

## Surface Mount Zener Diodes


**SMA (DO-214AC)**
**LINKS TO ADDITIONAL RESOURCES**


| PRIMARY CHARACTERISTICS      |               |      |
|------------------------------|---------------|------|
| PARAMETER                    | VALUE         | UNIT |
| V <sub>Z</sub> range nom.    | 8.2 to 100    | V    |
| Test current I <sub>ZT</sub> | 2.5 to 31     | mA   |
| V <sub>Z</sub> specification | Pulse current |      |
| Circuit configuration        | Single        |      |

**FEATURES**

- Plastic package has underwriters laboratory flammability classification 94 V-0
- For surface mounted applications
- Low Zener impedance
- Low regulation factor
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Standard voltage tolerance is ± 10 %, suffix A ± 5 %
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

**MECHANICAL DATA**

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified ("\_X" denotes revision code e.g. A, B, ...)

| ORDERING INFORMATION |                |                                       |                        |
|----------------------|----------------|---------------------------------------|------------------------|
| DEVICE NAME          | ORDERING CODE  | TAPED UNITS PER REEL                  | MINIMUM ORDER QUANTITY |
| SML4738 to SML4764A  | SML4738-E3/5A  | 7500 (12 mm tape on 13" plastic reel) | 7500                   |
|                      | SML4738HE3_A/I |                                       |                        |
| SML4738 to SML4764A  | SML4738-E3/61  | 1800 (12 mm tape on 7" plastic reel)  | 1800                   |
|                      | SML4738HE3_A/H |                                       |                        |

| PACKAGE        |        |                                      |                                   |                              |
|----------------|--------|--------------------------------------|-----------------------------------|------------------------------|
| PACKAGE NAME   | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL        | SOLDERING CONDITIONS         |
| SMA (DO-214AC) | 64 mg  | UL 94 V-0                            | MSL level 1 (according J-STD-020) | Peak temperature max. 260 °C |

| ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) |                        |                  |             |      |
|---|------------------------|------------------|-------------|------|
| PARAMETER   | TEST CONDITION         | SYMBOL           | VALUE       | UNIT |
| Power dissipation   | T <sub>L</sub> = 75 °C | P <sub>tot</sub> | 1000        | mW   |
| Junction temperature  |                        | T <sub>j</sub>   | 150         | °C   |
| Storage temperature range   |                        | T <sub>stg</sub> | -65 to +150 | °C   |



| ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |              |                     |              |           |                 |      |                    |                       |                              |
|---|--------------|---------------------|--------------|-----------|-----------------|------|--------------------|-----------------------|------------------------------|
| PART NUMBER   | MARKING CODE | ZENER VOLTAGE RANGE | TEST CURRENT |           | REVERSE CURRENT |      | DYNAMIC RESISTANCE |                       | SURGE CURRENT <sup>(1)</sup> |
|   |              | $V_Z$ at $I_{ZT1}$  | $I_{ZT1}$    | $I_{ZT2}$ | $I_R$ at $V_R$  |      | $Z_Z$ at $I_{ZT1}$ | $Z_{ZK}$ at $I_{ZT2}$ | $I_{RM}$                     |
|   |              | V                   | mA           |           | $\mu\text{A}$   | V    | $\Omega$           |                       | $\text{mA}_{pk}$             |
|   |              | NOM.                |              |           | MAX.            |      | MAX.               | MAX.                  | MAX.                         |
| SML4738   | 8P2          | 8.2                 | 31           | 0.5       | 10              | 6    | 4.5                | 700                   | 550                          |
| SML4739   | 9P1          | 9.1                 | 28           | 0.5       | 10              | 7    | 5                  | 700                   | 500                          |
| SML4740   | 10           | 10                  | 25           | 0.25      | 10              | 7.6  | 7                  | 700                   | 454                          |
| SML4741   | 11           | 11                  | 23           | 0.25      | 5               | 8.4  | 8                  | 700                   | 414                          |
| SML4742   | 12           | 12                  | 21           | 0.25      | 5               | 9.1  | 9                  | 700                   | 380                          |
| SML4743   | 13           | 13                  | 19           | 0.25      | 5               | 9.9  | 10                 | 700                   | 344                          |
| SML4744   | 15           | 15                  | 17           | 0.25      | 5               | 11.4 | 14                 | 700                   | 305                          |
| SML4745   | 16           | 16                  | 15.5         | 0.25      | 5               | 12.2 | 16                 | 700                   | 285                          |
| SML4746   | 18           | 18                  | 14           | 0.25      | 5               | 13.7 | 20                 | 750                   | 250                          |
| SML4747   | 20           | 20                  | 12.5         | 0.25      | 5               | 15.2 | 22                 | 750                   | 225                          |
| SML4748   | 22           | 22                  | 11.5         | 0.25      | 5               | 16.7 | 23                 | 750                   | 205                          |
| SML4749   | 24           | 24                  | 10.5         | 0.25      | 5               | 18.2 | 25                 | 750                   | 190                          |
| SML4750   | 27           | 27                  | 9.5          | 0.25      | 5               | 20.6 | 35                 | 750                   | 170                          |
| SML4751   | 30           | 30                  | 8.5          | 0.25      | 5               | 22.8 | 40                 | 1000                  | 150                          |
| SML4752   | 33           | 33                  | 7.5          | 0.25      | 5               | 25.1 | 45                 | 1000                  | 135                          |
| SML4753   | 36           | 36                  | 7            | 0.25      | 5               | 27.4 | 50                 | 1000                  | 125                          |
| SML4754   | 39           | 39                  | 6.5          | 0.25      | 5               | 29.7 | 60                 | 1000                  | 115                          |
| SML4755   | 43           | 43                  | 6            | 0.25      | 5               | 32.7 | 70                 | 1500                  | 110                          |
| SML4756   | 47           | 47                  | 5.5          | 0.25      | 5               | 35.8 | 80                 | 1500                  | 95                           |
| SML4757   | 51           | 51                  | 5            | 0.25      | 5               | 38.8 | 95                 | 1500                  | 90                           |
| SML4758   | 56           | 56                  | 4.5          | 0.25      | 5               | 42.6 | 110                | 2000                  | 80                           |
| SML4759   | 62           | 62                  | 4            | 0.25      | 5               | 47.1 | 125                | 2000                  | 70                           |
| SML4760   | 68           | 68                  | 3.7          | 0.25      | 5               | 51.7 | 150                | 2000                  | 65                           |
| SML4761   | 75           | 75                  | 3.3          | 0.25      | 5               | 56   | 175                | 2000                  | 60                           |
| SML4762   | 82           | 82                  | 3            | 0.25      | 5               | 62.2 | 200                | 3000                  | 55                           |
| SML4763   | 91           | 91                  | 2.8          | 0.25      | 5               | 69.2 | 250                | 3000                  | 50                           |
| SML4764   | 100          | 100                 | 2.5          | 0.25      | 5               | 76   | 350                | 3000                  | 45                           |

**Note**

<sup>(1)</sup> Surge current is a non-repetitive, 8.3 ms pulse width square wave or equivalent sine-wave superimposed on  $I_{ZT}$  per JEDEC<sup>®</sup> method

