

# RKZ-KL Series

Silicon Planar Zener Diode for Surge Absorption and Stabilizer

REJ03G1519-0100

Rev.1.00

May 09, 2007

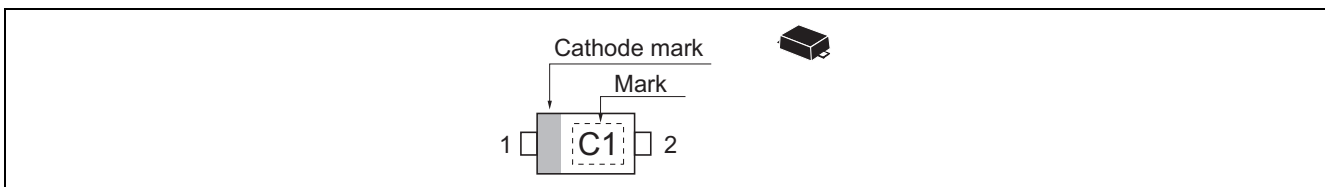
## Features

- Emboss Taping Reel Pack.
- Extremely small Flat Lead Package (EFP) is suitable for surface mount design.

## Ordering Information

Part No.	Laser Mark	Package Name	Package Code
RKZ-KL Series	Let to Mark Code	EFP	PXSF0002ZA-A

## Pin Arrangement



## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Power dissipation	Pd *1	100	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. With P.C. Board.

## Electrical Characteristics

(Ta = 25°C)

Part No.	Zener Voltage		Reverse Current		Dynamic Resistance		ESD-Capability *2	
	Vz (V) *1		Test Condition	I <sub>R</sub> (μA)	Test Condition	r <sub>d</sub> (Ω)	Test Condition	— (kV) *2
	Min	Max	I <sub>Z</sub> (mA)	Max	V <sub>R</sub> (V)	Max	I <sub>Z</sub> (mA)	Min
RKZ2.0BKL	1.90	2.20	5	120	0.5	100	5	30
RKZ2.2BKL	2.10	2.40	5	120	0.7	100	5	30
RKZ2.4BKL	2.30	2.60	5	120	1.0	100	5	30
RKZ2.7B2KL	2.65	2.90	5	120	1.0	110	5	30
RKZ3.0B2KL	2.95	3.20	5	50	1.0	120	5	30
RKZ3.3B2KL	3.25	3.50	5	20	1.0	130	5	30
RKZ3.6B2KL	3.55	3.80	5	10	1.0	130	5	30
RKZ3.9B2KL	3.87	4.10	5	10	1.0	130	5	30
RKZ4.3B2KL	4.15	4.34	5	10	1.0	130	5	30
RKZ4.7B2KL	4.55	4.75	5	10	1.0	130	5	30
RKZ5.1B2KL	4.98	5.20	5	5	1.5	130	5	30
RKZ5.6B2KL	5.49	5.73	5	5	2.5	80	5	30
RKZ6.2B2KL	6.06	6.33	5	2	3.0	50	5	30
RKZ6.8B2KL	6.65	6.93	5	2	3.5	30	5	30
RKZ7.5B2KL	7.28	7.60	5	2	4.0	30	5	30
RKZ8.2B2KL	8.02	8.36	5	2	5.0	30	5	30
RKZ9.1B2KL	8.85	9.23	5	2	6.0	30	5	30
RKZ10B2KL	9.77	10.21	5	2	7.0	30	5	30
RKZ11B2KL	10.76	11.22	5	2	8.0	30	5	30
RKZ12B2KL	11.74	12.24	5	2	9.0	35	5	30
RKZ13B2KL	12.91	13.49	5	2	10.0	35	5	30
RKZ15B2KL	14.34	14.98	5	2	11.0	40	5	25
RKZ16B2KL	15.85	16.51	5	2	12.0	40	5	25
RKZ18B2KL	17.56	18.35	2	2	13.0	45	2	25
RKZ20B2KL	19.52	20.39	2	2	15.0	50	2	20
RKZ22B2KL	21.54	22.47	2	2	17.0	55	2	20
RKZ24B2KL	23.72	24.78	2	2	19.0	60	2	15
RKZ27BKL	25.10	28.90	2	2	21.0	70	2	15
RKZ30BKL	28.00	32.00	2	2	23.0	80	2	13
RKZ33BKL	31.00	35.00	2	2	25.0	80	2	8
RKZ36BKL	34.00	38.00	2	2	27.0	90	2	8

Notes: 1. Tested with pulse (Pw = 40 ms).

