HIGH TECH
CHIPS, INC.
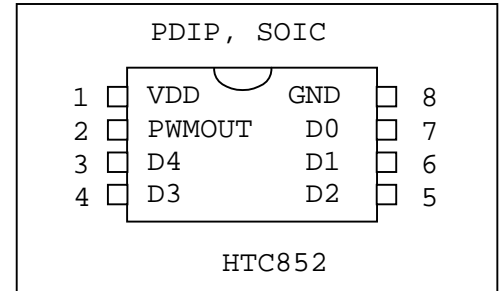
GENERAL PURPOSE PWM

1.0 General description.

HTC852 is a general-purpose PWM controller with fixed output frequency of 31250Hz. It requires minimum number of external components and provides wide range of power control (32 possible settings).

It's very easy to use and provides general DC power control solution in wide range of applications. Output pulse width is determined by input voltage value on D[0:4].

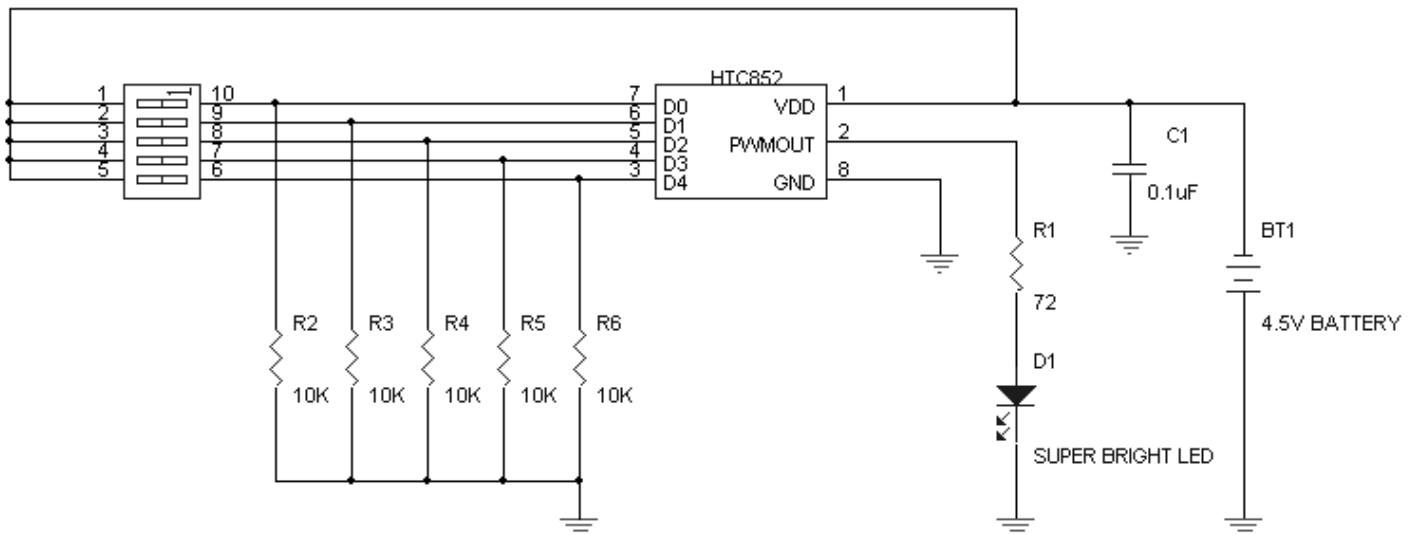Refer to Output Period selection table.

