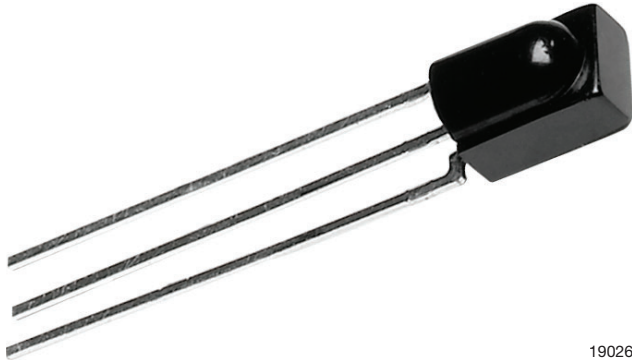




IR Receiver Modules for Remote Control Systems



19026

DESCRIPTION

This IR receiver series is optimized for long burst remote control systems in different environments. The customer can choose between different IC settings (AGC variants), to find the optimum solution for his application. The higher the AGC, the better noise is suppressed, but the lower the code compatibility.

The devices contain a PIN diode and a preamplifier assembled on a lead frame. The epoxy package contains an IR filter. The demodulated output signal can be directly connected to a microprocessor for decoding. These components have not been qualified to automotive specifications.

FEATURES

- Individual IC settings to reach maximum performance
- Immunity against noise (lamps, LCD TV, Wi-Fi)
- Low supply current
- Photo detector and preamplifier in one package
- Supply voltage: 2.0 V to 5.5 V
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



LINKS TO ADDITIONAL RESOURCES



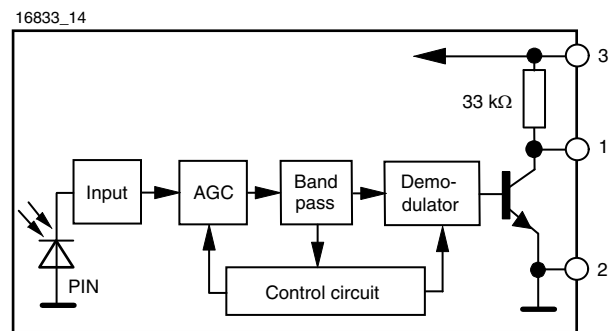
APPLICATIONS

- Infrared remote control systems

DESIGN SUPPORT TOOLS

- [3D models](#)
- [Window size calculator](#)

BLOCK DIAGRAM

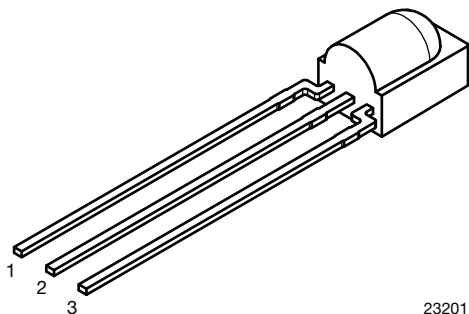




MECHANICAL DATA

Pinning for TSOP582.., TSOP584..:

1 = OUT, 2 = GND, 3 = V_S

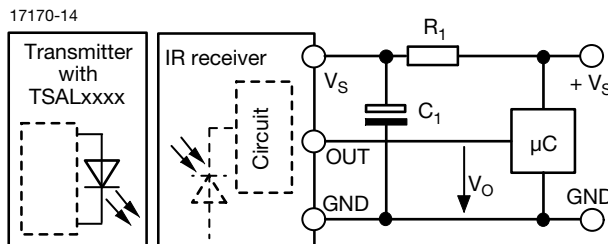


23201

ORDERING CODE

TSOP58... - 1500 pieces in bags

APPLICATION CIRCUIT



R₁ and C₁ recommended in case there are strong ripple or spikes on the supply line.

