



+



# COMPONENTS FOR THE INTERNET OF THINGS



A **WORLD OF**  
**SOLUTIONS**

+ **Touching the  
Human Body**

+ **In the Home**

## **VISHAY and the INTERNET of THINGS (IoT)**

Vishay has stepped up to the challenges of the Internet of Things (IoT) with a broad portfolio of unique passive and active solutions. These best-in-class components are optimally suited for the “Things” being controlled and monitored through IoT applications.

# the Categories



Vishay offers many best-in-class components for equipment in IoT categories.



## Touching The Human Body

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(IoT)

Touching  
The Human Body



# Biometric Monitoring

## What is Biometric Monitoring?

Biometrics refers to metrics related to human characteristics and traits. Using distinctive, measurable characteristics, biometric identifiers are often categorized as physiological and include fingerprint, palm veins, face recognition, DNA, palm print, hand geometry, iris, and retina recognition.



### CERAMIC CAPACITORS MLCC Hi Q Capacitors

Ultra-stable dielectric low dissipation factor (DF) capacitors using robust design build with wet process. Non magnetic copper or epoxy bondable available.

### OPTOELECTRONICS VSMY7850X01

High-power SurfLight™ emitter with 850 nm peak wavelength and 170 mW/sr intensity at 1 A forward current, 780 mW/sr at 5 A forward current.



### ICs SiP32431

1.0 A slew rate controlled load switch with reverse blocking in SC70-6 and TDFN4 1.2 mm x 1.6 mm packages. Industry's lowest operating current (only 50 pA).

### INDUCTORS IHLP-2020CZER4R7M01

Low-profile, high-current IHLP® inductors. Compact composite for high-efficiency DC/DC conversion. High-frequency operation up to 5 MHz for excellent saturation.



### OPTOELECTRONICS VSMY98545

High-power SurfLight™ emitter with 850 nm peak wavelength. Radiant intensity of 350 mW/sr at 1 A and 1600 mW/sr at 5 A pulsed. Radiant power of 660 mW in a compact package.

### OPTOELECTRONICS TFBS4711

Infrared transceiver with data rate up to 115.2 kbit/s, idle current of: 70 µA, shutdown current of 10 nA, transmit range of 1 meter, in small 1.9 mm x 3 mm x 6 mm (H x L x W) package.



# Clip-On / Pocket-Worn Devices



## What are Clip-On / Pocket-Worn Devices?

Clip-on and pocket-worn devices measure steps in our day, analyze our sleeping patterns, track the whereabouts of friends and loved ones, or monitor health and safety of those most vulnerable.

	<p>RESISTORS <b>MCT0603 / MCS0402</b> Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.</p>	<p>MLCC CAPACITORS <b>MLCC Hi Q Capacitors</b> Ultra-stable dielectric low dissipation factor (DF) capacitors using robust design build with wet process. Non magnetic copper or epoxy bondable available.</p>	
	<p>RESISTORS <b>CRCW0201 ...e3</b> Lead (Pb)-free commodity thick film chip resistors in a very small 0.6 mm x 0.3 mm package for high-volume commercial product applications.</p>	<p>ICs <b>SiP32458</b> 20 mΩ smart load switch designed for 1.5 V to 5.5 V operation in compact WSCP6 package.</p>	
	<p>CERAMIC CAPACITORS <b>MLCC RF Capacitors</b> Excellent power handling capabilities in sizes from 0402 to 3838. Non magnetic copper or epoxy bondable available and lead bearing for hi-rel applications.</p>	<p>ICs <b>DG2501</b> Ultra-low power quad SPST switches optimized for sensors in portables/wearable technology with power consumption &lt; 0.01 μW for superior switching characteristics in a compact WCSP16 package.</p>	
	<p>TANTALUM CAPACITORS <b>T55</b> vPolyTan™ polymer tantalum capacitors. High-capacitance, low-ESR polymer tantalum capacitors for stable electrical performance over temperature and voltage.</p>	<p>MOSFETs <b>Si8457DB</b> P-channel 12 V (D-S) MOSFET using TrenchFET® Gen III for extremely low on-resistance. MICRO FOOT® ultra-small 1.6 mm x 1.6 mm outline, ultra-thin 0.6 mm height package.</p>	
	<p>ESD DIODES <b>VESD05A4A-HS4</b> ESD protection diode in LLP1010-6L ultra compact package with low package height &lt; 0.4 mm. ESD protection acc. IEC 61000-4-2, ± 30 kV contact and air discharge.</p>		



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# Fitbands

## What is a Fitband?

Worn on the wrist, fitbands track physical activity to monitor and record fitness metrics.

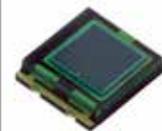


### RESISTORS CRCW0201 ...e3

Lead (Pb)-free commodity thick film chip resistors in a very small package size of 0.6 mm x 0.3 mm for high volume commercial product applications.

### OPTOELECTRONICS TEMD5510FX01

Ambient light sensor with analog output with peak sensitivity at 540 nm with a 7.5 mm<sup>2</sup> detector chip in a low-profile package

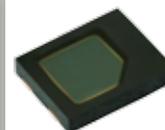


### RESISTORS MCT0603 / MCS0402

Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.

### OPTOELECTRONICS VEMD5010X01

High-sensitivity PIN photodiode in leadless low-profile 0.8 mm high package, with 7.5 mm<sup>2</sup> sensitive area and daylight blocking filter.



### MOSFETs Si8817DB

Industry leading p-channel 20 V (D-S) MOSFET with max R<sub>DS(ON)</sub> 76 mΩ in smallest 0.8 mm x 0.8 mm chip scale package with 0.4 mm height.