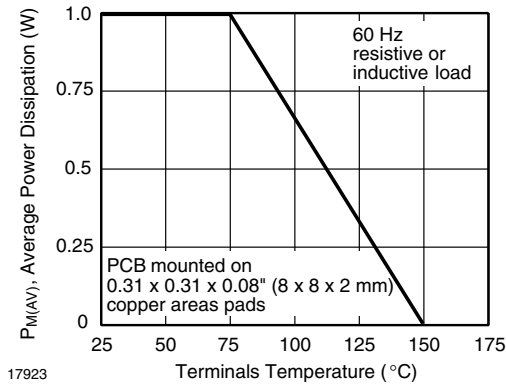


| ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |              |                     |              |           |                 |      |                    |                       |                              |
|---|--------------|---------------------|--------------|-----------|-----------------|------|--------------------|-----------------------|------------------------------|
| PART NUMBER   | MARKING CODE | ZENER VOLTAGE RANGE | TEST CURRENT |           | REVERSE CURRENT |      | DYNAMIC RESISTANCE |                       | SURGE CURRENT <sup>(1)</sup> |
|   |              | $V_Z$ at $I_{ZT1}$  | $I_{ZT1}$    | $I_{ZT2}$ | $I_R$ at $V_R$  |      | $Z_Z$ at $I_{ZT1}$ | $Z_{ZK}$ at $I_{ZT2}$ | $I_{RM}$                     |
|   |              | V                   | mA           |           | $\mu\text{A}$   | V    | $\Omega$           |                       | $\text{mA}_{pk}$             |
|   |              | NOM.                |              |           | MAX.            |      | MAX.               | MAX.                  | MAX.                         |
| SML4738A  | 8P2A         | 8.2                 | 31           | 0.5       | 10              | 6    | 4.5                | 700                   | 550                          |
| SML4739A  | 9P1A         | 9.1                 | 28           | 0.5       | 10              | 7    | 5                  | 700                   | 500                          |
| SML4740A  | 10A          | 10                  | 25           | 0.25      | 10              | 7.6  | 7                  | 700                   | 454                          |
| SML4741A  | 11A          | 11                  | 23           | 0.25      | 5               | 8.4  | 8                  | 700                   | 414                          |
| SML4742A  | 12A          | 12                  | 21           | 0.25      | 5               | 9.1  | 9                  | 700                   | 380                          |
| SML4743A  | 13A          | 13                  | 19           | 0.25      | 5               | 9.9  | 10                 | 700                   | 344                          |
| SML4744A  | 15A          | 15                  | 17           | 0.25      | 5               | 11.4 | 14                 | 700                   | 305                          |
| SML4745A  | 16A          | 16                  | 15.5         | 0.25      | 5               | 12.2 | 16                 | 700                   | 285                          |
| SML4746A  | 18A          | 18                  | 14           | 0.25      | 5               | 13.7 | 20                 | 750                   | 250                          |
| SML4747A  | 20A          | 20                  | 12.5         | 0.25      | 5               | 15.2 | 22                 | 750                   | 225                          |
| SML4748A  | 22A          | 22                  | 11.5         | 0.25      | 5               | 16.7 | 23                 | 750                   | 205                          |
| SML4749A  | 24A          | 24                  | 10.5         | 0.25      | 5               | 18.2 | 25                 | 750                   | 190                          |
| SML4750A  | 27A          | 27                  | 9.5          | 0.25      | 5               | 20.6 | 35                 | 750                   | 170                          |
| SML4751A  | 30A          | 30                  | 8.5          | 0.25      | 5               | 22.8 | 40                 | 1000                  | 150                          |
| SML4752A  | 33A          | 33                  | 7.5          | 0.25      | 5               | 25.1 | 45                 | 1000                  | 135                          |
| SML4753A  | 36A          | 36                  | 7            | 0.25      | 5               | 27.4 | 50                 | 1000                  | 125                          |
| SML4754A  | 39A          | 39                  | 6.5          | 0.25      | 5               | 29.7 | 60                 | 1000                  | 115                          |
| SML4755A  | 43A          | 43                  | 6            | 0.25      | 5               | 32.7 | 70                 | 1500                  | 110                          |
| SML4756A  | 47A          | 47                  | 5.5          | 0.25      | 5               | 35.8 | 80                 | 1500                  | 95                           |
| SML4757A  | 51A          | 51                  | 5            | 0.25      | 5               | 38.8 | 95                 | 1500                  | 90                           |
| SML4758A  | 56A          | 56                  | 4.5          | 0.25      | 5               | 42.6 | 110                | 2000                  | 80                           |
| SML4759A  | 62A          | 62                  | 4            | 0.25      | 5               | 47.1 | 125                | 2000                  | 70                           |
| SML4760A  | 68A          | 68                  | 3.7          | 0.25      | 5               | 51.7 | 150                | 2000                  | 65                           |
| SML4761A  | 75A          | 75                  | 3.3          | 0.25      | 5               | 56   | 175                | 2000                  | 60                           |
| SML4762A  | 82A          | 82                  | 3            | 0.25      | 5               | 62.2 | 200                | 3000                  | 55                           |
| SML4763A  | 91A          | 91                  | 2.8          | 0.25      | 5               | 69.2 | 250                | 3000                  | 50                           |
| SML4764A  | 100A         | 100                 | 2.5          | 0.25      | 5               | 76   | 350                | 3000                  | 45                           |