PARTS TABLE			
AGC		LEGACY, FOR LONG BURST REMOTE CONTROLS (AGC2)	RECOMMENDED FOR LONG BURST CODES (AGC4)
Carrier frequency	30 kHz	TSOP58230	TSOP58430
	33 kHz	TSOP58233	TSOP58433
	36 kHz	TSOP58236	TSOP58436 ⁽¹⁾⁽²⁾⁽⁶⁾
	38 kHz	TSOP58238	TSOP58438 ⁽³⁾⁽⁵⁾⁽⁹⁾⁽¹⁰⁾
	40 kHz	TSOP58240 ⁽¹¹⁾	TSOP58440
	56 kHz	TSOP58256 ⁽⁷⁾	TSOP58456 ⁽⁴⁾⁽⁸⁾
Package		Minicast	
Pinning		1 = OUT, 2 = GND, 3 = V _S	
Dimensions (mm)		5.0 W x 6.95 H x 4.8 D	
Mounting		Leaded	
Application		Remote control	
Best choice for		⁽¹⁾ Panasonic ⁽²⁾ RC5 ⁽³⁾ NEC ⁽⁴⁾ RCA ⁽⁵⁾ Mitsubishi ⁽⁶⁾ RC6 ⁽⁷⁾ Cisco ⁽⁸⁾ r-step ⁽⁹⁾ Sejin 4PPM ⁽¹⁰⁾ Sharp ⁽¹¹⁾ Sony	

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Supply voltage		V _S	-0.3 to +6	V
Supply current		I _S	5	mA
Output voltage		V _O	-0.3 to 5.5	V
Voltage at output to supply		V _S - V _O	-0.3 to (V _S + 0.3)	V
Output current		I _O	5	mA
Junction temperature		T _j	100	°C
Storage temperature range		T _{stg}	-25 to +85	°C
Operating temperature range		T _{amb}	-25 to +85	°C
Power consumption	T _{amb} ≤ 85 °C	P _{tot}	10	mW
Soldering temperature	t ≤ 10 s, 1 mm from case	T _{sd}	260	°C

Note

- Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect the device reliability.



ELECTRICAL AND OPTICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply voltage		V _S	2.0	-	5.5	V
Supply current	V _S = 3.3 V, E _v = 0	I _{SD}	0.25	0.35	0.45	mA
	E _v = 40 klx, sunlight	I _{SH}	-	0.45	-	mA
Transmission distance	E _v = 0, IR diode TSAL6200, I _F = 50 mA, test signal see Fig. 1	d	-	18	-	m
Output voltage low	I _{OSL} = 0.5 mA, E _e = 0.7 mW/m ² , test signal see Fig. 1	V _{OSL}	-	-	100	mV
Minimum irradiance	Test signal: RC5 code	E _{e min.}	-	0.2	0.4	mW/m ²
	Test signal: NEC code	E _{e min.}	-	0.3	0.5	mW/m ²
Maximum irradiance	Pulse width tolerance: t _{pi} - 4/f ₀ < t _{po} < t _{pi} + 4/f ₀ , test signal see Fig. 1	E _{e max.}	30	-	-	W/m ²
Directivity	Angle of half transmission distance	φ _{1/2}	-	± 45	-	°