### NON LINEAR RESISTORS NTCS0402

SMD NTC thermistors with glass protected flex terminations and AEC-Q200 compliant



### MOSFETs SiB441EDK

Industry leading p-channel 12 V (D-S) MOSFET with max R<sub>DS(ON)</sub> down to 25.5 mΩ in 1.6 mm x 1.6 mm PowerPAK SC-70 package.

### ICs DG2501

Ultra-low power quad SPST switches optimized for sensors in portables/wearable technology with power consumption < 0.01 μW for superior switching characteristics in a compact WCSP16 package.

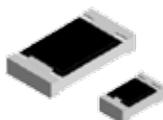


### DIODES VBUS05A1-SDO

Low-capacitance bidirectional symmetrical (BiSy) single line ESD-protection diode in ultra-compact package.

### MLCC CAPACITORS VJ0201

High capacitance per unit size in COG, X5R and X7R dielectrics. Miniaturized case sizes for board space savings and better ESL performance.



### RESISTORS RCWE

Thick film surface-mount chip resistors with extremely low resistance values from 0.01 Ω to 0.99 Ω, tolerance of 1 %, and high-power 2X power capacity.

### TANTALUM CAPACITORS 298D / 298W

Solid tantalum chip capacitors. MICROTAN<sup>®</sup>, and extended range MICROTAN<sup>®</sup> in small case sizes for space constrained designs.



# Patient Monitoring



## What is Patient Monitoring?

Wireless health systems for the next level of healthcare delivery. RPM (remote patient monitoring) devices support healthcare away from the hospital and into the patient's home.

	<p>RESISTORS <b>TNPW0402 ...e3</b> High-stability thin film flat chip resistors with excellent overall stability, endurance &lt; 0.05 %, TCR down to 10 ppm/K. AEC-Q200 qualified, sulfur resistant, and halogen free.</p>	<p>DISPLAYS <b>LCD, Color TFT, OLED</b> High-quality displays offer excellent human to machine interface solutions using standard and custom display interface modules and high brightness options for LCD, OLED, and color TFT.</p>	
	<p>RESISTORS <b>P (Sizes 0302 to 2512)</b> High-precision wraparound thin film chip resistors with low TCR down to 5 ppm/°C and tight tolerance down to 0.01 %. Sulfur resistant.</p>	<p>OPTOELECTRONICS <b>TFDU4101</b> 115.2 kbit/s infrared transceiver in an SMD package measuring 9.7 mm × 4.7 mm × 4 mm, capable of surface-mount soldering in side or top view orientation.</p>	
	<p>ICs <b>DG2037</b> Low-voltage, low <math>R_{ON}</math> (down to 3 <math>\Omega</math>), dual SPST analog switch in cost-effective SOT-23-8 and MSOP-8 packages.</p>	<p>NON LINEAR RESISTORS <b>NTCS0805E3</b> SMD 0805 NTC thermistors with glass protected flex terminations and tolerance on R25 down to 1 %.</p>	
	<p>MOSFETs <b>SiA906EDJ</b> Dual n-channel 20-V (D-S) MOSFET with TrenchFET technology. Low maximum <math>R_{DS(on)}</math> down to 0.046 m<math>\Omega</math> at <math>V_{GS} = 4.5</math> V in compact 2 mm x 2 mm PowerPAK SC-70 package.</p>	<p>CERAMIC CAPACITORS <b>Hi-Rel MLCCs</b> MIL-PRF-55681 qualified facility. Reliability testing done on maintenance basis with multiple screening options and customized certification available.</p>	
	<p>DIODES <b>VBUS052CD-FAH</b> 2-line bus-port ESD-protection with flow through design. Low load capacitance at <math>C_D = 0.8</math> pF in compact LLP1713-7L package.</p>	<p>IC's <b>SiC403A</b> microBUCK® 6 A, 28 V integrated buck regulator with programmable LDO. Offers a scalable design with 10 A and 15 A parts in the same footprint.</p>	
	<p>CERAMIC CAPACITORS <b>MLCC RF Capacitors</b> Excellent power handling capabilities in sizes from 0402 to 3838. Non magnetic copper or epoxy bondable available and lead bearing for high-rel.</p>		



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# Smartwatches

## What is a Smartwatch?

The next generation of wristwatch. Computerized functionality providing mobile apps, games, media players, phone, cameras, even video recording. And it tells you the time.



### RESISTORS MCT0603 / MCS0402

Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.

### NON LINEAR RESISTORS NTCS0402

SMD glass protected NTC thermistors with glass protected flex terminations. AEC-Q200 compliant.

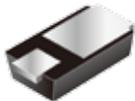


### MOSFETs Si8805EDB

Low on-resistance, guaranteed with gate voltages down to 1.2 V. In industry-smallest 0.8 mm by 0.8 mm chip scale package with 0.4 mm height

### INDUCTORS IWAS and Custom Rx Coils

Wireless charging receiving coil/shield with thin, high-efficiency, low saturation Rx coils. Custom designs available.



### RECTIFIERS MSS2P2

Surface-mount schottky barrier rectifiers in low-profile AEC-Q101 package.

### INDUCTORS IFSC

Low-profile, high-current inductors for DC/DC converter filtering.



### DIODE VBUS05A1-SDO

Low-capacitance bidirectional symmetrical (BiSy) single line ESD protection diode in ultra-compact package

### TANTALUM CAPACITORS 298D / 298W

Solid tantalum chip capacitors. MICROTAN® and extended range MICROTAN® in small case sizes for space constrained designs.



