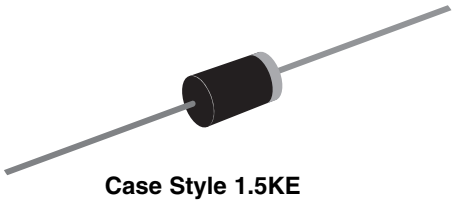
1.5KE6.8A thru 1.5KE540A, 1N6267A thru 1N6303A

TRANSZORB® Transient Voltage Suppressors



Case Style 1.5KE

FEATURES

- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 1500 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- AEC-Q101 qualified
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb e3 RoHS COMPLIANT

PRIMARY CHARACTERISTICS	
V_{BR} uni-directional	6.45 V to 567 V
V_{BR} bi-directional	6.45 V to 231 V
V_{WM}	5.8 V to 459 V
P_{PPM}	1500 W
P_D	6.5 W
I_{FSM} (uni-directional only)	200 A
T_J max.	175 °C
Polarity	Uni-directional, bi-directional
Package	1.5KE

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication.

MECHANICAL DATA

Case: Molded epoxy body over passivated junction
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade
Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Note

- 1.5KE250A to 1.5KE540A and 1.5KE250CA to 1.5KE440CA for commercial grade only

Polarity: For uni-directional types the color band denotes cathode end, no marking on bi-directional types

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional types, use CA suffix (e.g. 1.5KE440CA)
Eletrical characteristics apply in both directions.

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 µs waveform (1) (fig. 1)	P_{PPM}	1500	W
Peak pulse current with a 10/1000 µs waveform (1)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at T_L = 75 °C (fig. 5)	P_D	6.5	W
Peak forward surge current 8.3 ms single half sine-wave uni-directional only (2)	I_{FSM}	200	A
Maximum instantaneous forward voltage at 100 A for uni-directional only (3)	V_F	3.5/5.0	V
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to 175	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2
(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum
(3) V_F = 3.5 V for 1.5KE220A and below; V_F = 5.0 V for 1.5KE250A and above

