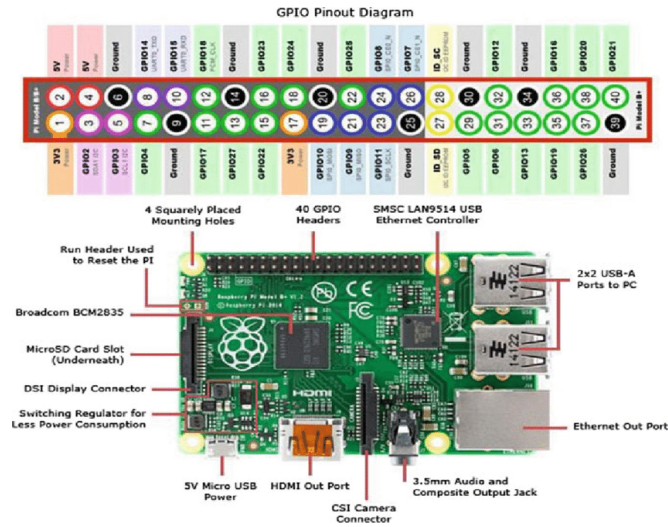


LAMPIRAN

RASPBERRY PI 3 DATASHEET



Raspberry Pi-3 Pin Configuration

PIN GROUP	PIN NAME	DESCRIPTION
POWER SOURCE	+5V, +3.3V, GND and Vin	+5V -power output +3.3V -power output GND – GROUND pin
COMMUNICATION INTERFACE	UART Interface(RXD, TXD) [(GPIO15,GPIO14)]	UART (Universal Asynchronous Receiver Transmitter) used for interfacing sensors and other devices.

<p>SPI Interface(MOSI, MISO, CLK,CE) x 2</p> <p>[SPI0-(GPIO10 ,GPIO9, GPIO11 ,GPIO8)]</p> <p>[SPI1--(GPIO20 ,GPIO19, GPIO21 ,GPIO7)]</p>	<p>SPI (Serial Peripheral Interface) used for communicating with other boards or peripherals.</p>	
<p>TWI Interface(SDA, SCL) x 2</p> <p>[(GPIO2, GPIO3)]</p> <p>[(ID_SD,ID_SC)]</p>	<p>TWI (Two Wire Interface) Interface can be used to connect peripherals.</p>	
<p>INPUT OUTPUT PINS</p>	<p>26 I/O</p>	<p>Although these some pins have multiple functionsthey can be considered as I/O pins.</p>
<p>PWM</p>	<p>Hardware PWM available on GPIO12, GPIO13, GPIO18, GPIO19</p>	<p>These 4 channels can provide PWM (Pulse Width Modulation) outputs.</p> <p>*Software PWM available on all pins</p>
<p>EXTERNAL INTERRUPTS</p>	<p>All I/O</p>	<p>In the board all I/O pins can be used as Interrupts.</p>

Raspberry Pi 3 Technical Specifications

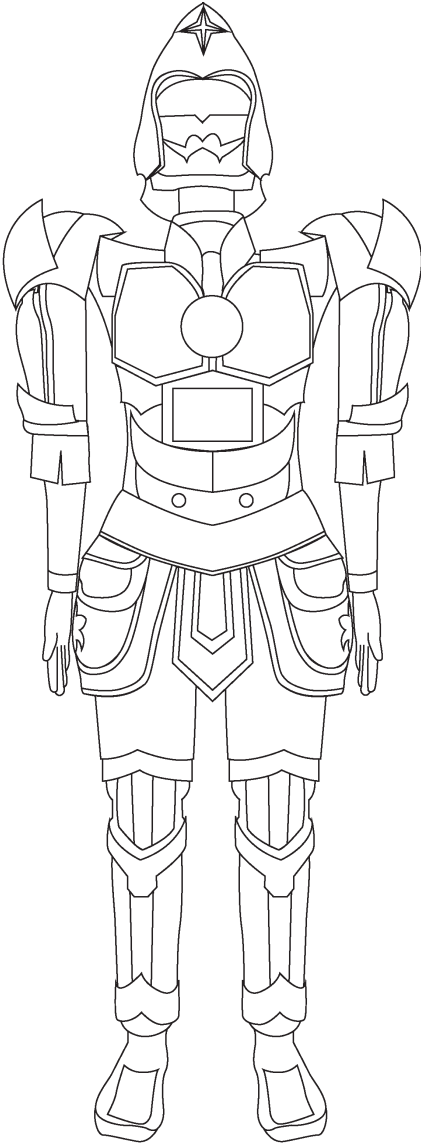
Microprocessor	Broadcom BCM2837 64bit Quad Core Processor
Processor Operating Voltage	3.3V
Raw Voltage input	5V, 2A power source
Maximum current through each I/O pin	16mA
Maximum total current drawn from all I/O pins	54mA
Flash Memory (Operating System)	16Gbytes SSD memory card
Internal RAM	1Gbytes DDR2
Clock Frequency	1.2GHz
GPU	<p>Dual Core Video Core IV® Multimedia Co-Processor. Provides Open GLES 2.0, hardware-accelerated Open VG, and 1080p30 H.264 high-profile decode.</p> <p>Capable of 1Gpixel/s, 1.5Gtexel/s or 24GFLOPs with texture filtering and DMA infrastructure.</p>
Ethernet	10/100 Ethernet
Wireless Connectivity	BCM43143 (802.11 b/g/n Wireless LAN and Bluetooth 4.1)