### OPTOELECTRONICS VCNL4020

Fully integrated proximity and ambient light sensor with I<sup>2</sup>C interface. 16-bit resolution, proximity range of up to 20 cm with programmable thresholds

### ICs SiP32461

50 mΩ, slew rate controlled load switch in WCSP package.



### OPTOELECTRONICS TEMD6200FX01

Ambient light sensor with high-speed and high-sensitivity. PIN photodiode output.

# Smart Glasses



## What are Smart Glasses?

The next wave in wearable computers. Offering heads-up display (HUD) or augmented reality (AR) with transparent overlay of projected digital images.

	<p><b>RESISTORS</b> <b>MCT0603 / MCS0402</b> Professional and precision chip resistors with excellent stability. CECC approved and sulfur resistant.</p>	<p><b>TANTALUM CAPACITORS</b> <b>TL8</b> Solid tantalum Microtan® chip capacitors. High-CV leadframeless molded low-profile devices for space constrained designs.</p>	
	<p><b>RECTIFIERS</b> <b>MSS2P2</b> Surface-mount Schottky barrier rectifiers in low-profile AEC-Q101 package.</p>	<p><b>NON LINEAR RESISTORS</b> <b>NTCS0402</b> SMD glass protected NTC thermistors with glass protected flex terminations. AEC-Q200 compliant.</p>	
	<p><b>DIODE</b> <b>VBUS05A1-SDO</b> Low-capacitance bidirectional symmetrical (BiSy) single line ESD protection diode in ultra-compact package.</p>	<p><b>INDUCTORS</b> <b>IWAS and Custom Rx Coils</b> Wireless charging receiving coil/shield with thin, high-efficiency, low-saturation Rx coils. Custom designs available.</p>	
	<p><b>OPTOELECTRONICS</b> <b>VCNL4020</b> Fully integrated proximity and ambient light sensor with I<sup>2</sup>C interface. 16-bit resolution, proximity range of up to 20 cm with programmable thresholds.</p>	<p><b>INDUCTORS</b> <b>IFSC</b> Low-profile, high-current inductors for DC/DC converter filtering.</p>	
	<p><b>OPTOELECTRONICS</b> <b>TEM6200FX01</b> Ambient light sensor with high-speed and high-sensitivity PIN photodiode output.</p>	<p><b>ICs</b> <b>DG9451</b> 8-channel, dual 4-channel, triple 2-channel multiplexers.</p>	
	<p><b>OPTOELECTRONICS</b> <b>VSMY3850 / VSMG3700</b> High-speed infrared emitting diode, 850 nm, SurfLight™ surface emitter technology with high radiant intensity of 17 mW/sr.</p>	<p><b>ENERGY STORAGE CAPACITORS</b> <b>196 HVC ENYCAP™</b> Hybrid storage capacitors with extremely small profile and high energy density. Instant rechargeable, suitable for solar power charging.</p>	

# DESIGN SUPPORT TOOLS

Vishay has developed a number of software support tools to assist design engineers. These include SPICE models, custom calculators, and thermal simulation tools. The full list of support tools can be found at <http://www.vishay.com/how/design-support-tools/>

Here are a few examples:

## Ohm's Law Calculator

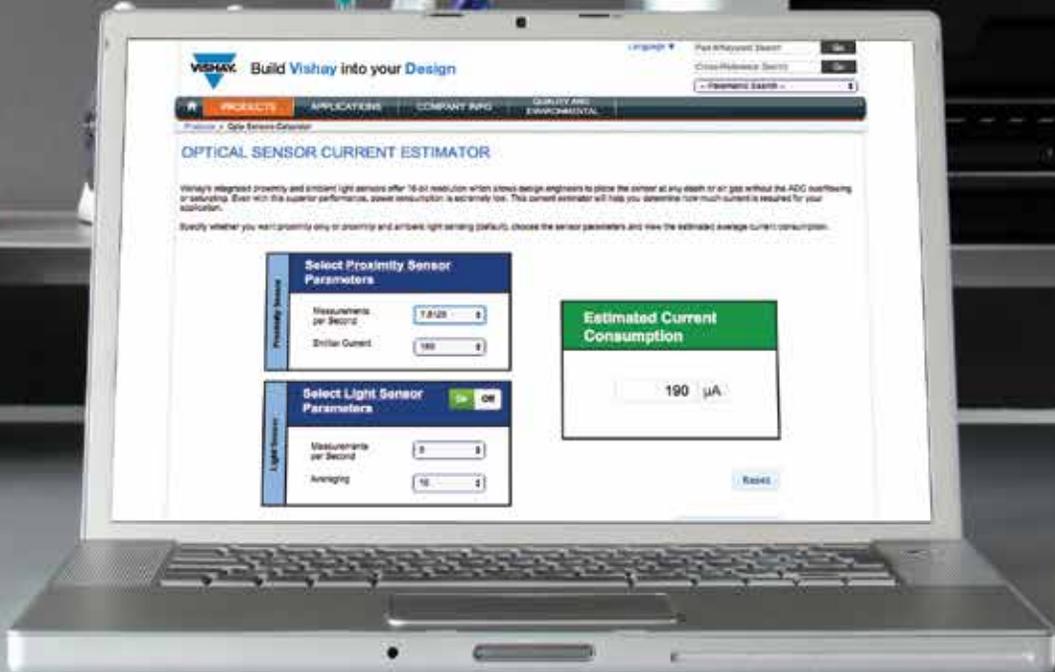
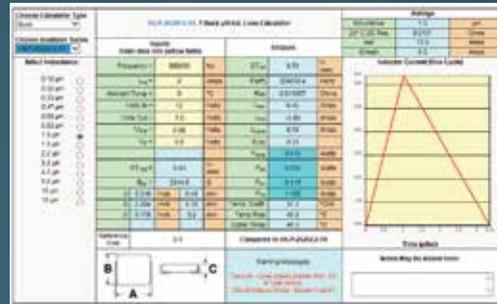
Enter any two values and the Vishay calculator will provide the missing information

Ohm's Law Calculator

Voltage	<input type="text" value="5V"/>	<input type="checkbox"/>	Volts
Resistance	<input type="text" value="100Ω"/>	<input type="checkbox"/>	Ohms
Current	<input type="text" value="50mA"/>	<input type="checkbox"/>	Amperes
Power	<input type="text" value="500mW"/>	<input type="checkbox"/>	Watts

Please use American number formats that use decimal points instead of commas. For example, use "5.00" and not "5,00".

