



DIMITECH

DTU1012

Programmable Square Wave Generator

DATA SHEET

TO OUR VALUED CUSTOMERS

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1. Overview

Feature Highlights

No external components required (except for decoupling capacitor)

Two independent frequency outputs

1% clock accuracy (typical)

Easily controlled via serial line

Selectable **33 output frequencies** plus one fixed

Low current operation

RoHS compliant

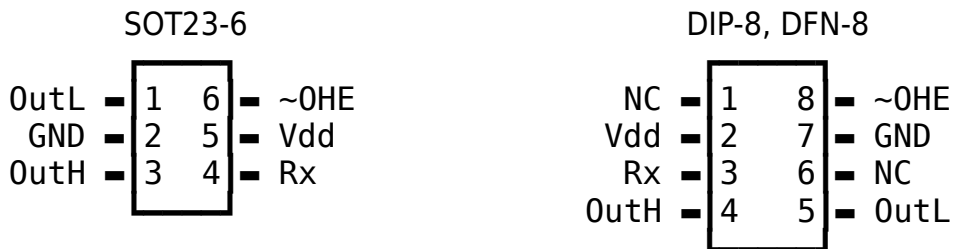
Typical Applications

General use in electronic devices

Ordering Codes

Device	Marking	Package
DTU1012T	silver dot	SOT23-6
DTU1012P	DTUP 1012	DIP-8
DTU1012R	silver dot	DFN-8

2. Pinout



Pinout Summary

Pin (SOT23)	Pin (DIP, DFN)	Name	Type	Description
1	5	OutL	O	“Low” frequency output (programmable, 1MHz default)
2	7	GND	P	Ground
3	4	OutH	O	“High” frequency output (16MHz)
4	3	Rx	I	Serial data input 9600 bps, 8N1 protocol
5	2	Vdd	P	DC power supply, positive lead
6	8	~OHE	I	High frequency output enable
N/A	1	NC	-	No connection
N/A	6	NC	-	No connection

Legend:

I - input with CMOS levels
AI - analogue input

O - digital output

P - power pin

OutL

Output for “low” frequencies. This output can have 33 selectable frequencies, controlled by data received on the **Rx** input. The control codes are shown in the table below. All invalid control codes are ignored and no change in the frequency occurs.

Control code	OutL frequency	Duty cycle
0x40	250Hz	50%
0x41	625Hz	50%
0x42	1.024kHz	50%

0x43	1.25kHz	50%
0x44	2.5kHz	50%
0x45	3.125kHz	50%
0x46	4kHz	50%
0x47	5kHz	50%
0x48	6.25kHz	50%
0x49	10kHz	50%
0x4a	12.5kHz	50%
0x4b	16kHz	50%
0x4c	20kHz	50%
0x4d	25kHz	50%
0x4e	40kHz	50%
0x4f	50kHz	50%
0x50	62.5kHz	50%
0x51	80kHz	50%
0x52	100kHz	50%
0x53	125kHz	50%
0x54	160kHz	50%
0x55	200kHz	50%
0x56	250kHz	50%
0x57	308kHz	50%
0x58	400kHz	50%
0x59	500kHz	50%
0x5a	571kHz	50%
0x5b	666kHz	50%
0x5c	800kHz	50%
0x5d	1MHz (default)	50%
0x5e	1.333MHz	50%
0x5f	2MHz	49%
0x60	4MHz	47%

OutH

Output for “high” frequency. This output has fixed **16MHz** (with approximately 35% duty cycle) frequency and its operation is controlled by the ~OHE input.

~OHE

“OutH Enable” input. A low level enables the OutH clock.

Rx

Serial data input. The protocol complies with the standard UART **9600 bps, 8-bit word, no parity, one stop bit** interface (receive only) at TTL level. The line can be directly fed by the TX output of a microcontroller. Every received byte immediately changes the output frequency OutL according to the control codes table.

Vdd

Power supply positive lead. In order to assure reliable operation, the power supply must be well filtered with minimum ripples. One or more ceramic decoupling capacitors with total capacitance of at least 0.1uF should be used and placed on the board as close as possible to the pin.

