



Is Now Part of



**ON Semiconductor®**

To learn more about ON Semiconductor, please visit our website at  
[www.onsemi.com](http://www.onsemi.com)

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (\_), the underscore (\_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (\_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at [www.onsemi.com](http://www.onsemi.com). Please email any questions regarding the system integration to [Fairchild\\_questions@onsemi.com](mailto:Fairchild_questions@onsemi.com).

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

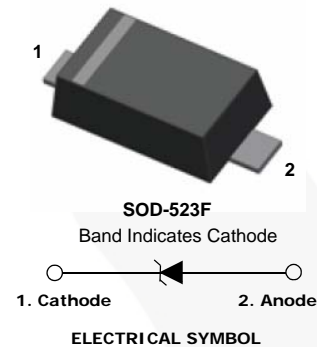


June 2015

# MM5Z2V4 - MM5Z75V Zener Diodes

## Features

- Wide Zener Voltage Range Selection, 2.4 V to 75 V
- Flat Lead, Surface Mount Device Under 0.70 mm Height
- Extremely Small Outline Plastic Package SOD523F
- Moisture Sensitivity Level 1
- Pb Free Version and RoHS Compliant
- Matte Tin(Sn) Lead Finish
- Band Indicates Cathode
- Green Mold Compound



## Ordering Information

Part Number	Device Marking	Package	Packing Method	Reel Size	Tape Width	Quantity
Refer to product table list	Refer to product table list	SOD-523F 2L	Tape and Reel	7 inch	12 mm	8,000

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	200	mW
$T_{STG}$	Storage Temperature Range	-55 to +150	$^\circ\text{C}$
$T_{OPR}$	Operating Temperature Range	-55 to +150	$^\circ\text{C}$