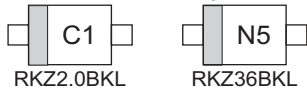
2. C =150 pF, R = 330 Ω, Both forward and reverse direction 10 pulse  
Failure criterion ; According to IR spec

3. For EFP package, the material of lead is exposed for cutting plane. There for, soldering nature of lead tip part is considered as unquestioned. Please kindly consider soldering nature.

Mark Code

Part No.	Mark No.	Part No.	Mark No.
RKZ2.0BKL	C1	RKZ9.1B2KL	G3
RKZ2.2BKL	C2	RKZ10B2KL	G6
RKZ2.4BKL	C3	RKZ11B2KL	G9
RKZ2.7B2KL	C5	RKZ12B2KL	J3
RKZ3.0B2KL	C7	RKZ13B2KL	J6
RKZ3.3B2KL	C9	RKZ15B2KL	J9
RKZ3.6B2KL	D2	RKZ16B2KL	M3
RKZ3.9B2KL	D4	RKZ18B2KL	M6
RKZ4.3B2KL	D6	RKZ20B2KL	M9
RKZ4.7B2KL	D9	RKZ22B2KL	P3
RKZ5.1B2KL	E3	RKZ24B2KL	P6
RKZ5.6B2KL	E6	RKZ27BKL	P8
RKZ6.2B2KL	E9	RKZ30BKL	P9
RKZ6.8B2KL	F3	RKZ33BKL	N4
RKZ7.5B2KL	F6	RKZ36BKL	N5
RKZ8.2B2KL	F9		