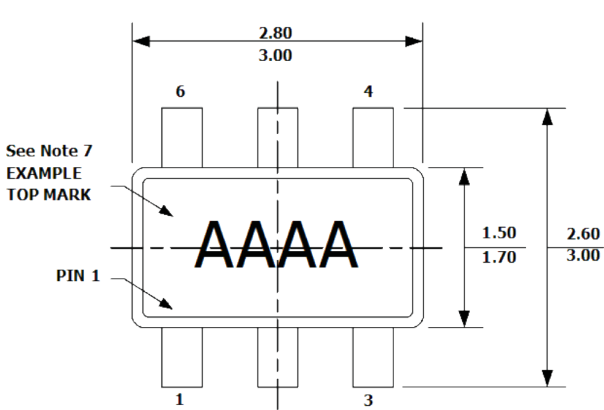
3. Electrical Parameters

Parameter	MIN.	TYP.	MAX.	Dim.
Power supply voltage on pin Vdd with respect to GND	2		5.5	V
Input voltage applied to digital pins with respect to GND	Vdd-0.5		Vdd+0.5	V
Digital logic "high" voltage	0.8Vdd			V
Digital logic "low" voltage			0.8	V
Maximum current into Vdd			80	mA
Current sunk by any pin			20	mA
Current sourced by any pin			20	mA
Power supply current ⁽¹⁾ OutL <500kHz, OutH disabled		1.0		mA
Power supply current ⁽¹⁾ OutL ≥500kHz, OutH disabled	1.0	1.05	1.12	mA
Power supply current ⁽¹⁾ OutL <500kHz, OutH enabled		1.48		mA
Power supply current ⁽¹⁾ OutL ≥500kHz, OutH enabled	1.48	1.53	1.6	mA
Ambient temperature	-40		+125	°C
Storage temperature	-65		+150	°C

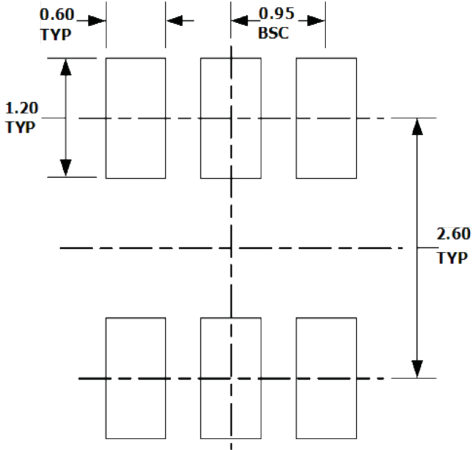
(1) 3.3V supply; Environment temperature +25°C

4. Packaging

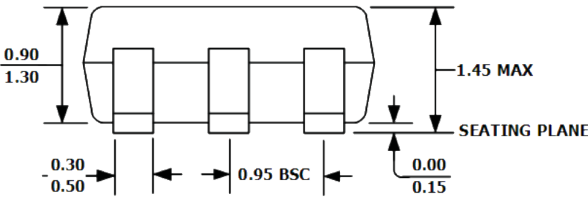
Package "T" (SOT23-6)