## IHLP® Inductor Loss Calculator Tool



Optical Sensor Current Estimator

# Smart Meters



## What are Smart Meters?

Remotely record and monitor energy consumption within the home with the ability to reduce load and disconnect-reconnect in emergencies.

	<p><b>RESISTORS</b> <b>Z300-C</b> Axial cemented wirewound resistors with high voltage surge (up to 12 kV) capability and non flammable cement coating.</p>	<p><b>OPTOELECTRONICS</b> <b>VOW2611</b> 10 MBd widebody high-speed, high-isolation optocoupler with &gt; 10 mm creepage/clearance.</p>	
	<p><b>FILM CAPACITORS</b> <b>F1772S</b> Interference suppression film capacitor, class X2, MKT 310 V<sub>AC</sub>, high stability grade. Withstanding 85 °C / 85 % RH for 1000 h at 240 V<sub>AC</sub>.</p>	<p><b>NON LINEAR RESISTORS</b> <b>VDRH14-VDRH20</b> VDR metal oxide varistors high surge resistor with extended operating temperature to 125°C. UL recognized up to 105°C (selected types).</p>	
	<p><b>MOSFETs</b> <b>SiHD7N60E</b> E Series 600 V Power MOSFET with maximum R<sub>DS(ON)</sub> of 600 mΩ and continuous current of 7 A in popular DPAK package.</p>	<p><b>OPTOELECTRONICS</b> <b>VSMB2020X01</b> High-speed and high-power infrared emitting diodes with peak wavelength of 940 nm, radiant intensity of 40 mW/sr at I<sub>F</sub> = 100 mA, 15 ns rise/fall time, and angle of half intensity of ± 12°.</p>	
	<p><b>DIODES</b> <b>SMAJxx</b> Surface-mount TRANSZORB transient voltage suppressors with 400 W peak pulse power capability with a 10/1000 μs waveform. AEC-Q101 qualified.</p>	<p><b>INDUCTORS</b> <b>IDCP2218</b> High-current, surface mount non-shielded inductors with low cost filtering and DC/DC conversion.</p>	
	<p><b>RESISTORS</b> <b>WSMS</b> Power Metal Strip® meter shunt resistor with very low resistance value (down to 0.0001 Ω) offering high accuracy for smart meter applications.</p>	<p><b>CERAMIC CAPACITORS</b> <b>MLCC Hi Q Capacitors</b> Ultra-stable dielectric low dissipation factor (DF) capacitors using robust design build with wet process. Non magnetic copper or epoxy bondable available.</p>	
	<p><b>RESISTORS</b> <b>MM / SMM</b> Thin film Mini-MELF resistors with unrivaled surge handling capability for ultimate stability over lifetime. AEC-Q200 qualified, approved acc. EN 140401-803, sulfur resistant, and Vishay Green.</p>	<p><b>ICs</b> <b>SiP32419/SiP32429</b> 28 V, 56 mΩ, load switch with programmable current limit and slew rate control. Simplifies design while increasing reliability of the circuit.</p>	



(IoT)



# Lighting Controls

## What are Lighting Controls?

Control and monitor lighting in the home for safety and energy savings.



### RESISTORS VR25

High-ohmic (100K - 22 MΩ), high-voltage metal glaze leaded resistors with continuous voltage of 1600 V and pulse loading capacity of 7 kV in small 0207 package.

### RESISTORS HVW

Carbon film (metal alloy) resistors. Special purpose, high-voltage up to 15 kV with wide value range of 1 kΩ to 200 MΩ.

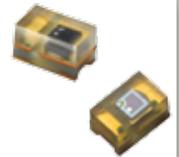


### RESISTORS PR01/02/03

High-power metal film leaded resistors with power ratings of 1 W, 2 W, and 3 W. Non flammable lacquer coating in small package with various lead forming options.

### OPTOELECTRONICS TEMT6200FX01

Ambient light sensor in miniature 0805 package with phototransistor output. Wavelength of peak sensitivity of 550 nm and linearity over operating temperature range of -40 to +100 °C.

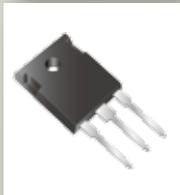


### MOSFETs SiHD7N60E

E Series 600 V power MOSFET with maximum  $R_{DS(ON)}$  of 600 mΩ and continuous current of 7 A in popular DPAK package.

### FILM CAPACITORS MKP385

Single metallized AC and pulse capacitors. MKP radial plotted type. Low loss dielectric, small dimensions for high density packaging.



### RECTIFIERS VT10200C

Trench MOS barrier Schottky rectifier with low forward voltage drop and low power losses.

### OPTOELECTRONICS V04157

Zero crossing phototriac optocoupler. 5000 V/μs dV/dt minimum with 800 V blocking voltage, 300 mA on-state output current, and 1.6 mA trigger current with VISO of 5300 V.