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

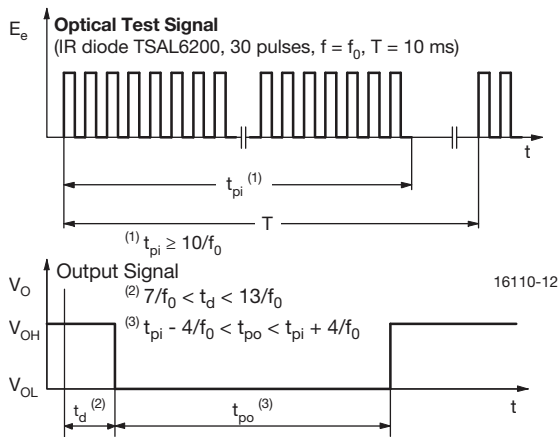


Fig. 1 - Output Active Low

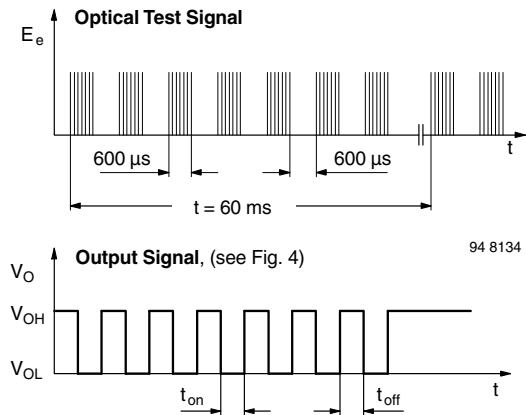


Fig. 3 - Output Function

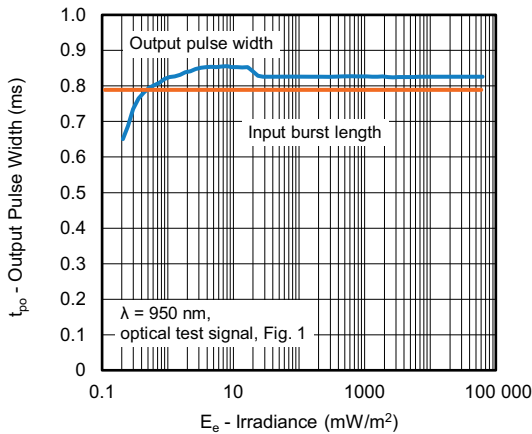


Fig. 2 - Pulse Length and Sensitivity in Dark Ambient

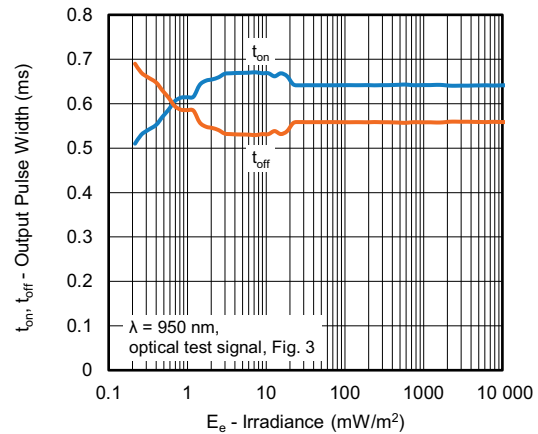


Fig. 4 - Output Pulse Diagram

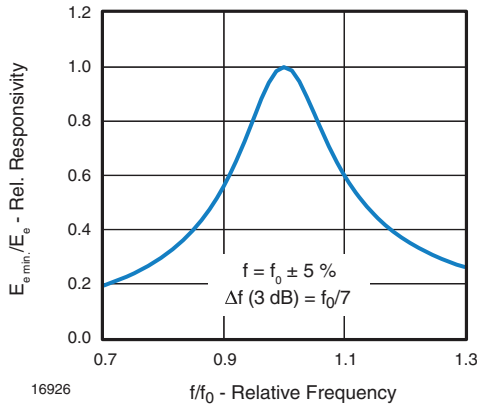


Fig. 5 - Frequency Dependence of Responsivity

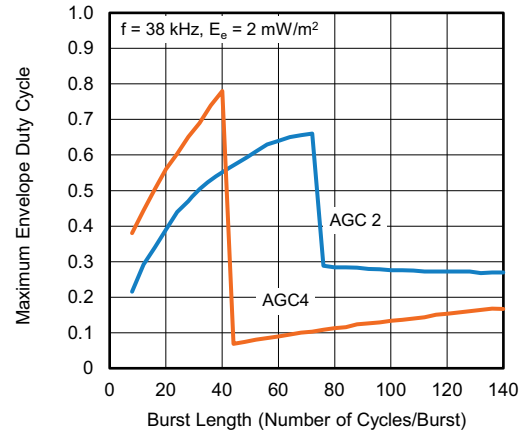


Fig. 8 - Max. Envelope Duty Cycle vs. Burst Length

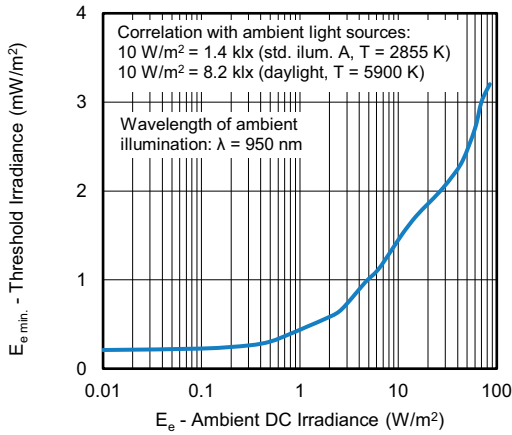


Fig. 6 - Sensitivity in Bright Ambient

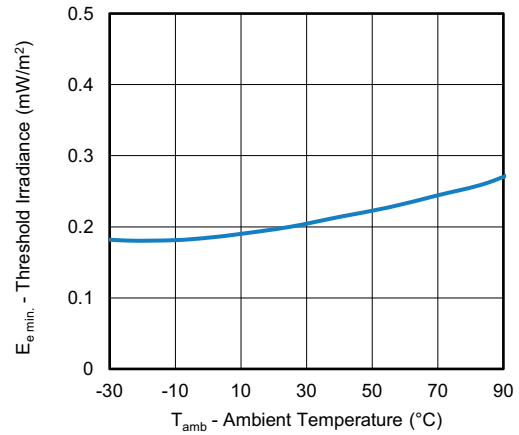