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          PDIP, SOIC

   1 □  VDD        GND  □ 8
   2 □  PWMOUT      D0  □ 7
   3 □  D4          D1  □ 6
   4 □  D3          D2  □ 5

          HTC852
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Features

- Low power consumption.
- Single chip solution.
- High output frequency of 31250Hz.
- Sleep mode of operation with power consumption in 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 brightness of super bright LED by changing dip switch settings. We can have thirty-two different brightness settings. See output period selection table for dip switch settings. Please note that if only some settings of DIP switch is used, then connect D [0:4] unused pins directly to ground or VDD. C1 is used as de-coupling capacitor and it is not required for HTC852 operation. Setting DIP switch to all on position will set highest brightness of LED and part will enter into SLEEP mode to preserve power. Setting DIP switch to all off position will turn off LED and part will enter into SLEEP mode to preserve power. In SLEEP mode power consumption of HTC852 is in micro amp range and that allows us power it directly from battery without power switch. Note that HTC852 is monitoring its D[0:4] inputs constantly. Any change of input will be reflected on 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.
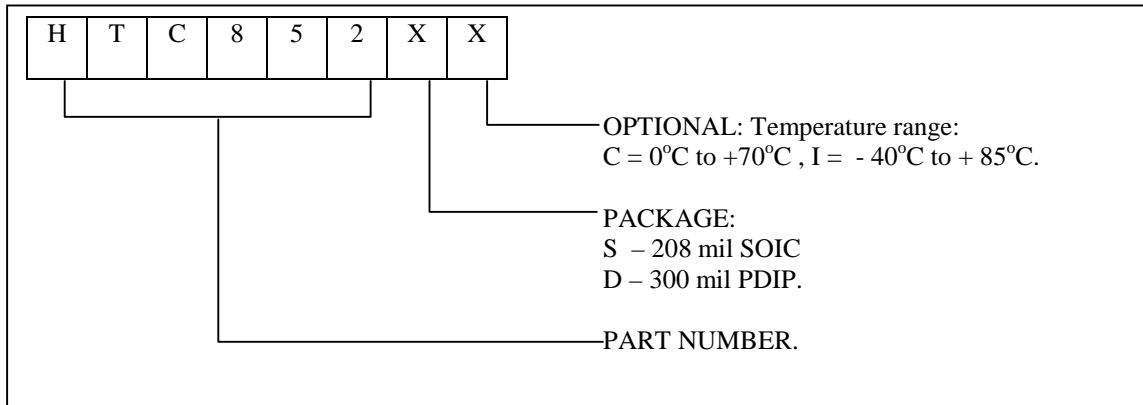
4.0 Electrical characteristics.

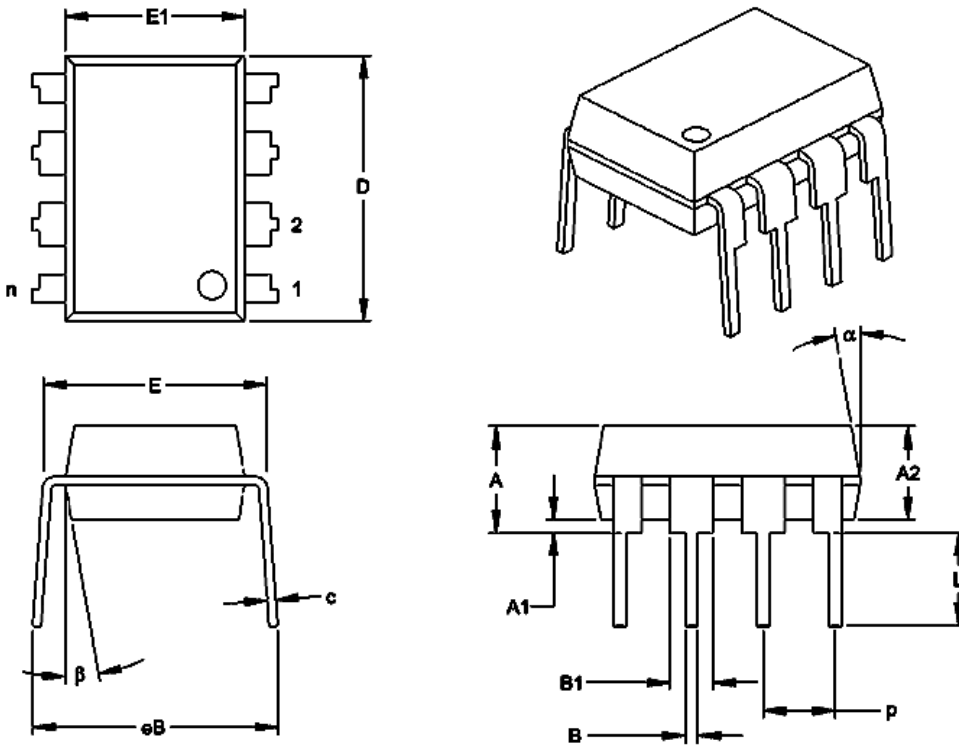|	
Voltage on VDD pin in respect to GND	+2.5 to +5.5V
Current consumption with no load attached In active mode.	3 mA[1]
Current consumption with no load attached In sleep mode.	7 uA[1]
PWMOUT output low voltage (5mA load)	0.4V[1]
PWMOUT output low voltage (25mA load)	0.75V[1]
PWMOUT output high voltage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

