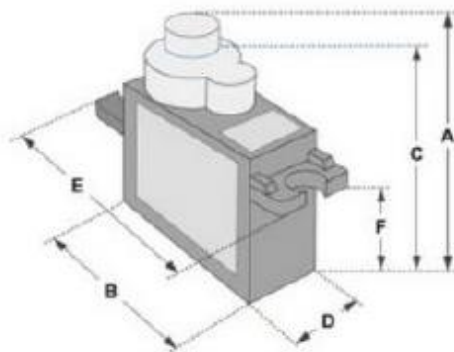# SERVO MOTOR SG90                                        DATA SHEET



Tiny and lightweight with high output power. Servo can rotate approximately 180 degrees (90 in each direction), and works just like the standard kinds but smaller. You can use any servo code, hardware or library to control these servos. Good for beginners who want to make stuff move without building a motor controller with feedback & gear box, especially since it will fit in small places. It comes with a 3 horns (arms) and hardware.
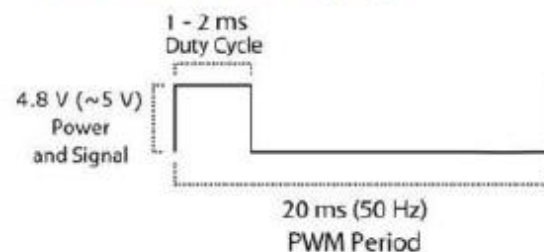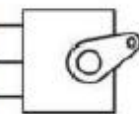


| Dimensions & Specifications |
| --- |
| A (mm) : 32 |
| B (mm) : 23 |
| C (mm) : 28.5 |
| D (mm) : 12 |
| E (mm) : 32 |
| F (mm) : 19.5 |
| Speed (sec) : 0.1 |
| Torque (kg-cm) : 2.5 |
| Weight (g) : 14.7 |
| Voltage : 4.8 - 6 |

Position "0" (1.5 ms pulse) is middle, "90" (~2ms pulse) is middle. is all the way to the right, "-90" (~1ms pulse) is all the way to the left.
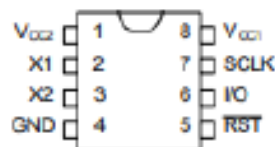
PWM=Orange ( ⎍ )
Vcc = Red ( + )
Ground=Brown ( – )



1 - 2 ms
Duty Cycle

4.8 V (~5 V)
Power
and Signal

20 ms (50 Hz)
PWM Period

## FEATURES

- Real time clock counts seconds, minutes, hours, date of the month, month, day of the week, and year with leap year compensation valid up to 2100
- 31 x 8 RAM for scratchpad data storage
- Serial I/O for minimum pin count
- 2.0–5.5 volt full operation
- Uses less than 300 nA at 2.0 volts
- Single–byte or multiple–byte (burst mode) data transfer for read or write of clock or RAM data
- 8–pin DIP or optional 8–pin SOICs for surface mount
- Simple 3–wire interface
- TTL–compatible ($V_{CC}$ = 5V)
- Optional industrial temperature range –40°C to +85°C
- DS1202 compatible
- Added features over DS1202
  - Optional trickle charge capability to $V_{CC1}$
  - Dual power supply pins for primary and backup power supplies
  - Backup power supply pin can be used for battery or super cap input
  - Additional scratchpad memory (7 bytes)

## PIN ASSIGNMENT



DS1302
8-Pin DIP (300-Mil)



DS1302S 8-Pin SOIC (200-Mil)
DS1302Z 8-Pin SOIC (150-Mil)

## PIN DESCRIPTION

| | |
|---|---|
| X1, X2 | – 32.768 kHz Crystal Pins |
| GND | – Ground |
| $\overline{RST}$ | – Reset |
| I/O | – Data Input/Output |
| SCLK | – Serial Clock |
| $V_{CC1}$, $V_{CC2}$ | – Power Supply Pins |

## ORDERING INFORMATION

| PART # | DESCRIPTION |
|---|---|
| DS1302 | Serial Timekeeping Chip; 8–pin DIP |
| DS1302S | Serial Timekeeping Chip; 8–pin SOIC (200-mil) |
| DS1302Z | Serial Timekeeping Chip; 8–pin SOIC (150-mil) |

## DESCRIPTION

The DS1302 Trickle Charge Timekeeping Chip contains a real time clock/calendar and 31 bytes of static RAM. It communicates with a microprocessor via a simple serial interface. The real time clock/calendar provides seconds, minutes, hours, day, date, month, and year information. The end of the month date is automatically adjusted for months with less than 31 days, including corrections for leap year. The clock operates in either the 24–hour or 12–hour format with an AM/PM indicator.

برد آردوینو Uno در مجموع دارای 20 پایه ورودی/خروجی است که در ادامه جزییات آن‌ها بیان می‌شود.



www.ElectroPeak.com