Operating Temperature	-40°C to +85°C
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Board Connectors

Name	Description
Ethernet	Base T Ethernet Socket
USB	2.0 (Four sockets)
Audio Output	3.5mm Jack and HDMI
Video output	HDMI
Camera Connector	15-pin MIPI Camera Serial Interface (CSI-2)
Display Connector	Display Serial Interface (DSI) 15 way flat flex cable connector with two data lanes and a clock lane.
Memory Card Slot	Push/Pull Micro SDIO

DESAIN ROBOT





Description of E18-D80NK

E18-D80NK is a non-contact detection sensor providing a digital output when an object comes into a specific range of it. It is a low-cost, easy to assemble sensor with very little interference with the surrounding lights and environment.

Features and Specifications of E18-D80NK

Below are some features and specifications of the E18-D80NK infrared proximity sensor.

1. Input Voltage: 5V
2. Current Consumption: 25-100 mA
3. Response time <2ms
4. Sensor type: Diffuse reflective type
5. Sensing range: 3-80 cm
6. Cable length: 45 cm

Pin Configuration of E18-D80NK

The table below showcases the pin configuration of the IR proximity sensor. It has 3 output wires, which are generally color-coded with Red as VCC, Green as the ground, and Yellow being the Digital output.

Pin Type/Wire color	Pin Description
VCC(Red)	Voltage input(+5V)
GND(Green)	Ground terminal
Digital pin(Yellow)	Digital signal output

Note: The general color coding of the wire may vary in the E18-D80NK IR sensor from different manufacturers or distributors. Kindly follow the suitable datasheet for connections.

*Some other common color code is: **Brown: VCC, Black: Output, Blue: Ground***

SPEAKER DATASHEET



Features and Specification

- Nominal Size: 20 mm
- Impedance: 8 Ohm \pm 15% at 1 KHz 1V
- Resonant frequency: 750 Hz \pm 150 Hz at 1V
- Sound pressure level: 86 dB/w \pm 3 dB
- Response: 10 dB (max)
- Input power: 0.5W
- Handling capacity: 1W
- Operation must be normal at program source of 0.5W
- Buzz, rattle, etc. must be normal at sine wave of 2 V
- Magnet Size: 8 x 1 mm
- Heat test: 60 \pm 2° C
- Humidity test: 40 \pm 2° C

8 Ohm Speakers with different power rating

0.5W, 2W, 10W, 25W, 40W and other.

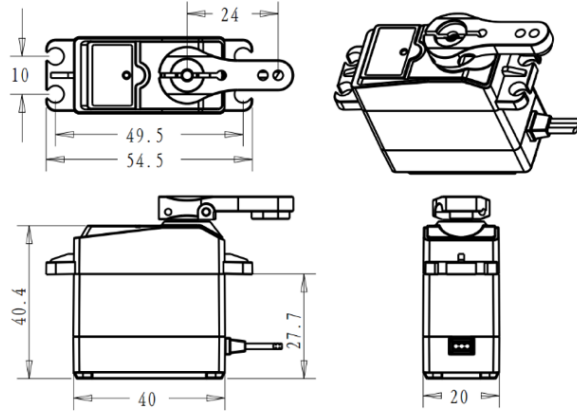
SERVO DATASHEET



Mizuzei 6V 20kg RC Digital Servo
(Product datasheet)

page 1/2

(Product Mode No.): DS3218
(Product Description): 6V 20kg RC Digital Servo
(Drawing)



