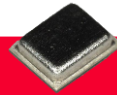


Murata's Solutions for Humanoid Robotics



Power Products

- **AC/DC, DC/DC, PMEC, Motor drivers, Power distribution unit**
 - Wide 10:1 input range supporting 72, 48, 24, 12, 5, 3.3V PDU rails
- **AC/DC**
 - High reliability solutions for 48V, 60V, 72V battery/system charging
- **Ultra-small PoLs**
 - Compact, high-efficiency modules for motors, sensors & compute
- **High-Isolation DC/DC**
 - Reinforced solutions for communications, sensing & BMS



pMUT- Object Detection

- **Piezoelectric Micromachined Ultrasound Transducer**
 - Measurements range from 1cm to 6cm
 - Small size of 2.8mm x 2.3mm x 0.81 mm
 - User-friendly frequency of around 45kHz (reception by possible)
 - μ W order low power consumption
 - Compact high SPL for accurate range detection
- Applications:** Object detection



Magnetic Sensors

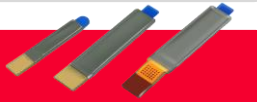
- **AMR Sensors**
 - Compact size
 - High sensitivity
 - Low power consumption
 - Omni directional
 - World's first Omni directional AMR magnetic sensor
- Applications:** Detecting the positioning & orientation of limbs and joints



Communication Modules-Module/RF



- **BT, BLE, Wi-Fi, HaLow, mmWave, UWB, LTE**
 - Real-time connectivity, 6E and 7.
 - Connecting to sensors and telemetry nodes
 - Precise short-range obstacle detection
 - Centimeter-level positioning and ranging



Picoleaf™

- **Piezoelectric Thin Film Sensor**
 - High sensitivity (1 μ m deformation detection)
 - Light, thin (<300 μ m), and small sensor (2x4mm-10x54mm)
 - Flexible structure
 - Non-pyroelectric: stable for temperature change
 - Highly durable in wet environments
 - Supports metal housing
 - Piezo transparent film sensor for detecting “bends”, “twists”, and various “bio-signals”
- Applications:** Force detection, bump detection



MEMS IMU- NAV/Precision Positioning

- **SCH16T Series- 6DOF IMU**
 - Single package 6DOF component
 - Cross-axis calibration enables better than 0.15° orthogonality error
 - Gyro bias instability down to 0.5°/h
 - Gyro noise density down to 0.0004 (°/s) \sqrt HZ
 - Stable offset and sensitivity over full temperature range
 - Engineered for high accuracy and reliability in harsh environments
- Applications:** Precision robotics control, maintaining balance and tilt detection

Power Supplies	
Standard AC/DC	
Board Mount AC/DC	
Isolated Gate Drive Power module Murata Manufacturing Co., Ltd.	
Isolated DC/DC	Non-Isolated DC/DC
PoE	Data Center & Open Compute

Capacitors
MLCC
Polymer Aluminum Electrolytic Capacitor
<ul style="list-style-type: none"> Low ESRR No DC bias characteristic of capacitance
Silicon Capacitor

Inductors
RF Inductors
Inductors for Power Lines
<ul style="list-style-type: none"> Wound Metal alloy Multilayer type Wound Ferrite Core
General Circuit Inductors

EMIs
Ferrite Beads for Power Lines BLE/BLM Series
Common Mode Noise Filters
Block Filters for communication equipment and FA equipment
Noise Suppression for Antennas 700MHz, 2.4 & 5 GHz

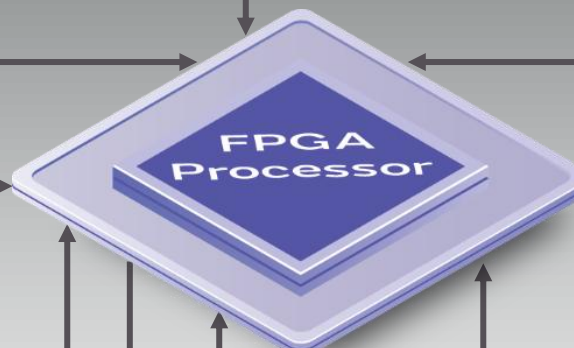
Microblower (Air Pump)

RFID / NFC

Temp Detection NTC

Timing Device

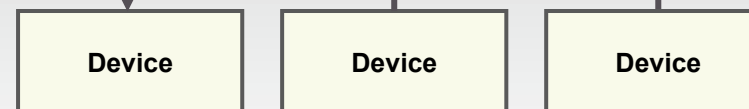
Overheat Detection PTC



Connectivity Modules
BLE
Wi-Fi + BLE Modules
Wi-Fi Modules
Cellular IoT
LoRa
V2X - 5G NR
Wi-Fi HaLow
UWB

Sensors
PIR
Accelerometers
Gyroscope
Magnetic-AMR
Thermistors
Piezoelectric Film Sensor
CO ₂
Pressure

Speicalty DC-DC
PoL: 0.15 to 108A
Isolated Gate Drive, SiC, GaN, IGBT
Isolated DC-DC 0.15 to 1,500W
24A Quarter Brick with PMBus



RF Components

Common Mode Chokes for Signal Lines
USB, MIPI D-PHY, MIPI-C PHY, HDMI, Display Port

Common Mode Chokes for Power Line