



Vishay Intertechnology, Inc.

# Consumer

(Wearables)



One of the World's Largest Manufacturers of  
**Discrete Semiconductors and Passive Components**





**Consumer**

Wearables

Smartwatches	2
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More information on the Engineer's Toolbox, including product datasheet links, can be found at [www.vishay.com/ref/et3](http://www.vishay.com/ref/et3).

For inquiries, please contact your local sales representative.

# Key components for WEARABLES



**THE VISHAY ADVANTAGE**  
Small Form Factor  
Low Profile  
Low Power Consumption  
High Efficiency  
Precision  
and more ...

## Smartwatches



## Glasses / Goggles



## Fitness Bands / Wrist Bands



## Clip-On / Pocket-Worn Devices





# Smartwatches



View datasheets for these products  
[www.vishay.com/ref/et3cn1a](http://www.vishay.com/ref/et3cn1a)

### RESISTORS

#### Professional Thin Film Chip Resistors



[MCS0402...e3](#)

- Excellent stability class 0.5, cost efficient
- CECC approved acc. EN 140401-801, sulfur resistant

### MOSFETs

#### P-Channel 8 V (D-S) MOSFET



[Si8805EDB](#)

- Low on-resistance guaranteed with gate voltages down to 1.2 V
- Industry smallest chip scale packaging with MICRO FOOT® 0.8 mm x 0.8 mm

### INDUCTORS

#### Wireless Charging Receiving Coil / Shield



[IWAS and Custom Rx Coils](#)

- Thin, high-efficiency, low-saturation Rx coils
- Custom designs available for WPC and PMA compatibility

### DIODES

#### Low-Capacitance Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode



[VBUS05A1-SD0](#)

- Ultra compact CLP0603 package
- Low package height < 0.3 mm

### TANTALUM CAPACITORS

#### Solid Tantalum Chip Capacitors 298D MICROTAN®, 298W Extended Range MICROTAN



[298D](#)

- High capacitance in small case sizes including 0603 and 0402 footprint
- Perfect for space constrained designs

### RECTIFIERS

#### Surface-Mount Schottky Barrier Rectifiers



[MSS2P2](#)

- AEC-Q101 qualified
- Very low profile – typical height of 0.65 mm

### NON-LINEAR RESISTORS

#### SMD Glass Protected NTC Thermistors



[NTCS0402](#)

- Standard series, AEC-Q200 compliant
- Glass protected with soft terminations

### OPTOELECTRONICS

#### Fully Integrated Proximity and Ambient Light Sensor with I<sup>2</sup>C Interface



[VCNL4020](#)

- Infrared emitter is included in the 4.9 mm x 2.4 mm x 0.83 mm SMD pkg.
- 16-bit resolution, proximity range of up to 20 cm with programmable thresholds

### INDUCTORS

#### Low-Profile, High-Current Inductors



[IFSC](#)

- Very small ferrite power inductor for DC/DC conversion and filtering

### OPTOELECTRONICS

#### Ambient Light Sensor with High-Speed and High-Sensitivity PIN Photodiode Output



[TEMD6200FX01](#)

- Wavelength of peak sensitivity of 550 nm; similar to human eye sensitivity
- Excellent linearity over operating temperature range of -40 °C to +100 °C

### TANTALUM CAPACITORS

#### Solid Tantalum Chip Capacitors 298D MICROTAN®, 298W Extended Range MICROTAN



[298W](#)

- High capacitance in small case sizes including 0603 and 0402 footprint
- Perfect for space constrained designs

### ICs

#### 50 mΩ, Slew Rate Controlled Load Switch in WCSP, Optimized for Portable / Wearable Applications



[SiP32461](#)

- 1.2 V to 5.5 V operation voltage range with low and flat R<sub>DS(on)</sub>
- Featuring low I<sub>Q</sub> output discharge, and reverse blocking





# Glasses / Goggles



View datasheets for these products  
[www.vishay.com/ref/et3cn1b](http://www.vishay.com/ref/et3cn1b)

TANTALUM CAPACITORS

**Solid Tantalum Chip Capacitors, MICROTAN®, High CV Leadframeless Molded Low Profile**




[TL8](#)

- High capacitance in low-profile packages including 0.4 mm height in 0603 case
- Perfect for space constrained designs

NON-LINEAR RESISTORS

**SMD Glass Protected NTC Thermistors**




[NTCS0402](#)