1. Apply Environmental Condition

No.	Item	Specification
1-1	Storage Temperature Range	-30°C ~ 80°C
1-2	Operating Temperature Range	-15°C ~ 70°C
1-3	Operating Voltage Range	4.8-6.8V

2. Mechanical Specification

No.	Item	Specification
2-1	Size	40*20*40.5mm
2-2	Weight	60g
2-3	Gear ratio	275
2-4	Bearing	Double bearing
2-5	Connector wire	300±5mm
2-6	Motor	3-pole
2-7	Waterproof performance	IP66

Miuzei 6V 20kg RC Digital Servo

(Product datasheet)

page 2/2

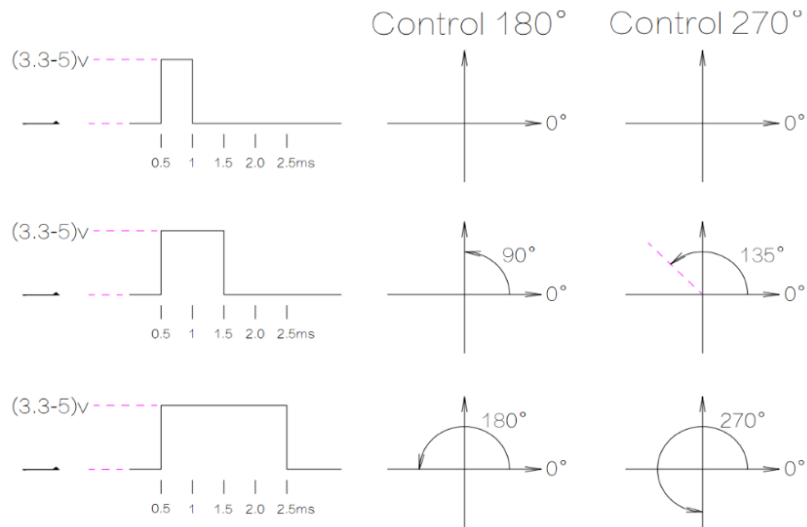
3. Electrical Specification

No.	Operating Voltage	5V	6.8V
3-1	Idle current(at stopped)	4mA	5mA
3-2	Operating speed (at no load)	0.16 sec/60°	0.14sec/60°
3-3	Stall torque (at locked)	18 kg-cm	21.5 kg-cm
3-4	Stall current (at locked)	1.8A	2.2A

4. Control Specification

No.	Item	Specification
4-1	Control System	PWM(Pulse width modification)
4-2	Pulse width range	500~2500 μsec
4-3	Neutral position	1500 μsec
4-4	Running degree	180° or 270° (when 500~2500 μ sec)
4-5	Dead band width	3 μsec
4-6	Operating frequency	50-330Hz
4-7	Rotating direction	Counterclockwise (when 500~2500 μsec)

5. PWM About PWM Control



AMPLIFIER DATASHEET

LM386 LINEAR INTEGRATED CIRCUIT

LOW VOLTAGE AUDIO POWER AMPLIFIER

DESCRIPTION

The UTC LM386 is a power amplifier, designed for use in low voltage consumer applications. The gain is internally set to 20 to keep external part count low, but the addition of an external resistor and capacitor between pin 1 and pin 8 will increase the gain to any value up from 20 to 200.

The inputs are ground referenced while the output automatically biases to one-half the supply voltage. The quiescent power drain is only 24 milliwatts when operating from a 6 voltage supply, making the LM386 ideal for battery operation.