Fig. 9 - Sensitivity vs. Ambient Temperature

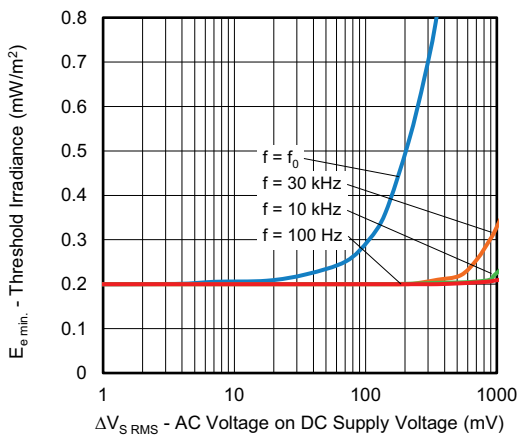


Fig. 7 - Sensitivity vs. Supply Voltage Disturbances

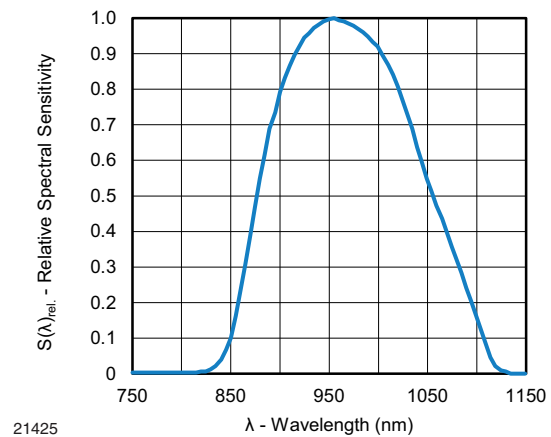


Fig. 10 - Relative Spectral Sensitivity vs. Wavelength

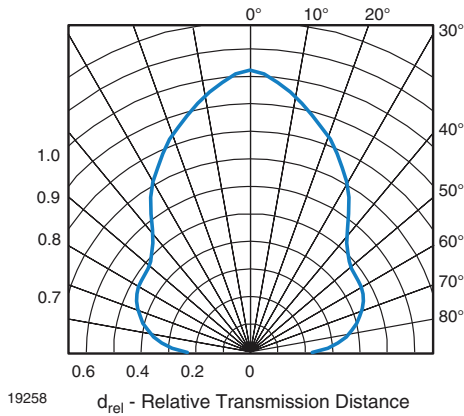


Fig. 11 - Horizontal Directivity

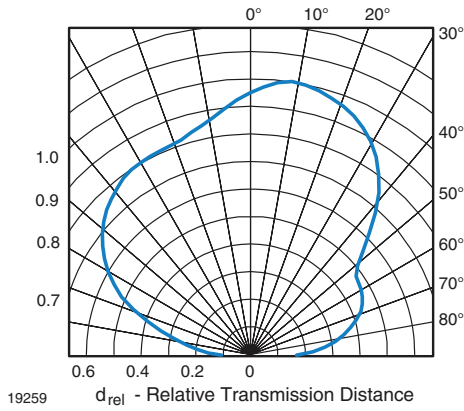


Fig. 12 - Vertical Directivity

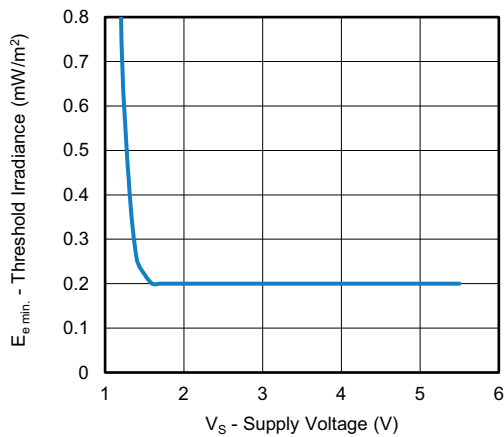


Fig. 13 - Sensitivity vs. Supply Voltage



SUITABLE DATA FORMAT

These products are designed to suppress spurious output pulses due to noise or disturbance signals. Data and disturbance signals can be distinguished by the devices according to carrier frequency, burst length and envelope duty cycle. The data signal should be close to the band-pass center frequency (e.g. 38 kHz) and fulfill the conditions in the table below.

When a data signal is applied to the IR receiver in the presence of a disturbance signal, the sensitivity of the receiver is reduced to insure that no spurious pulses are present at the output. Some examples of disturbance signals which are suppressed are:

- DC light (e.g. from tungsten bulb or sunlight)
- Continuous signals at any frequency
- Modulated IR signals from common fluorescent lamps (example of noise pattern is shown in Fig. 14 or Fig. 15)
- 2.4 GHz and 5 GHz Wi-Fi