## Thermal Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient <sup>(1)</sup>	500	$^\circ\text{C/W}$

### Note:

1. Device mounted on FR-4 PCB minimum land pad.

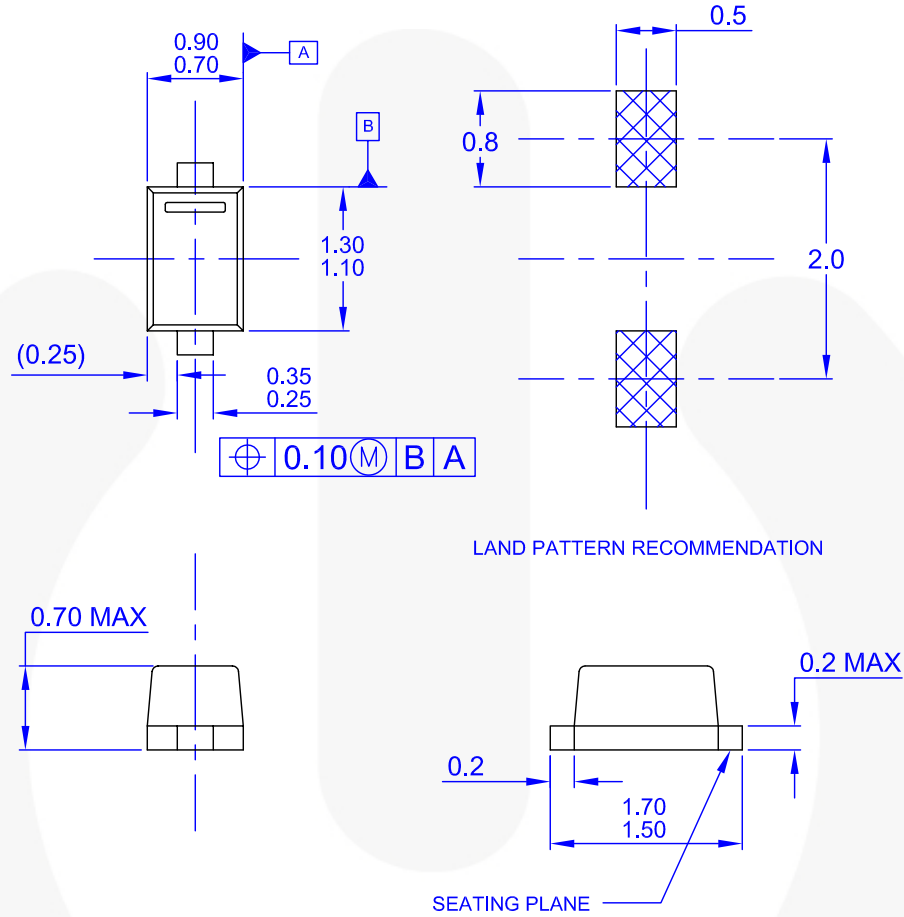
**Electrical Characteristics**<sup>(2), (3)</sup>Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Device Type	Device Marking	$V_Z$ (V) @ $I_{ZT}$			$Z_{ZT}$ ( $\Omega$ ) @ $I_{ZT}$	$I_{ZT}$ (mA)	$Z_{ZK}$ ( $\Omega$ ) @ $I_{ZK}$	$I_{ZK}$ (mA)	$I_R$ ( $\mu\text{A}$ ) @ $V_R$	$V_R$ (V)
		Min.	Typ.	Max.	Max.	-	Max.	-	Max.	-
MM5Z2V4	50	2.2	2.4	2.6	100	5	1000	1	50	1
MM5Z2V7	51	2.5	2.7	2.9	100	5	1000	1	20	1
MM5Z3V0	52	2.8	3.0	3.2	100	5	1000	1	10	1
MM5Z3V3	53	3.1	3.3	3.5	95	5	1000	1	5	1
MM5Z3V6	54	3.4	3.6	3.8	90	5	1000	1	5	1
MM5Z3V9	55	3.7	3.9	4.1	90	5	1000	1	3	1
MM5Z4V3	56	4.0	4.3	4.6	90	5	1000	1	3	1
MM5Z4V7	57	4.4	4.7	5.0	80	5	800	1	3	2
MM5Z5V1	58	4.8	5.1	5.4	60	5	500	1	2	2
MM5Z5V6	59	5.2	5.6	6.0	40	5	200	1	1	2
MM5Z6V2	5A	5.8	6.2	6.6	10	5	100	1	3	4
MM5Z6V8	5B	6.4	6.8	7.2	15	5	160	1	2	4
MM5Z7V5	5C	7.0	7.5	7.9	15	5	160	1	1	5
MM5Z8V2	5D	7.7	8.2	8.7	15	5	160	1	0.7	5
MM5Z9V1	5E	8.5	9.1	9.6	15	5	160	1	0.2	7
MM5Z10V	5F	9.4	10	10.6	20	5	160	1	0.1	8
MM5Z11V	5G	10.4	11	11.6	20	5	160	1	0.1	8
MM5Z12V	5H	11.4	12	12.7	25	5	80	1	0.1	8
MM5Z13V	5J	12.4	13	14.1	30	5	80	1	0.1	8
MM5Z15V	5K	14.3	15	15.8	30	5	80	1	0.05	10.5
MM5Z16V	5L	15.3	16	17.1	40	5	80	1	0.05	11.2
MM5Z18V	5M	16.8	18	19.1	45	5	80	1	0.05	12.6
MM5Z20V	5N	18.8	20	21.2	55	5	100	1	0.05	14.0
MM5Z22V	5P	20.8	22	23.3	55	5	100	1	0.05	15.4
MM5Z24V	5R	22.8	24	25.6	70	5	120	1	0.05	16.8
MM5Z27V	5S	25.1	27	28.9	80	2	300	0.5	0.05	18.9
MM5Z30V	5T	28	30	32	80	2	300	0.5	0.05	21.0
MM5Z33V	5U	31	33	35	80	2	300	0.5	0.05	23.2
MM5Z36V	5V	34	36	38	90	2	500	0.5	0.05	25.2
MM5Z39V	5X	37	39	41	130	2	500	0.5	0.05	27.3
MM5Z43V	5Y	40	43	46	150	2	500	0.5	0.05	30.1
MM5Z47V	5Z	44	47	50	170	2	500	0.5	0.05	32.9
MM5Z51V	5-	48	51	54	180	2	500	0.5	0.05	35.7
MM5Z56V	5=	52	56	60	200	2	500	0.5	0.05	39.2
MM5Z62V	5≡	58	62	66	215	2	500	0.5	0.05	43.4
MM5Z68V	5>	64	68	72	240	2	500	0.5	0.05	47.6
MM5Z75V	5<	70	75	79	255	2	500	0.5	0.05	52.5