FEATURES

- *Battery Operation
- *Minimum External Parts
- *Wide Supply Voltage Range: 4V-12V
- *Low Quiescent Current Drain-4mA
- *Voltage Gains 20-200
- *Ground Referenced Input
- *Self-Centering Output Quiescent Voltage
- *Low Distortion 0.2% (A_v=20, V_{in}=4V, R_L=8Ω, P_{in}=125mW, f=1kHz)

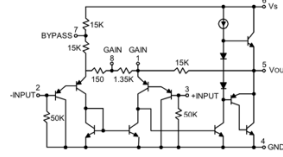
ORDERING INFORMATION

Ordering Number		Package	Packing
Normal	Lead Free Halogen Free		
LM386-S08-R	LM386L-S08-R	LM386G-S08-R	SOP-8 Tape Reel
LM386-S08-T	LM386L-S08-T	LM386G-S08-T	SOP-8 Tube
LM386-P08-R	LM386L-P08-R	LM386G-P08-R	TSSOP-8 Tape Reel
LM386-P08-T	LM386L-P08-T	LM386G-P08-T	TSSOP-8 Tube
LM386-D08-T	LM386L-D08-T	LM386G-D08-T	DIP-8 Tube

LM386G-D08-T	(1) Packing Type (2) Package Type (3) Halogen Free	(1) R: Tape Reel, T: Tube (2) S08: SOP-8, P08: TSSOP-8, D08: DIP-8 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn
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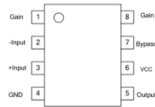
LM386 LINEAR INTEGRATED CIRCUIT

BLOCK DIAGRAM



LM386 LINEAR INTEGRATED CIRCUIT

PIN CONFIGURATION



LM386 LINEAR INTEGRATED CIRCUIT

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	15	V
Input Voltage	V _{IN}	-0.4V ~ +0.4V	V
Power Dissipation	DIP-8	1250	mW
	SOP-8	600	
	TSSOP-8	600	
Operating Temperature	T _{op}	-20 ~ +85	°C
Junction Temperature	T _J	+125	°C
Storage Temperature	T _{stg}	-65 ~ +150	°C

Note: 1. Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

ELECTRICAL CHARACTERISTICS (T_a=25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Supply Voltage	V _{CC}	V _{in} =0	4	6	12	V
Quiescent Current	I _{CC}	V _{in} =4V, V _{out} =0	4	6	12	mA
Output Power	P _{out}	V _{in} =4V, R _L =8Ω, THD=10%	250	325	400	mW
		V _{in} =5V, R _L =8Ω, THD=10%	800	700	700	mW
Voltage Gain	G _v	V _{in} =4V, f=1kHz	20	25	25	dB
		10μF from pin 1 to pin 8	46	46	46	dB
Bandwidth	BW	V _{in} =4V, Pin1 and pin 8 open	300	300	300	KHz
Total Harmonic Distortion	THD	P _{out} =125mW, V _{in} =4V, f=1kHz, R _L =8Ω, pin1 and pin 8 open	0.2	0.2	0.2	%
Rejection Ratio	RR	V _{in} =4V, f=1kHz, Common Mode Input pin1 and pin 8 open, Referred to output	50	50	50	dB
Input Resistance	R _{in}	V _{in} =4V	50	50	50	kΩ
Input Bias Current	I _{bias}	V _{in} =4V, Pin2 and pin 3 open	250	250	250	nA

PENGUJIAN SENSOR PROXIMITY



PENGUJIAN GERAKAN



```
import RPi.GPIO as GPIO
import time

GPIO.setmode(GPIO.BOARD)

# Tentukan pin yang akan digunakan
untuk mengontrol servo
servo_pin = 11

# Atur pin sebagai output
GPIO.setup(servo_pin, GPIO.OUT)

# Buat objek PWM pada pin servo
pwm = GPIO.PWM(servo_pin, 50)

# Atur sudut awal servo ke posisi tengah
pwm.start(7.5)

# Fungsi untuk menggerakkan servo ke
posisi tertentu
def move_servo(angle):
    duty_cycle = 2.5 + 10 * angle / 180
    pwm.ChangeDutyCycle(duty_cycle)
```

```
try:
    while True:
        # Baca input dari pengguna
        angle = int(input("Masukkan sudut
(0-180): "))

        # Pastikan sudut yang dimasukkan
berada dalam rentang 0-180
        if angle < 0:
            angle = 0
        elif angle > 180:
            angle = 180

        # Gerakkan servo ke sudut yang
dimasukkan
        move_servo(angle)
        time.sleep(0.5)

except KeyboardInterrupt:
    # Jika program dihentikan, matikan
objek PWM dan keluar
    pwm.stop()
    GPIO.cleanup()
```