Note: 1. Example of Marking



Main Characteristic

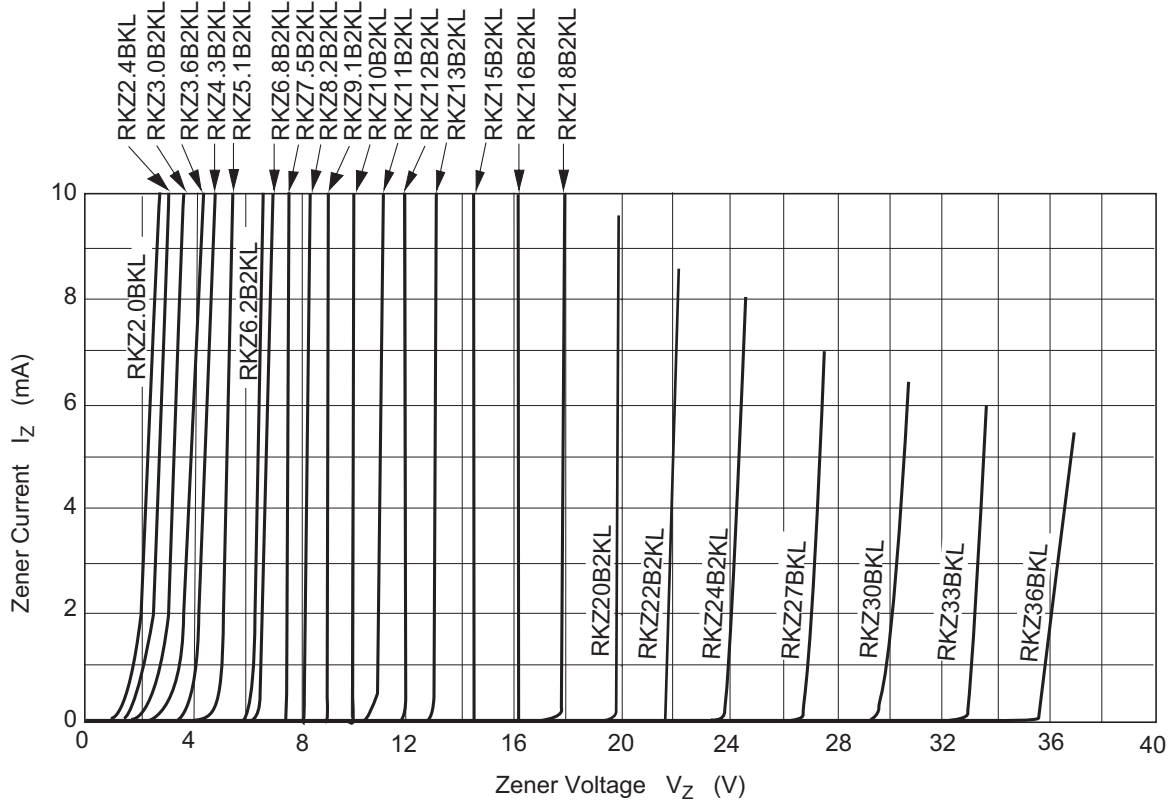


Fig.1 Zener current vs. Zener voltage

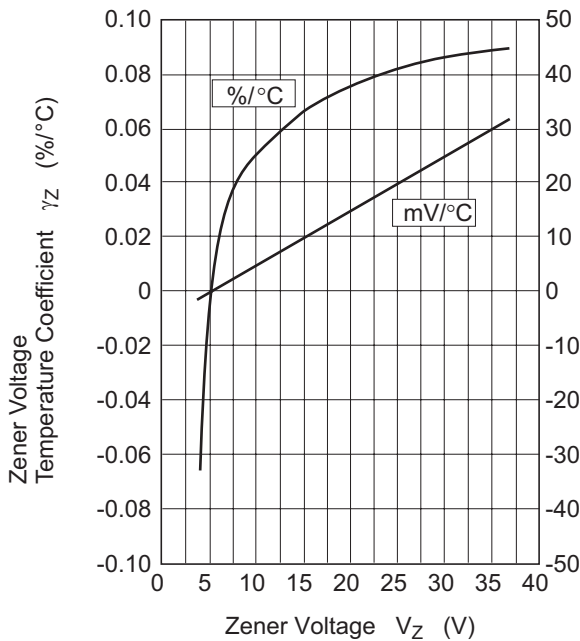


Fig.2 Temperature Coefficient vs. Zener voltage

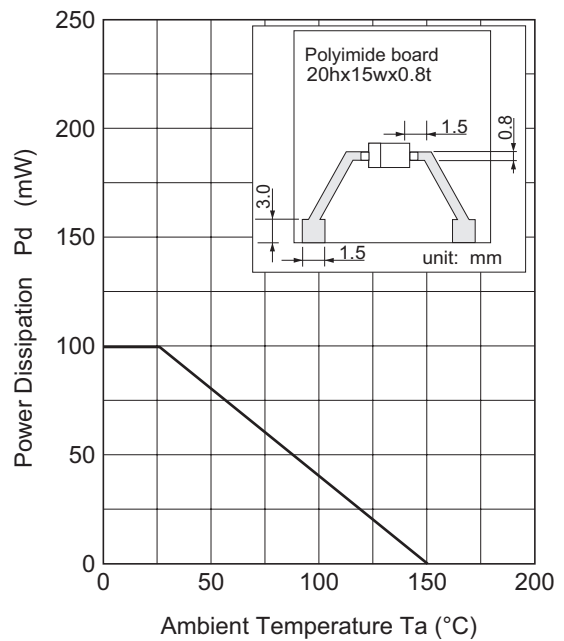
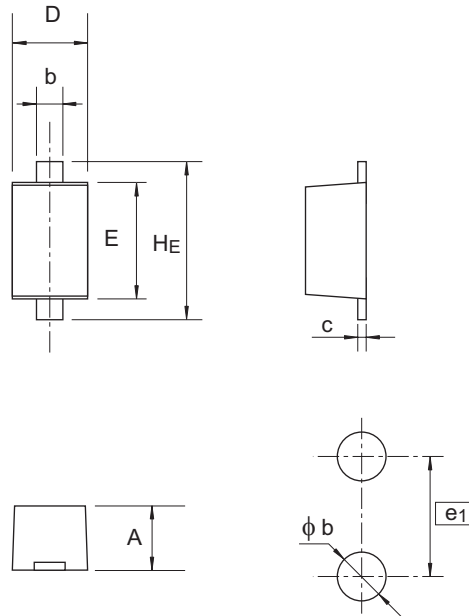


Fig.3 Power Dissipation vs. Ambient Temperature

## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
EFP	—	PXSF0002ZA-A	EFP / EFPV	0.0007g



Pattern of terminal position areas

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
A	0.44	0.47	0.50
b	0.25	0.30	0.35
c	0.08	0.13	0.18
D	0.55	0.60	0.65
E	0.75	0.80	0.85
HE	0.95	1.00	1.05
phi b	—	0.40	—
e1	—	1.00	—