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

5.0 Ordering information.

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┌───┬───┬───┬───┬───┬───┬───┬───┐
│ H │ T │ C │ 8 │ 5 │ 2 │ X │ X │
└───┴───┴───┴───┴───┴───┴───┴───┘
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OPTIONAL: Temperature range:
C = 0°C to +70°C , I = - 40°C to + 85°C.

PACKAGE:
S – 208 mil SOIC
D – 300 mil PDIP.

PART NUMBER.

6.0 Mechanical information.

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

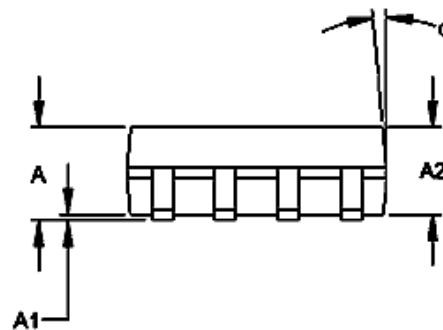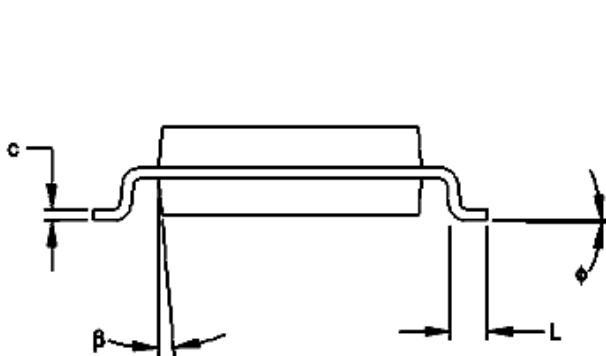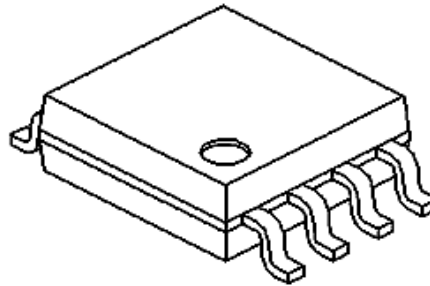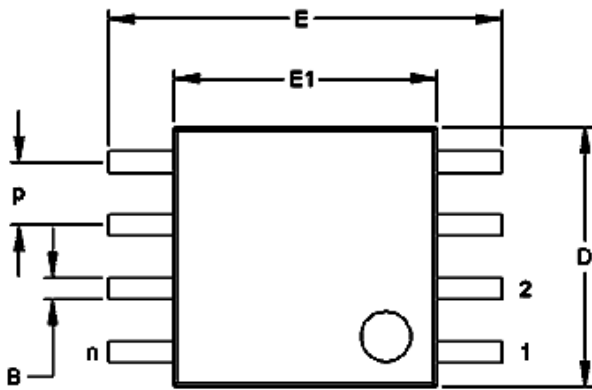|	Units	INCHES*			MILLIMETERS		
Dimension Limits		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		8			8	
Pitch	p		.100			2.54	
Top to Seating Plane	A	.140	.155	.170	3.56	3.94	4.32
Molded Package Thickness	A2	.115	.130	.145	2.92	3.30	3.68
Base to Seating Plane	A1	.015			0.38		
Shoulder to Shoulder Width	E	.300	.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 not exceed .010" (0.254mm)per side.

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