Fig. 14 - IR Disturbance from Fluorescent Lamp With Low Modulation



Fig. 15 - IR Disturbance from Fluorescent Lamp With High Modulation

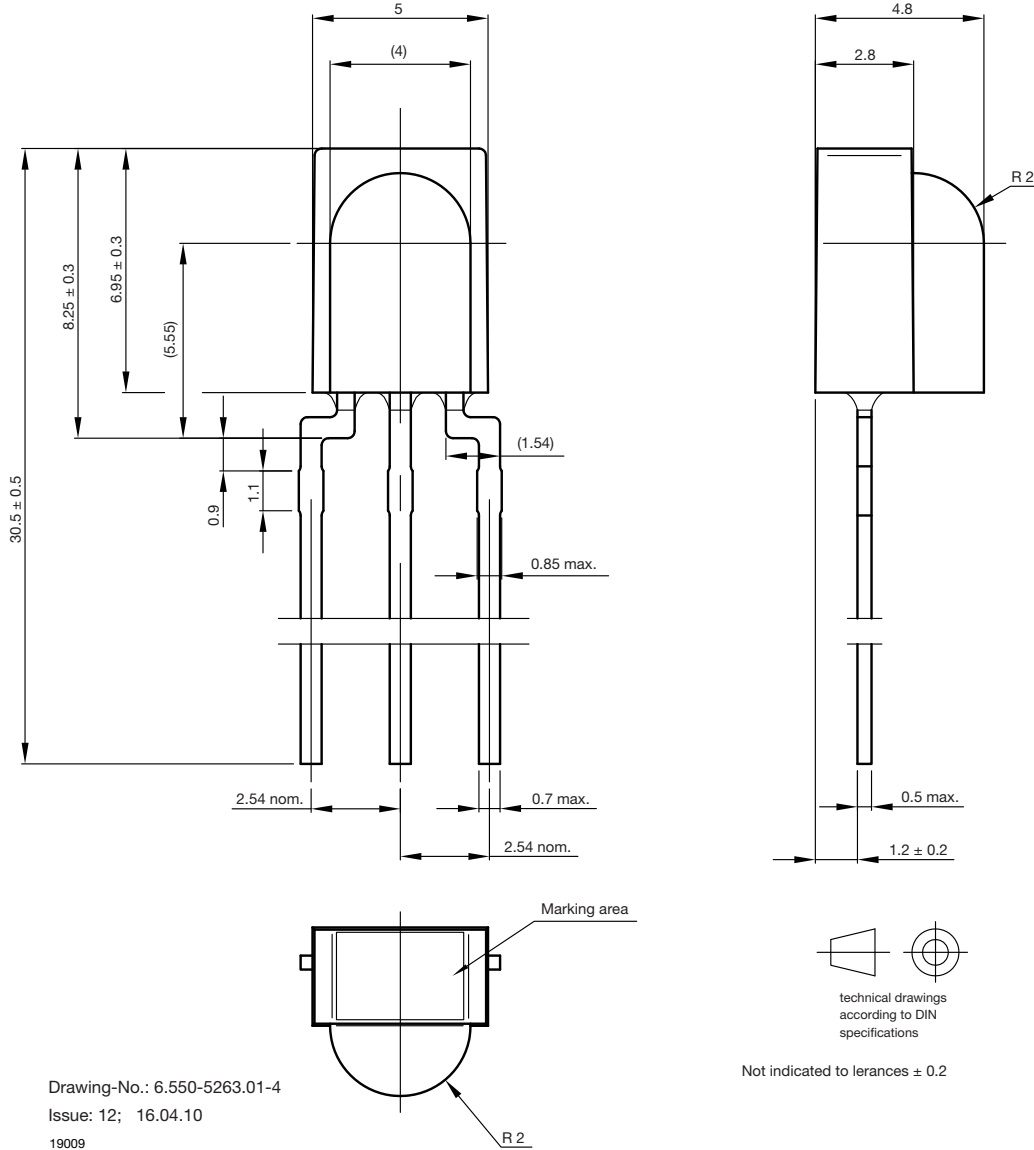
	TSOP582..	TSOP584..
Minimum burst length	10 cycles/burst	10 cycles/burst
After each burst of length A gap time is required of	10 to 72 cycles ≥ 10 cycles	10 to 40 cycles ≥ 10 cycles
For bursts greater than a minimum gap time in the data stream is needed of	72 cycles > 3 x burst length	40 cycles > 10 x burst length
Maximum number of continuous short bursts/second	950	1500
RC5 code	Yes	Preferred
RC6 code	Yes	Preferred
NEC code	Yes	Preferred
r-step code	Yes	Preferred
Sony code	Preferred	No
RCA 56 kHz code	Yes	Preferred
Suppression of interference from fluorescent lamps	Mild disturbance patterns are suppressed (example: signal pattern of Fig. 14)	Complex disturbance patterns are suppressed (example: signal pattern of Fig. 14 and Fig. 15)

Note

- For data formats with short bursts please see the datasheet of TSOP581.., TSOP583..



PACKAGE DIMENSIONS in millimeters





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.