### DIODES BZD27CxxP Series

Zener diodes with surge current specification. AEC-Q101 qualified.

### OPTOELECTRONICS V02223A

Power phototriac optocoupler with optically coupled phototriac driving a power triac, load current of 1 A<sub>RMS</sub> and 5300 V of input to output isolation in a DIP-8 package



### RESISTORS ROX

Metal oxide resistors. Special purpose. High-voltage up to 45 kV and wide value range of 100 Ω to 3 GΩ.

### NON LINEAR RESISTORS PTCCL...

PTC thermistors for overload protection with best current/size ratio. UL recognized.



# White Goods Air Conditioners



## What are White Goods?

Control and monitor the home environment to maximize comfort and efficiency.

### Air Conditioners

	<p><b>MOSFETs</b> <b>SUP85N10-10</b> N-channel 100-V (D-S) 175 °C MOSFET with TrenchFET technology. Max <math>R_{DS(on)}</math> down to 10 mΩ in popular TO-220 package.</p>	<p><b>RECTIFIERS</b> <b>PB3510</b> Enhanced isoCink+™ bridge rectifiers with enhanced high-current density single in-line and UL recognition (file number E312394).</p>	
	<p><b>MOSFETs</b> <b>IRF19Z34G</b> P-channel 60 V (D-S) MOSFET with rugged planar technology for maximum <math>R_{DS(on)}</math> 140 mΩ and continuous current of -12 A in TO-220 FullPAK package.</p>	<p><b>RESISTORS</b> <b>CMA0204</b> High pulse load MELF resistors with ESD capability to 6 kV. Up to 4 kV single pulse capability. Advanced carbon technology. Sulfur resistant, Vishay Green.</p>	
	<p><b>FILM CAPACITORS</b> <b>MKP1848C</b> Metallized polypropylene DC-Link film capacitor. Compact, high performance device. Built with environmentally friendly materials.</p>	<p><b>RESISTORS</b> <b>WSHM2818</b> Power Metal Strip® resistors with very high power rating of 7 W. Low resistance values, 0.001 Ω to 0.10 Ω, with tolerance of 1 % in small 2818 package.</p>	
	<p><b>DIODES</b> <b>P6KE200A</b> TRANSZORB® transient voltage suppressors. 600 W peak pulse power capability with 10/1000 μs waveform. AEC-Q101 qualified</p>	<p><b>RECTIFIERS</b> <b>FEP30JP</b> Dual common cathode ultrafast recovery rectifier with low switching losses and high efficiency.</p>	
	<p><b>INDUCTORS</b> <b>IMC1812</b> Wirewound, surface-mount, molded RF inductors for high-frequency filtering</p>	<p><b>RESISTORS</b> <b>WSR</b> Power Metal Strip® resistors with high power ratings to 5 W and low values down to 0.001 Ω in 4527 surface-mount package.</p>	
	<p><b>NON LINEAR RESISTORS</b> <b>NTCLP450..</b> NTC thermistor sensors. Miniature pipe sensor with fast time response against industry standards.</p>	<p><b>OPTOELECTRONICS</b> <b>TSOP34xxxR</b> IR receiver with industry leading range of 45 m, directivity of ± 45°, and 38 kHz carrier frequency in copper leadframe for high humidity / saline atmospheres.</p>	



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# White Goods Washing Machines

## What are White Goods?

Control and monitor the home environment to maximize safety and energy savings.

### Washing Machines

	<p>ALUMINUM CAPACITORS <b>093PMG-Si</b></p> <p>Miniaturized general-purpose snap-in power aluminum capacitors with useful life of 2000 h at 85°C.</p>	<p>OPTOELECTRONICS <b>V0615A</b></p> <p>Phototransistor output optocoupler with broad operating temperature range of - 55 °C to + 110 °C and 6 kV peak transient overvoltage protection in a 4-pin DIP or SMD package. VDE, BSI, FIMKO, UL certified.</p>	
	<p>CERAMIC CAPACITORS <b>VJ OMD Series</b></p> <p>Internal design reduces risk of shorts caused by board flex. Polymer termination available for intensive board flex requirements and 100 % voltage conditioning available up to 630 V<sub>DC</sub> rating.</p>	<p>RESISTORS <b>WSHM2818</b></p> <p>Power Metal Strip® resistors with very high power rating of 7 W. Low resistance values, 0.001 Ω to 0.10 Ω, with tolerance of 1 % in small 2818 package.</p>	
	<p>MOSFETS <b>IRFB20</b></p> <p>N-channel 800-V (D-S) Power MOSFET built on rugged planar technology. Max R<sub>DS(on)</sub> of 6.5 Ω and maximum continuous current of 1.8 A. Available in popular TO-220 package.</p>	<p>RESISTORS <b>VR25</b></p> <p>High-ohmic (100K - 22 MΩ), high-voltage metal glaze leaded resistors with continuous voltage of 1600 V and pulse loading capacity of 7 kV in small 0207 package.</p>	
	<p>MOSFETS <b>Si2307CDS</b></p> <p>P-channel 30-V (D-S) MOSFET using TrenchFET technology. Max R<sub>DS(on)</sub> down to 88 mΩ in popular SOT-23 package.</p>	<p>RECTIFIERS <b>GSIB2560-E3</b></p> <p>Single-phase, single in-line bridge rectifiers with UL recognition and high surge current capability.</p>	
	<p>NON LINEAR RESISTORS <b>NTCS0603</b></p> <p>SMD 0603 NTC thermistors with glass protected flex terminations. AEC-Q200 compliant.</p>	<p>RESISTORS <b>AC03...CS</b></p> <p>Cemented fusible wirewound safety resistors with 3 W, UL 1412 approved, non-flammable cement coating, and surge handling of 4 kV.</p>	
	<p>OPTOELECTRONICS <b>VCNL4020</b></p> <p>Fully integrated proximity and ambient light sensor with I<sup>2</sup>C interface.</p>	<p>FILM CAPACITORS <b>MKP339</b></p> <p>Interference suppression film capacitors, MKP radial potted type, RFI X2 for standard across-the-line applications.</p>	

# White Goods Induction Cooking



## What are White Goods?

Control and monitor the home environment to maximize safety and energy savings.