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

JEDEC TYPE NUMBER	GENERAL SEMICONDUCTOR PART NUMBER	BREAKDOWN VOLTAGE V_{BR} AT I_T (1) (V)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (4) (µA)	MAXIMUM PEAK PULSE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	MAXIMUM TEMPERATURE COEFFICENT OF V_{BR} (%/°C)
		MIN.	MAX.						
1N6267A	(+)1.5KE6.8A	6.45	7.14	10	5.80	1000	143	10.5	0.057
1N6268A	(+)1.5KE7.5A	7.13	7.88	10	6.40	500	133	11.3	0.061
1N6269A	(+)1.5KE8.2A	7.79	8.61	10	7.02	200	124	12.1	0.065
1N6270A	(+)1.5KE9.1A	8.65	9.55	1.0	7.78	50	112	13.4	0.068
1N6271A	(+)1.5KE10A	9.50	10.5	1.0	8.55	10	103	14.5	0.073
1N6272A	(+)1.5KE11A	10.5	11.6	1.0	9.40	5.0	96.2	15.6	0.075
1N6273A	(+)1.5KE12A	11.4	12.6	1.0	10.2	5.0	89.8	16.7	0.078
1N6274A	(+)1.5KE13A	12.4	13.7	1.0	11.1	5.0	82.4	18.2	0.081
1N6275A	(+)1.5KE15A	14.3	15.8	1.0	12.8	1.0	70.8	21.2	0.084
1N6276A	(+)1.5KE16A	15.2	16.8	1.0	13.6	1.0	66.7	22.5	0.086
1N6277A	(+)1.5KE18A	17.1	18.9	1.0	15.3	1.0	59.5	25.2	0.089
1N6278A	(+)1.5KE20A	19.0	21.0	1.0	17.1	1.0	54.2	27.7	0.09
1N6279A	(+)1.5KE22A	20.9	23.1	1.0	18.8	1.0	49.0	30.6	0.092
1N6280A	(+)1.5KE24A	22.8	25.2	1.0	20.5	1.0	45.2	33.2	0.094
1N6281A	(+)1.5KE27A	25.7	28.4	1.0	23.1	1.0	40.0	37.5	0.096
1N6282A	(+)1.5KE30A	28.5	31.5	1.0	25.6	1.0	36.2	41.4	0.097
1N6283A	(+)1.5KE33A	31.4	34.7	1.0	28.2	1.0	32.8	45.7	0.098
1N6284A	(+)1.5KE36A	34.2	37.8	1.0	30.8	1.0	30.1	49.9	0.099
1N6285A	(+)1.5KE39A	37.1	41.0	1.0	33.3	1.0	27.8	53.9	0.1
1N6286A	(+)1.5KE43A	40.9	45.2	1.0	36.8	1.0	25.3	59.3	0.101
1N6287A	(+)1.5KE47A	44.7	49.4	1.0	40.2	1.0	23.1	64.8	0.101
1N6288A	(+)1.5KE51A	48.5	53.6	1.0	43.6	1.0	21.4	70.1	0.102
1N6289A	(+)1.5KE56A	53.2	58.8	1.0	47.8	1.0	19.5	77.0	0.103
1N6290A	(+)1.5KE62A	58.9	65.1	1.0	53.0	1.0	17.6	85.0	0.104
1N6291A	(+)1.5KE68A	64.6	71.4	1.0	58.1	1.0	16.3	92.0	0.104
1N6292A	(+)1.5KE75A	71.3	78.8	1.0	64.1	1.0	14.6	104	0.105
1N6293A	(+)1.5KE82A	77.9	86.1	1.0	70.1	1.0	13.3	113	0.105
1N6294A	(+)1.5KE91A	86.5	95.5	1.0	77.8	1.0	12.0	125	0.106
1N6295A	(+)1.5KE100A	95.0	105	1.0	85.5	1.0	10.9	137	0.106
1N6296A	(+)1.5KE 110A	105	116	1.0	94.0	1.0	9.9	152	0.107
1N6297A	(+)1.5KE120A	114	126	1.0	102	1.0	9.1	165	0.107
1N6298A	(+)1.5KE130A	124	137	1.0	111	1.0	8.4	179	0.107
1N6299A	(+)1.5KE150A	143	158	1.0	128	1.0	7.2	207	0.106
1N6300A	(+)1.5KE160A	152	168	1.0	136	1.0	6.8	219	0.108
1N6301A	(+)1.5KE170A	162	179	1.0	145	1.0	6.4	234	0.108
1N6302A	1.5KE180A	171	189	1.0	154	1.0	6.1	246	0.108
1N6303A	1.5KE200A*	190	210	1.0	171	1.0	5.5	274	0.108
-	1.5KE220A*	209	231	1.0	185	1.0	4.6	328	0.108
-	1.5KE250A	237	263	1.0	214	1.0	4.4	344	0.110
-	1.5KE300A	285	315	1.0	256	1.0	3.6	414	0.110
-	1.5KE350A	333	368	1.0	300	1.0	3.1	482	0.110
-	1.5KE400A	380	420	1.0	342	1.0	2.7	548	0.110
-	1.5KE440A	418	462	1.0	376	1.0	2.5	602	0.110
-	1.5KE480A	456	504	1.0	408	1.0	2.28	658	0.110
-	1.5KE510A	485	535	1.0	434	1.0	2.15	698	0.110
-	1.5KE540A	513	567	1.0	459	1.0	2.03	740	0.110

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) Surge current waveform per fig. 3 and derate per fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE CA62.35

(4) For bi-directional types with V_R 10 V and less the I_D limit is doubled

* Bi-directional versions are UL approved under component across the line protection, ULV1414 file number E108274 (1.5KE200CA, 1.5KE220CA)

(+) Underwriters laboratory recognition for the classification of protectors (QVGQ2) under the UL standard for safety 497B and file number E136766 for both uni-directional and bi-directional devices

