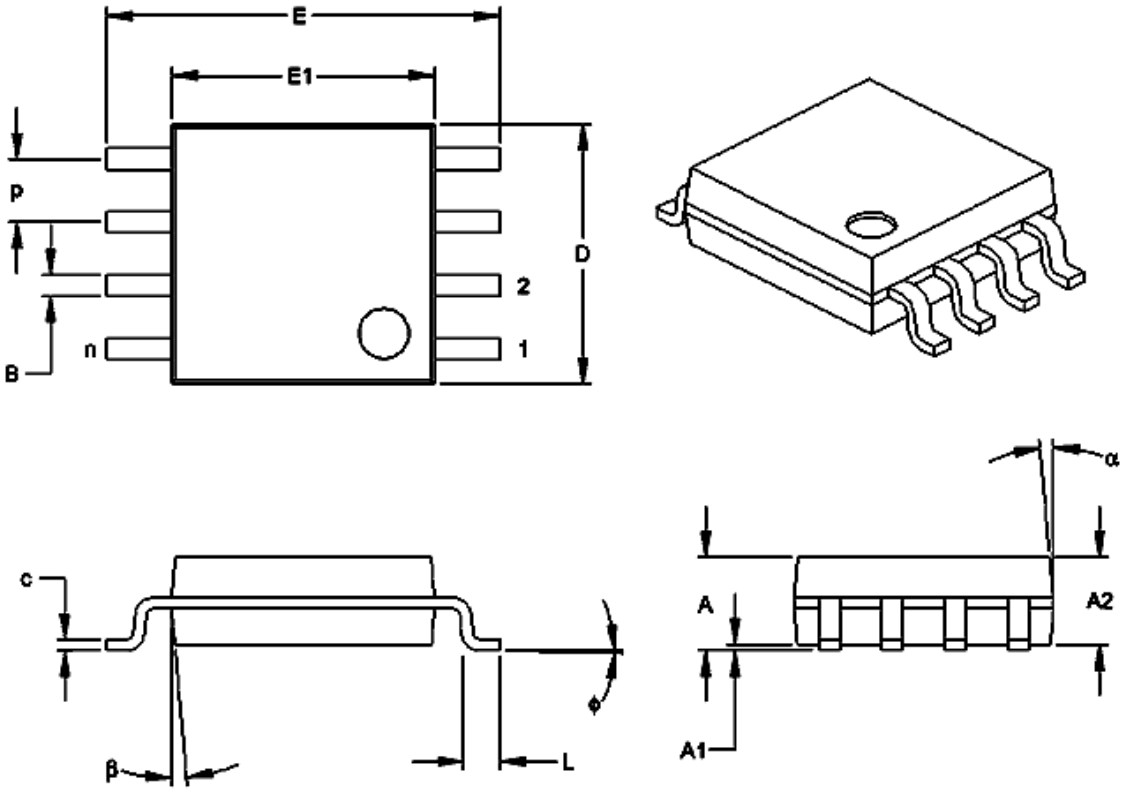
*Controlling Parameter

Notes:

Dimensions D and E1 do not include mold flash protrusions. Mold flash or protrusions shell not exceed .010” (0.254mm) per side.

JEDEC Equivalent: MS-001

8-Lead Plastic Small Outline (SM) – Medium, 208 mil (SOIC)



Units		INCHES*			MILLIMETERS		
Dimension Limits		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		8			8	
Pitch	P		.050			1.27	
Overall Height	A	.070	.075	.080	1.78	1.97	2.03
Molded Package Thickness	A2	.069	.074	.078	1.75	1.88	1.98
Standoff	A1	.002	.005	.010	0.05	0.13	0.25
Overall Width	E	.300	.313	.325	7.62	7.95	8.26
Molded Package Width	E1	.201	.208	.212	5.11	5.28	5.38
Overall Length	D	.202	.205	.210	5.13	5.21	5.33
Foot Length	L	.020	.025	.030	0.51	0.64	0.76
Foot Angle	ϕ	0	4	8	0	4	8
Lead Thickness	c	.008	.009	.010	0.20	0.23	0.25
Lead Width	B	.014	.017	.020	0.36	0.43	0.51
Mold Draft Angle Top	α	0	12	15	0	12	15
Mold Draft Angle Bottom	β	0	12	15	0	12	15

*Controlling Parameter

Notes:

Dimensions D and E1 do not include mold flash protrusions. Mold flash or protrusions shell should not exceed .010” (0.254mm) per side.

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