### Induction Cooking

	<p><b>CERAMIC CAPACITORS</b> <b>VY1</b> AC line rated ceramic disc capacitors. Class X1, 760 V<sub>AC</sub> and class Y1, 500 V<sub>AC</sub>. X1/Y1 safety rating according to IEC 60384-14 (3rd edition) for highest reliability and lifetime over operating temperature range of -40 °C to +125 °C.</p>	<p><b>MOSFETs</b> <b>SiHB15N60E</b> E Series 600 V n-channel MOSFET. High-performance, high-voltage technology with maximum R<sub>DS(on)</sub> 280 mΩ, maximum continuous current of 15 A, in popular D<sup>2</sup>PAK package.</p>	
	<p><b>FILM CAPACITORS</b> <b>MKP1848C</b> Metallized polypropylene film capacitor with compact and high performance DC-link. Built with environmentally friendly materials.</p>	<p><b>DIODES</b> <b>BAT54 / MMSZ5242B</b> Small-signal Schottky diodes, single and dual, featuring very low turn-on voltage and AEC-Q101 qualified.</p>	
	<p><b>MOSFETs</b> <b>Si2307CDS</b> P-channel 30-V (D-S) MOSFET with TrenchFET technology. Max R<sub>DS(on)</sub> down to 88 mΩ in popular SOT-23 package.</p>	<p><b>FILM CAPACITORS</b> <b>MKP1839HQ</b> AC and pulse metallized polypropylene film capacitors. MKP axial type for low building height and precision applications down to ± 1 %.</p>	
	<p><b>OPTOELECTRONICS</b> <b>VCNL4010</b> Fully integrated proximity and ambient light sensor with I<sup>2</sup>C interface. 16-bit resolution, proximity range of up to 20 cm with programmable thresholds.</p>	<p><b>RESISTORS</b> <b>WSLP2512</b> Power Metal Strip<sup>®</sup> resistors. Surface-mount with extremely low resistance values from 0.0005 Ω to 0.5 Ω, tolerance of 1 %, and high power of 1 W in 2512 size.</p>	
	<p><b>RESISTORS</b> <b>AC03</b> Cemented wirewound resistors. Non flammable cement coating, power to 3 W, excellent pulse handling capability with good size to power ratio and various lead forming options</p>	<p><b>NON LINEAR RESISTORS</b> <b>NTCALUG01A</b> NTC thermistors, standard lug for robust surface temperature sensor. AEC-Q200 compliant, UL recognized.</p>	
	<p><b>MOSFETs</b> <b>Si2307CDS</b> P-channel 30 V (D-S) MOSFET with TrenchFET<sup>®</sup> technology for max R<sub>DS(on)</sub> down to 88 mΩ in SOT-23 package</p>	<p><b>OPTOELECTRONICS</b> <b>6N136</b> 1 MBd high-speed optocoupler with photodiode-to-transistor output. Transmit signal frequency of 2 MHz and isolation test voltage of 5300 V<sub>RMS</sub>.</p>	



(IoT)

In The Home



# White Goods Refrigerators / Freezers

## What are White Goods?

Control and monitor the home environment to maximize safety and energy savings.

### Refrigerators / Freezers

	<p><b>DIODES</b> <b>BAT54S-V-GS08</b></p> <p>Small-signal Schottky diodes, single and dual, featuring very low turn-on voltage. AEC-Q101 qualified.</p>	<p><b>CERAMIC CAPACITORS</b> <b>VJ2220Y182KXUSTX1</b></p> <p>Robust design build with wet process. IEC 60384-14:2005, CAN/CSA/cCSAus, and ANSI/UL CB certificates. Surface-mount design for simpler assembly and reduced board space requirements.</p>	
	<p><b>NON LINEAR RESISTORS</b> <b>NTCACAPE3...</b></p> <p>NTC thermistors, double insulated refrigerator sensors.</p>	<p><b>MOSFETs</b> <b>IRF740B</b></p> <p>High-voltage 400 V<sub>DS</sub> MOSFET with dynamic dV/dt rating, repetitive avalanche rated, fast switching, ease of paralleling, and simple drive requirements.</p>	
	<p><b>RESISTORS</b> <b>AC03</b></p> <p>Cemented wirewound resistors. Non flammable cement coating, power ratings to 3 W, excellent pulse handling capability with good size to power ratio, and various lead forming options.</p>	<p><b>MOSFETs</b> <b>Si9407BDY</b></p> <p>P-channel 60 V (D-S) MOSFET using classic TrenchFET® technology with maximum R<sub>DS(on)</sub> down to 120 mΩ in popular S0-8 package.</p>	
	<p><b>RESISTORS</b> <b>AC05...CS</b></p> <p>Cemented fusible wirewound safety resistors. Power rating to 5 W, UL 1412 approved, non flammable cement coating for surge handling of 6 kV. Safe and silent fusing to prevent flame or explosion.</p>	<p><b>RESISTORS</b> <b>WSL2512</b></p> <p>Power Metal Strip® resistors. Surface-mount with extremely low resistance values from 0.0005 Ω to 0.5 Ω, tolerance of 1 %, and high power of 1 W in 2512 size.</p>	
	<p><b>CERAMIC CAPACITORS</b> <b>VY1</b></p> <p>AC line rated ceramic disc capacitors. Class X1, 760 V<sub>AC</sub> and class Y1, 500 V<sub>AC</sub>. X1/Y1 safety rating according to IEC 60384-14 (3rd edition) for highest reliability and lifetime over operating temperature of -40 °C to +125 °C.</p>	<p><b>FILM CAPACITORS</b> <b>MKP339</b></p> <p>Interference suppression film capacitors, MKP radial potted type, RFI X2 for standard across-the-line applications.</p>	
	<p><b>RECTIFIERS</b> <b>MURS160-M3</b></p> <p>Surface-mount ultrafast plastic rectifier with low switching losses, ultrafast reverse recovery time, and high efficiency.</p>	<p><b>OPTOELECTRONICS</b> <b>V0615A</b></p> <p>Phototransistor output optocoupler with broad operating temperature range of -55 °C to +110 °C and 6 kV peak transient overvoltage protection in a 4-pin DIP or SMD package. VDE, BSI, FIMKO, UL certified.</p>	