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to ambient	$R_{\theta JA}$	75	
Typical thermal resistance, junction to lead	$R_{\theta JL}$	15.4	°C/ W

ORDERING INFORMATION (Example)				
PREFERRED PIN	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
1.5KE6.8A-E3/54	0.968	54	1400	13" diameter paper tape and reel
1.5KE6.8AHE3/54 (1)	0.968	54	1400	13" diameter paper tape and reel

Note
(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

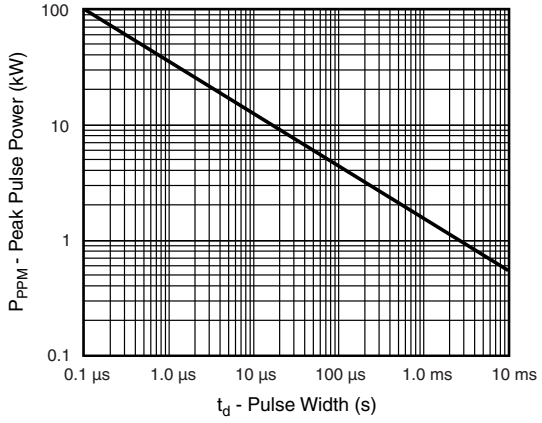


Fig. 1 - Peak Pulse Power Rating Curve

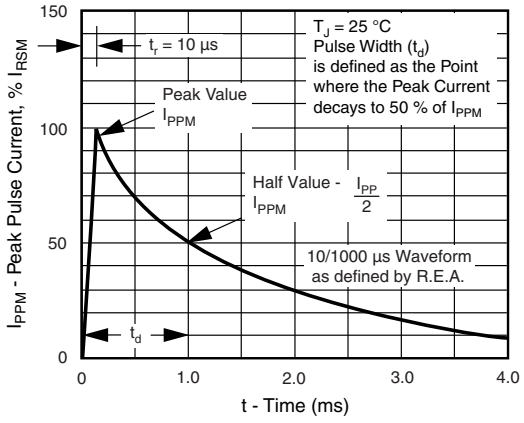


Fig. 3 - Pulse Waveform

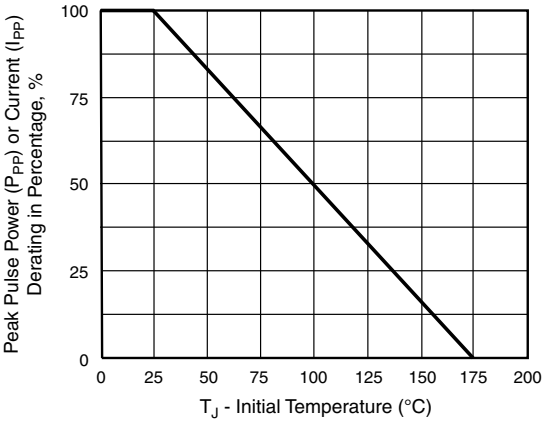


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