Notes:

1. This document is provided for reference purposes only so that Renesas customers may select the appropriate Renesas products for their use. Renesas neither makes warranties or representations with respect to the accuracy or completeness of the information contained in this document nor grants any license to any intellectual property rights or any other rights of Renesas or any third party with respect to the information in this document.
2. Renesas shall have no liability for damages or infringement of any intellectual property or other rights arising out of the use of any information in this document, including, but not limited to, product data, diagrams, charts, programs, algorithms, and application circuit examples.
3. You should not use the products or the technology described in this document for the purpose of military applications such as the development of weapons of mass destruction or for the purpose of any other military use. When exporting the products or technology described herein, you should follow the applicable export control laws and regulations, and procedures required by such laws and regulations.
4. All information included in this document such as product data, diagrams, charts, programs, algorithms, and application circuit examples, is current as of the date this document is issued. Such information, however, is subject to change without any prior notice. Before purchasing or using any Renesas products listed in this document, please confirm the latest product information with a Renesas sales office. Also, please pay regular and careful attention to additional and different information to be disclosed by Renesas such as that disclosed through our website. (<http://www.renesas.com>)
5. Renesas has used reasonable care in compiling the information included in this document, but Renesas assumes no liability whatsoever for any damages incurred as a result of errors or omissions in the information included in this document.
6. When using or otherwise relying on the information in this document, you should evaluate the information in light of the total system before deciding about the applicability of such information to the intended application. Renesas makes no representations, warranties or guaranties regarding the suitability of its products for any particular application and specifically disclaims any liability arising out of the application and use of the information in this document or Renesas products.
7. With the exception of products specified by Renesas as suitable for automobile applications, Renesas products are not designed, manufactured or tested for applications or otherwise in systems the failure or malfunction of which may cause a direct threat to human life or create a risk of human injury or which require especially high quality and reliability such as safety systems, or equipment or systems for transportation and traffic, healthcare, combustion control, aerospace and aeronautics, nuclear power, or undersea communication transmission. If you are considering the use of our products for such purposes, please contact a Renesas sales office beforehand. Renesas shall have no liability for damages arising out of the uses set forth above.
8. Notwithstanding the preceding paragraph, you should not use Renesas products for the purposes listed below:
  - (1) artificial life support devices or systems
  - (2) surgical implantations
  - (3) healthcare intervention (e.g., excision, administration of medication, etc.)
  - (4) any other purposes that pose a direct threat to human lifeRenesas shall have no liability for damages arising out of the uses set forth in the above and purchasers who elect to use Renesas products in any of the foregoing applications shall indemnify and hold harmless Renesas Technology Corp., its affiliated companies and their officers, directors, and employees against any and all damages arising out of such applications.
9. You should use the products described herein within the range specified by Renesas, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas shall have no liability for malfunctions or damages arising out of the use of Renesas products beyond such specified ranges.
10. Although Renesas endeavors to improve the quality and reliability of its products, IC products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Please be sure to implement safety measures to guard against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other applicable measures. Among others, since the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or system manufactured by you.
11. In case Renesas products listed in this document are detached from the products to which the Renesas products are attached or affixed, the risk of accident such as swallowing by infants and small children is very high. You should implement safety measures so that Renesas products may not be easily detached from your products. Renesas shall have no liability for damages arising out of such detachment.
12. This document may not be reproduced or duplicated, in any form, in whole or in part, without prior written approval from Renesas.
13. Please contact a Renesas sales office if you have any questions regarding the information contained in this document, Renesas semiconductor products, or if you have any other inquiries.



**RENESAS SALES OFFICES**

<http://www.renesas.com>

Refer to "<http://www.renesas.com/en/network>" for the latest and detailed information.

**Renesas Technology America, Inc.**

450 Holger Way, San Jose, CA 95134-1368, U.S.A  
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology (Shanghai) Co., Ltd.**

Unit 204, 205, AZIACenter, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120  
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7898

**Renesas Technology Hong Kong Ltd.**

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong  
Tel: <852> 2265-6688, Fax: <852> 2730-6071

**Renesas Technology Taiwan Co., Ltd.**

10th Floor, No.99, Fushing North Road, Taipei, Taiwan  
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

**Renesas Technology Singapore Pte. Ltd.**

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

**Renesas Technology Korea Co., Ltd.**

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510