# Robotic Appliances Domestic Robots



## What are Domestic Robots?

A domestic robot, or service robot, is an autonomous robot that is used for household chores.

### Robotic Vacuum

	<p><b>MOSFETs</b> <b>Si7938DP</b> Dual n-channel 40 V (D-S) MOSFET using TrenchFET® Gen III technology for maximum <math>R_{DS(on)}</math> down to 5.8 mΩ in thermally enhanced PowerPAK® SO-8 package.</p>	<p><b>DIODES</b> <b>SMBJ26CA-E3/52</b> Surface-mount TransZorb® transient voltage suppressors. 600 W peak pulse power capability with a 10/1000 μs waveform. Available in unidirectional and bidirectional.</p>	
	<p><b>DISPLAYS</b> <b>LCD, Color TFT, OLED</b> High-quality displays offer excellent Human to Machine interface solutions using standard and custom display modules and high brightness options for LCD, OLED, and color TFT.</p>	<p><b>RECTIFIERS</b> <b>SS10P6-M3/86A</b> High-current density surface-mount Schottky barrier rectifier in very low profile (typ. 1.1 mm). AEC-Q101 qualified.</p>	
	<p><b>OPTOELECTRONICS</b> <b>VSLB3948</b> High-speed infrared-emitting diode with peak wavelength of 940 nm in a T-1 clear package. Intensity of 65 mW/sr, <math>I_F = 100</math> mA, angle of half intensity: <math>\phi = \pm 22^\circ</math>, and rise / fall time of 15 ns</p>	<p><b>INDUCTORS</b> <b>IHLP-6767GZ</b> Low-profile, high-current IHLP® inductors. Large size, low saturation, and high current SMD inductor. DC/DC conversion and filter applications</p>	
	<p><b>OPTOELECTRONICS</b> <b>TEFT4300</b> Silicon NPN phototransistor with peak sensitivity of 925 nm, spectral bandwidth from 875 nm to 1000 nm (<math>\lambda_{0.5}</math>), angle of half sensitivity of <math>\pm 30^\circ</math>, and output current of 3.2 mA at <math>E_o = 1</math> mW/cm<sup>2</sup></p>	<p><b>CERAMIC CAPACITORS</b> <b>MLCC SMD Safety Capacitor</b> IEC 60384-14:2005, CAN/CSA/cCSAus, and ANSI/UL CB certificates. Surface-mount design for simpler assembly and reduced board space requirements. Available in NPO (COG) or X7R dielectrics.</p>	
	<p><b>OPTOELECTRONICS</b> <b>TSAL6100</b> High-power infrared-emitting diode with peak wavelength of 940 nm in a T-1 package. Typ. radiant intensity of 170 mW/sr at <math>I_F = 100</math> mA, 1450 mW/sr at <math>I_F = 1</math> mA, and angle of half intensity: <math>\phi = \pm 10^\circ</math></p>	<p><b>OPTOELECTRONICS</b> <b>TSOP34438</b> IR receiver modules with industry leading range of 45 m, directivity of <math>\pm 45^\circ</math>, minimum irradiance of 0.08 mW/m<sup>2</sup>, and AGC-4 noise suppression.</p>	
	<p><b>OPTOELECTRONICS</b> <b>VO2223A</b> Power phototriac optocoupler with optically coupled phototriac driving a power triac, load current of 1 A<sub>RMS</sub>, and 5300 V of input to output isolation in a DIP-8 package.</p>	<p><b>OPTOELECTRONICS</b> <b>VO3052</b> Optocoupler, non-zero crossing phototriac with 1500 V/μs dV/dt minimum, 2000 V/μs typical, 600 V blocking voltage, 100 mA on-state output current, and 10 mA trigger current with VISO of 5300 V.</p>	



## Automotive / Transportation



Powertrain – 12 V / 24 V  
Powertrain – Injection  
Control and Fuel Pump  
Chassis Control  
Body Electronics  
Passive Safety

Powertrain – 12 V / 24 V  
Exterior Lighting  
48 V<sub>DC</sub> Boardnet  
Micro Hybrid – Start /  
Stop (12 V)  
Full Hybrid Vehicles  
(HEVs)

Full Electric Vehicles  
(FEVs)  
Off-Road Equipment  
AC and Hybrid Trains  
Forklifts, Lift Trucks  
Heavy Transportation