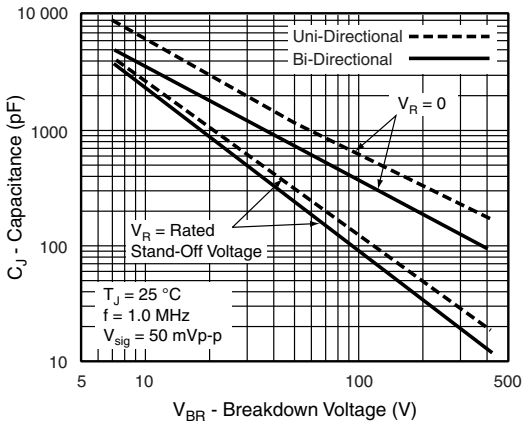


Fig. 4 - Typical Junction Capacitance

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

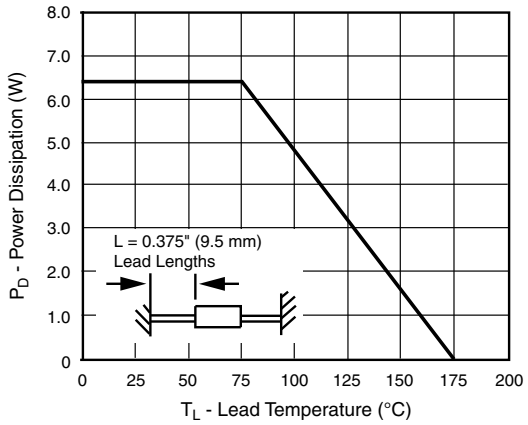


Fig. 5 - Power Derating Curve

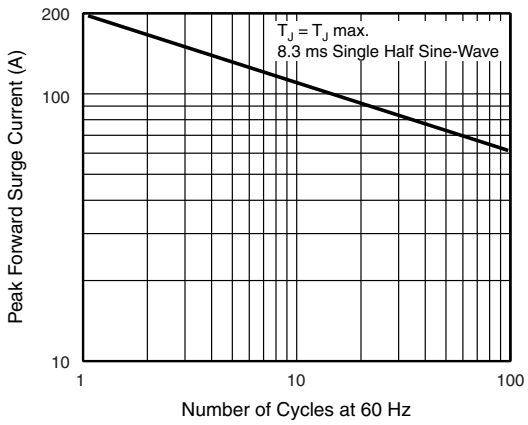


Fig. 6 - Maximum Non-Repetitive Forward Surge Current
Uni-Directional only

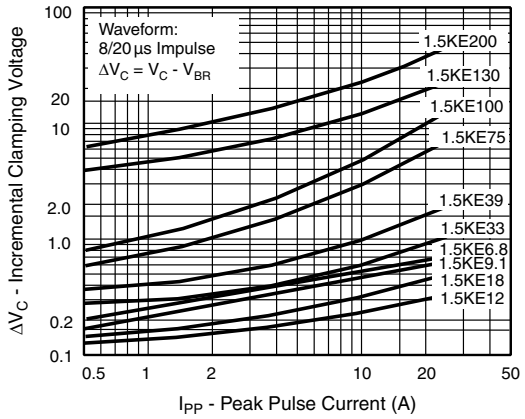


Fig. 7 - Incremental Clamping Voltage Curve (Uni-Directional)

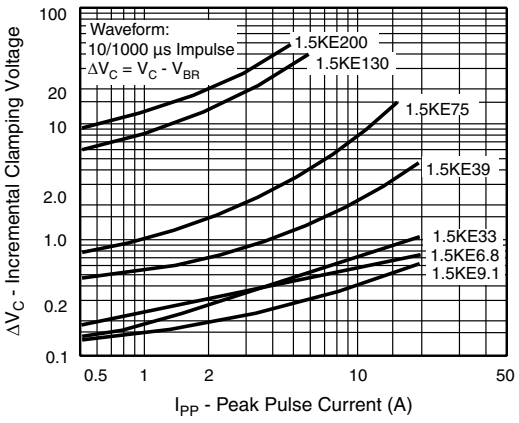


Fig. 8 - Incremental Clamping Voltage Curve (Uni-directional)

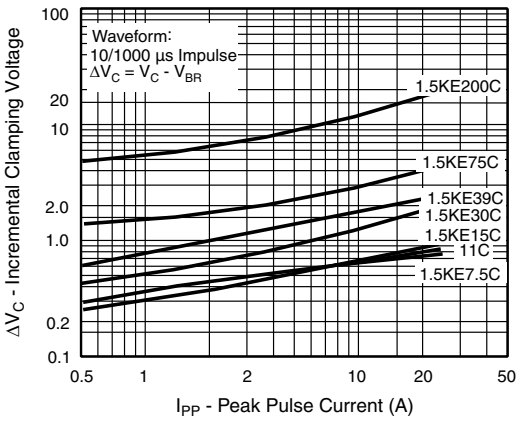


Fig. 9 - Incremental Clamping Voltage Curve (Bi-directional)