**Notes:**

- The zener voltage ( $V_Z$ ) is tested under pulse condition of 10 mS.
- The zener impedance is derived from the 60-cycle AC voltage, which results when an AC current having an RMS value equal to 10% of the DC zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .

Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- A) PACKAGE REFERENCE: THIS PACKAGE OUTLINE CONFORMS TO JEITA SC-79.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M - 1994
- D) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
- E) LANDPATTERN RECOMMENDATION IS BASED ON IPC7351A STANDARD SOD1609X65M.
- F) DRAWING NUMBER AND REVISION: MKT-SOD523F1rev1






Figure 1. 2-LEAD, SOD523F, JEITA SC79, 0.7 MM TALL





**TRADEMARKS**

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

- |   |  |   |   |
|---|--|---|---|
| AccuPower™  | F-PFS™   | OPTOPLANAR®   |  SYSTEM GENERAL® |
| AttitudeEngine™   | FRFET®   |  ® | TinyBoost®  |
| Awinda®   | Global Power Resource™                         | Power Supply WebDesigner™   | TinyBuck®   |
| AX-CAP®*  | GreenBridge™                                   | PowerTrench®  | TinyCalc™   |
| BitSiC™   | Green FPS™                                     | PowerXS™  | TinyLogic®  |
| Build it Now™   | Green FPS™ e-Series™                           | Programmable Active Droop™  | TINYOPTO™   |
| CorePLUS™   | Gmax™  | QFET®   | TinyPower™  |
| CorePOWER™  | GTO™   | QS™   | TinyPWM™  |
| CROSSVOL™   | IntelliMAX™                                    | Quiet Series™   | TinyWire™   |
| CTL™  | ISOPLANAR™                                     | RapidConfigure™   | TranSiC™  |
| Current Transfer Logic™   | Making Small Speakers Sound Louder and Better™ |  ™ | TriFault Detect™  |
| DEUXPEED®   | MegaBuck™                                      | Saving our world, 1mW/W/kW at a time™   | TRUECURRENT®*   |
| Dual Cool™  | MICROCOUPLER™                                  | SignalWise™   | μSerDes™  |
| EcoSPARK®   | MicroFET™                                      | SmartMax™   |  SerDes™         |
| EfficientMax™   | MicroPak™                                      | SMART START™  | UHC®  |
| ESBC™   | MicroPak2™                                     | Solutions for Your Success™   | Ultra FRFET™  |
|  ® | MillerDrive™                                   | SPM®  | UniFET™   |
| Fairchild®  | MotionMax™                                     | STEALTH™  | VCX™  |
| Fairchild Semiconductor®  | MotionGrid®                                    | SuperFET®   | VisualMax™  |
| FACT Quiet Series™  | MTI®   | SuperSOT™-3   | VoltagePlus™  |
| FACT®   | MTx®   | SuperSOT™-6   | XS™   |
| FAST®   | MVN®   | SuperSOT™-8   | Xsens™  |
| FastvCore™  | mWSaver®                                       | SupreMOS®   | 仙童™   |
| FETBench™   | OptoHiT™                                       | SyncFET™  |   |
| FPS™  | OPTOLOGIC®                                     | Sync-Lock™  |   |

\* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. TO OBTAIN THE LATEST, MOST UP-TO-DATE DATASHEET AND PRODUCT INFORMATION, VISIT OUR WEBSITE AT [HTTP://WWW.FAIRCHILDSEMI.COM](http://www.fairchildsemi.com). FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

**ANTI-COUNTERFEITING POLICY**

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, [www.fairchildsemi.com](http://www.fairchildsemi.com), under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

**PRODUCT STATUS DEFINITIONS**

**Definition of Terms**

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local  
Sales Representative