## Alternative Energy



Solar Energy  
Wind Turbines  
Smart Grids  
Energy Exploration  
Power Transmission /  
Distribution / Grid Quality



## Industrial



Factory Automation  
Fabrication  
Detection and  
Initial Safety  
Devices  
Surveillance  
Systems



## Computer



Portable Computers  
Stationary Computing  
Computer Peripherals



## Consumer



Wearables  
Home Entertainment  
Gaming / E-Bikes  
Home Appliances  
Robotic Applications /  
Domestic Robots  
Lighting



Mobile  
Infrastructure



## Telecommunications



Medical Equipment  
X-ray / Computed Tomography (CT)  
Cardiac Pacing  
External Defibrillators  
Patient Monitoring  
Glucose Meters  
MRI / MRT



## Medical



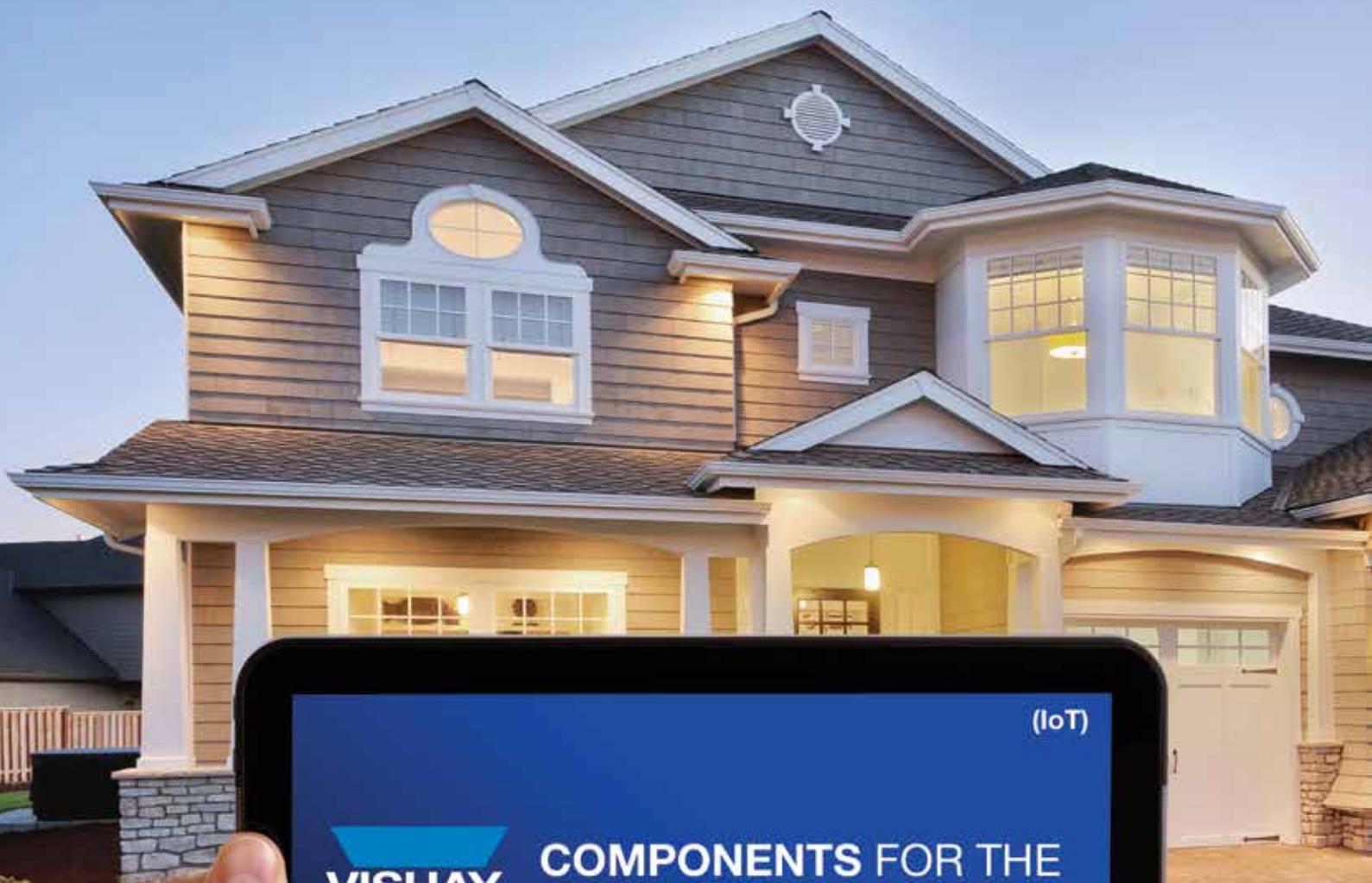
Airborne Systems  
Satellite / GPS  
Flight Control  
Computers  
Cockpit Panels

Braking Systems  
UAVs (Unmanned Aerial  
Vehicles) / Drones



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**COMPONENTS FOR THE  
INTERNET OF THINGS**

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# INTERNET OF THINGS

## ABOUT TTI, INC.

TTI Inc., is a world leading specialist distributor of connectors and passive, electromechanical and discrete components. TTI's philosophy is "Lead by Design", and the company differentiates itself by focusing on people, parts and processes. The company's aim is to become the distributor of choice for customers and suppliers alike by introducing new product technologies and by stocking broad and deep across its franchise base. TTI employs sophisticated inventory management processes which ensure that the company can react immediately to changes in component demand due to fluctuating markets and supply chains. For further information about TTI, please refer to: [www.ttiinc.com](http://www.ttiinc.com).

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