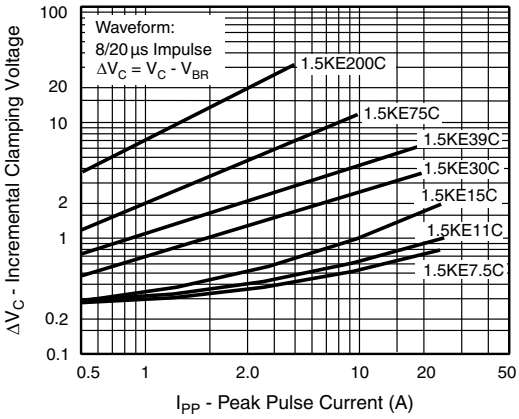


Fig. 10 - Incremental Clamping Voltage Curve (Bi-Directional)

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

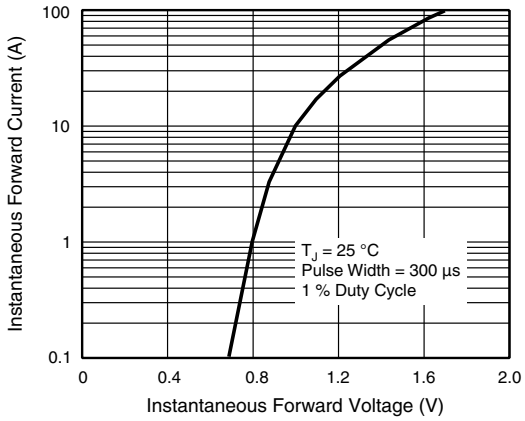


Fig. 11 - Instantaneous Forward Voltage Characteristics Curve

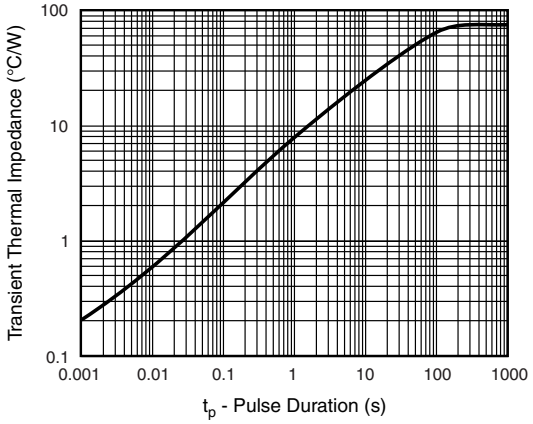
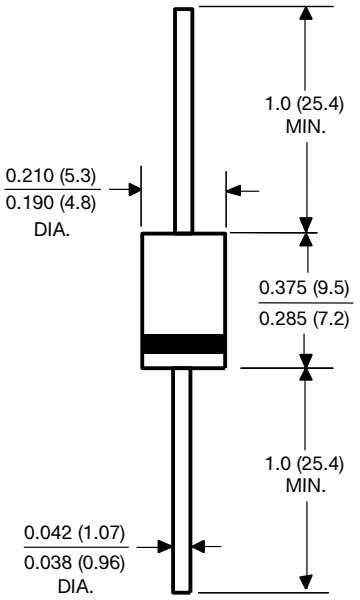


Fig. 12 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Case Style 1.5KE



APPLIACTION NOTES

- This series of Silicon Transient Suppressors is used in applications where large voltage transients can permanently damage voltage-sensitive components.
- The TVS diode can be used in applications where induced lightning on rural or remote transmission lines presents a hazard to electronic circuitry (ref: R.E.A. specification P.E. 60).
- This Transient Voltage Suppressor diode has a pulse power rating of 1500 W for 1 ms. The response time of TVS diode clamping action is effectively instantaneous (1×10^{-9} s bi-directional); therefore, they can protect integrated circuits, MOS devices, hybrids, and other voltage sensitive semiconductors and components. TVS diodes can also be used in series or parallel to increase the peak power ratings.

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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.

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.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru

www.lifeelectronics.ru