- Standard series, AEC-Q200 compliant
- Glass protected with soft terminations

ICs

**8-Channel, Dual 4-Channel, Triple 2-Channel Multiplexers**




[DG9451, DG9453](#)

- High-precision, low-noise signal switching, < 0.5 pC low charge injection
- Low parasitic capacitance of 16 pF  $C_{D(on)}$ , low leakage typically of 3 pA

ENERGY STORAGE CAPACITORS

**Hybrid Storage Capacitors**




[196 HVC ENYCAP™](#)

- Extreme small profile with high energy density
- Instant rechargeable, suitable for solar power charging

INDUCTORS

**Low-Profile, High-Current Inductors**




[IFSC](#)

- Very small ferrite power inductor for DC/DC conversion and filtering

OPTOELECTRONICS

**High-Speed Infrared Emitting Diode, 850 nm, SurfLight™ Surface Emitter Technology**



[VSMY3850 / VSMG3700](#)

- High radiant intensity of 17 mW/sr and high optical power of 55 mW when  $I_f=100$  mA
- Surface-mount PLCC2 package measuring dimensions 3.5 x 2.8 x 1.75 mm

RESISTORS

**Professional Thin Film Chip Resistors**




[MCS0402...e3](#)

- Excellent stability class 0.5, cost efficient
- CECC approved acc. EN 140401-801, sulfur-resistant

OPTOELECTRONICS

**Fully Integrated Proximity and Ambient Light Sensor with I<sup>2</sup>C Interface**




[VCNL4020](#)

- Infrared emitter is included in the 4.9 mm x 2.4 mm x 0.83 mm SMD pkg.
- 16-bit resolution, proximity range of up to 20 cm with programmable thresholds

DIODES

**Low-Capacitance Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode**




[VBUS05A1-SD0](#)

- Ultra compact CLP0603 package
- Low package height < 0.3 mm

INDUCTORS

**Wireless Charging Receiving Coil / Shield**




[IWAS and Custom Rx Coils](#)

- Thin, high-efficiency, low saturation Rx coils

OPTOELECTRONICS

**Ambient Light Sensor with High-Speed and High-Sensitivity PIN Photodiode Output**

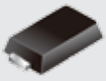


[TEMD6200FX01](#)

- Wavelength of peak sensitivity of 550 nm; similar to human eye sensitivity
- Excellent linearity over operating temperature range of -40 °C to +100 °C

RECTIFIERS

**Surface-Mount Schottky Barrier Rectifiers**



[MSS2P2](#)

- AEC-Q101 qualified
- Very low profile – typical height of 0.65 mm

## Fitness Band / Wrist Band



View datasheets for these products  
[www.vishay.com/ref/et3cn1c](http://www.vishay.com/ref/et3cn1c)

**CERAMIC CAPACITORS**

**High Capacitance per Unit Size in C0G, X5R, and X7R**



[VJ0201](#)

- Small size enables miniaturization and board space savings
- Small size enables component with better ESL performance

**MOSFETs**

**P-Channel 20 V (D-S) MOSFET**



[Si8817DB](#)

- Industry leading p-channel Gen III technology, maximum  $R_{DS(on)}$  76 m $\Omega$
- Industry smallest chip scale packaging with MICRO FOOT<sup>®</sup> 0.8 mm x 0.8 mm

**OPTOELECTRONICS**

**Ambient Light Sensor with Analog Output in Low Profile Package**



[TEMD5510FX01](#)

- Peak sensitivity at 540 nm much like the human eye with a 7.5 mm<sup>2</sup> detector chip
- PIN photodiode with high photo sensitivity in a miniature surface-mount device

**RESISTORS**

**Lead (Pb)-free Commodity Thick Film Chip Resistors**



[CRCW0201...e3](#)

- High-volume product for commercial applications
- Very small body size, 0.6 x 0.3 mm<sup>2</sup>

**DIODES**

**Low Capacitance Bidirectional Symmetrical (BiSy) Single Line ESD Protection Diode**



[VBUS05A1-SD0](#)

- Ultra compact CLP0603 package
- Low package height < 0.3 mm

**TANTALUM CAPACITORS**

**Solid Tantalum Chip Capacitors 298D MICROTAN<sup>®</sup>, 298W Extended Range MICROTAN**



[298W](#)

- High capacitance in small case sizes including 0603 and 0402 footprint
- Perfect for space constrained designs