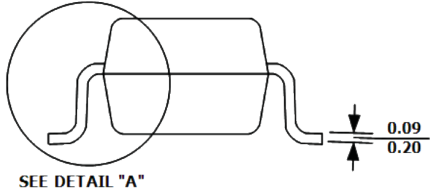
TOP VIEW



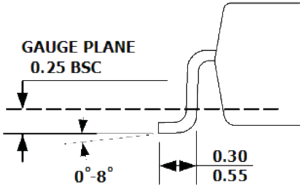
RECOMMENDED FOOTPRINT



FRONT VIEW



SIDE VIEW

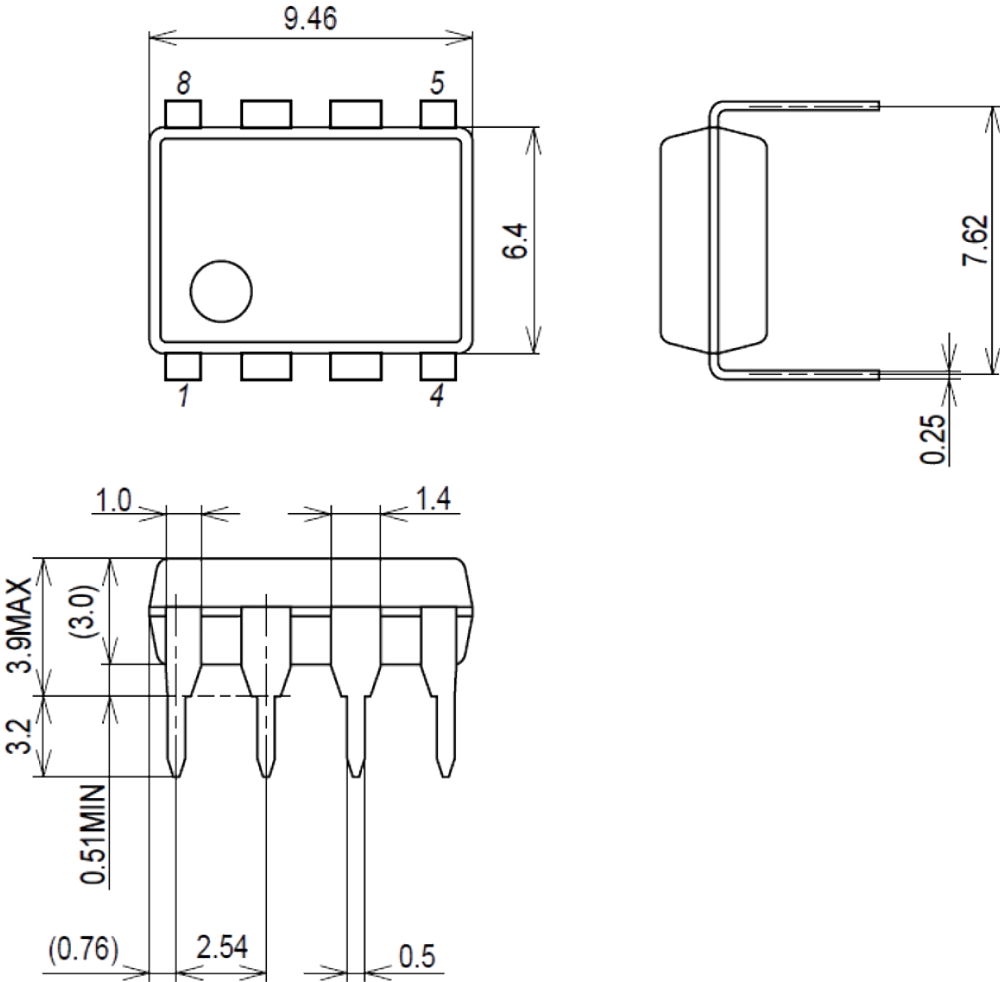


DETAIL "A"

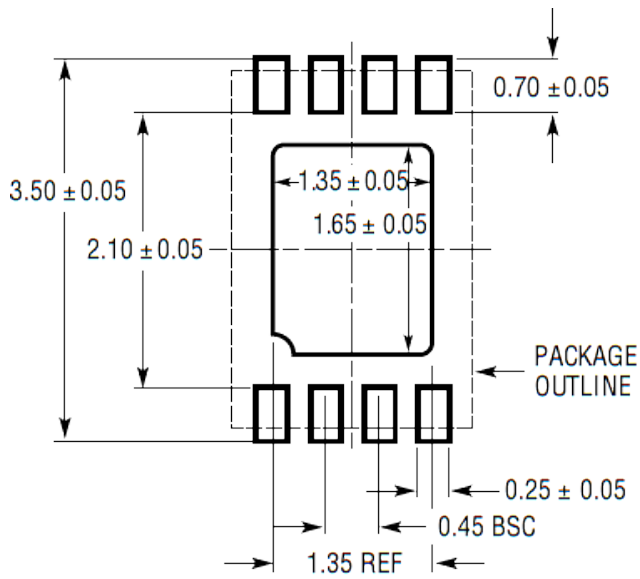
NOTE:

- 1) ALL DIMENSIONS ARE IN MILLIMETERS.
- 2) PACKAGE LENGTH DOES NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURR.
- 3) PACKAGE WIDTH DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION.
- 4) LEAD COPLANARITY (BOTTOM OF LEADS AFTER FORMING) SHALL BE 0.10 MILLIMETERS MAX.
- 5) DRAWING CONFORMS TO JEDEC MO-178, VARIATION AB.
- 6) DRAWING IS NOT TO SCALE.
- 7) PIN 1 IS LOWER LEFT PIN WHEN READING TOP MARK FROM LEFT TO RIGHT, (SEE EXAMPLE TOP MARK)

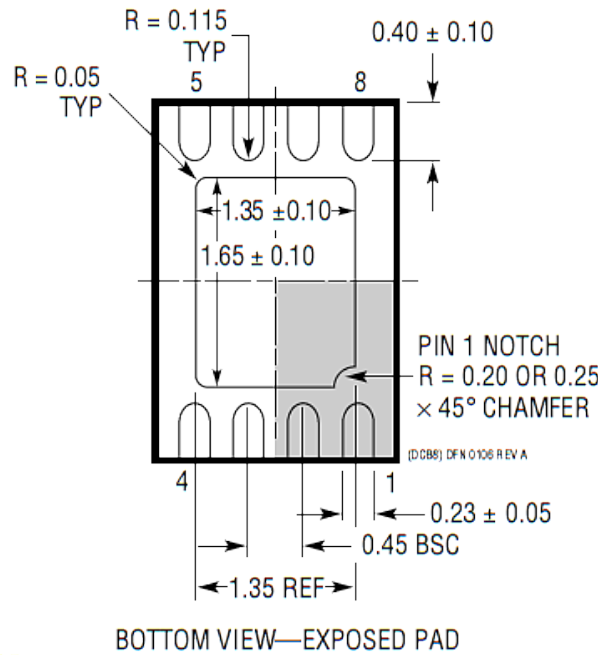
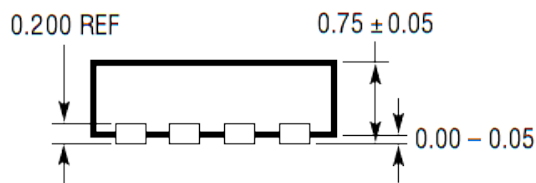
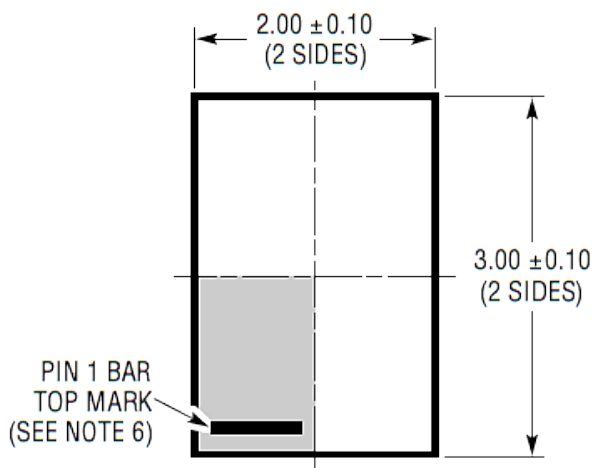
Package "P" (DIP8)



Package "R" (DFN8)



RECOMMENDED SOLDER PAD PITCH AND DIMENSIONS
APPLY SOLDER MASK TO AREAS THAT ARE NOT SOLDERED



BOTTOM VIEW—EXPOSED PAD

NOTE:

1. DRAWING IS NOT A JEDEC PACKAGE OUTLINE
2. DRAWING NOT TO SCALE
3. ALL DIMENSIONS ARE IN MILLIMETERS
4. DIMENSIONS OF EXPOSED PAD ON BOTTOM OF PACKAGE DO NOT INCLUDE MOLD FLASH. MOLD FLASH, IF PRESENT, SHALL NOT EXCEED 0.15mm ON ANY SIDE
5. EXPOSED PAD SHALL BE SOLDER PLATED
6. SHADED AREA IS ONLY A REFERENCE FOR PIN 1 LOCATION ON THE TOP AND BOTTOM OF PACKAGE