**MOSFETs**

**P-Channel 20 V (D-S) MOSFET**



[SiB441EDK](#)

- Industry leading p-channel Gen III technology, maximum  $R_{DS(on)}$  25.5 m $\Omega$
- 1.6 mm x 1.6 mm PowerPAK<sup>®</sup> SC-70 packaging

**RESISTORS**

**Thick Film Surface-Mount Chip Resistors, Wraparound, Extremely Low Value**



[RCWE](#)

- Low resistance values from 0.01  $\Omega$  to 0.99  $\Omega$  and tolerance of 1 %
- Thick film construction with 2x power capacity

**OPTOELECTRONICS**

**High-Sensitivity PIN Photodiode in Leadless Low-Profile Package**



[VEMD5010X01](#)

- 0.8 mm height SMD photodiode featuring a chip with a 7.5 mm<sup>2</sup> sensitive area
- Daylight blocking filter matched with IR emitters operating at wavelength 870 nm or 950 nm

**RESISTORS**

**Professional Thin Film Chip Resistors**



[MCS0402...e3](#)

- Excellent stability class 0.5, cost efficient
- CECC approved acc. EN 140401-801, sulfur resistant

**ICs**

**200  $\Omega$ , Low-Leakage, Low-Parasitic and Low Charge Injection, Quad SPST Analog Switches**



[DG2502](#)

- Power consumption < 0.01  $\mu$ W, superior switching characteristics
- Compact WCSP16 1.44 mm x 1.44 mm chip scale package

**NON-LINEAR RESISTORS**

**SMD Glass Protected NTC Thermistors**



[NTCS0402](#)

- Standard series, AEC-Q200 compliant
- Glass protected with soft terminations




# Clip-On / Pocket-Worn Devices



ICs

**20 mΩ, Slew Rate Controlled Load Switch in WCSP6**



[SiP32458](#)

- 20 mΩ low and flat R<sub>ON</sub> over the full operation voltage range
- Features low I<sub>Q</sub>, reverse blocking with guaranteed less than 10 μA leakage

CERAMIC CAPACITORS

**Ultra-Stable Dielectric Formulation Low Dissipation Factor (DF)**




[MLCC High Q Capacitors](#)

- Ultra-stable dielectric formulation, low dissipation factor (DF)
- Robust design build with wet process and noble metal electrodes

RESISTORS

**Lead (Pb)-Free Commodity Thick Film Chip Resistors**



[CRCW0201...e3](#)

- High-volume product for commercial applications
- Very small body size, 0.6 mm x 0.3 mm

RESISTORS

**Professional Thin Film Chip Resistors**




[MCT0603...e3](#)

- Excellent stability class 0.5, cost efficient
- CECC approved acc. EN 140401-801, sulfur resistant

ICs

**200 Ω, Low-Leakage, Low-Parasitic and Low Charge Injection, Quad SPST Analog Switches**



[DG2501](#)

- Power consumption < 0.01 μW, superior switching characteristics
- Compact WCSP16 1.44 mm x 1.44 mm chip scale package

CERAMIC CAPACITORS

**Body Sizes: 0402 to 3838, Excellent Power Handling Capabilities**



[MLCC RF Capacitors](#)

- Non-magnetic available with copper or epoxy bondable termination
- Lead-bearing termination available for hi-rel applications

TANTALUM CAPACITORS

**vPolyTan™ Polymar Tantalum Capacitors**



[T55](#)

- High-capacitance, low-ESR polymer tantalum capacitors
- Stable electrical performance over temperature and voltage

MOSFETs

**P-Channel 12 V (D-S) MOSFET**



[Si8457DB](#)

- TrenchFET® p-channel Gen III and MICRO FOOT® MOSFET provide extremely low on-resistance
- Ultra-small 1.6 mm x 1.6 mm max. outline, ultra-thin 0.6 mm max. height

ESD DIODES

**ESD Protection Diode in LLP1006-2L**



[VESD05A4A-HS4](#)

- Ultra compact LLP1006-2L package, low package height < 0.4 mm
- ESD protection acc. IEC 61000-4-2, ± 30 kV contact and air discharge

View datasheets for these products  
[www.vishay.com/ref/et3cn1d](http://www.vishay.com/ref/et3cn1d)



Vishay Intertechnology, Inc.



A *WORLD OF*  
*SOLUTIONS*