**Note**

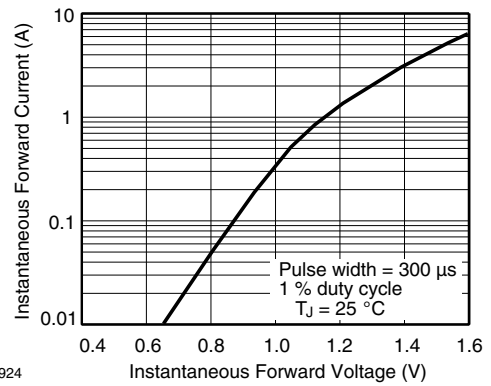
<sup>(1)</sup> Surge current is a non-repetitive, 8.3 ms pulse width square wave or equivalent sine-wave superimposed on  $I_{ZT}$  per JEDEC<sup>®</sup> method

## BASIC CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)



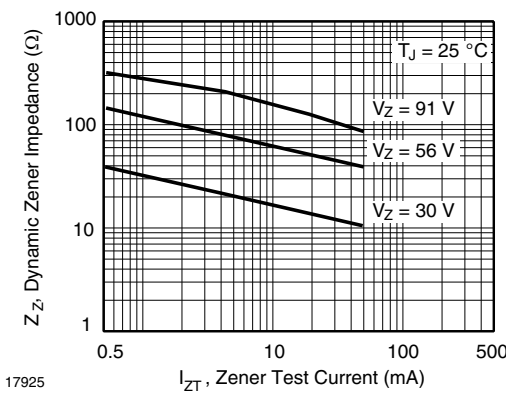
17923

Fig. 1 - Maximum Continuous Power Dissipation



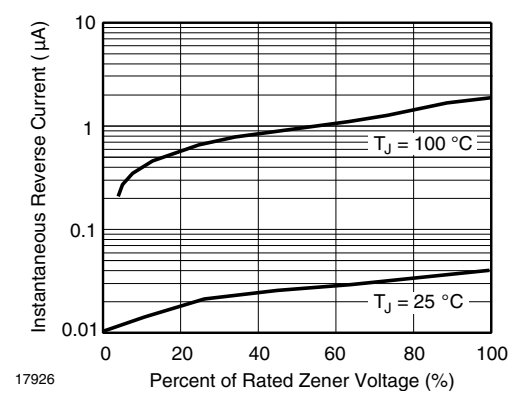
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Fig. 4 - Typical Instantaneous Forward Characteristics for SML4763



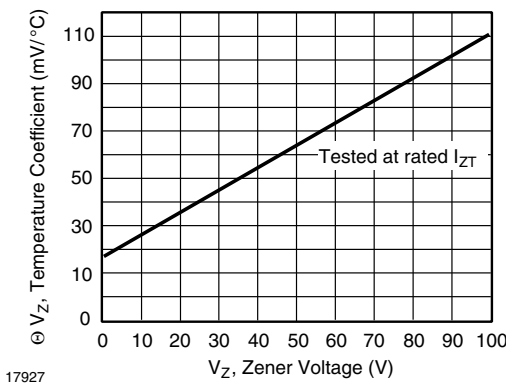
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Fig. 2 - Typical Zener Impedance



17926

Fig. 5 - Typical Reverse Characteristics

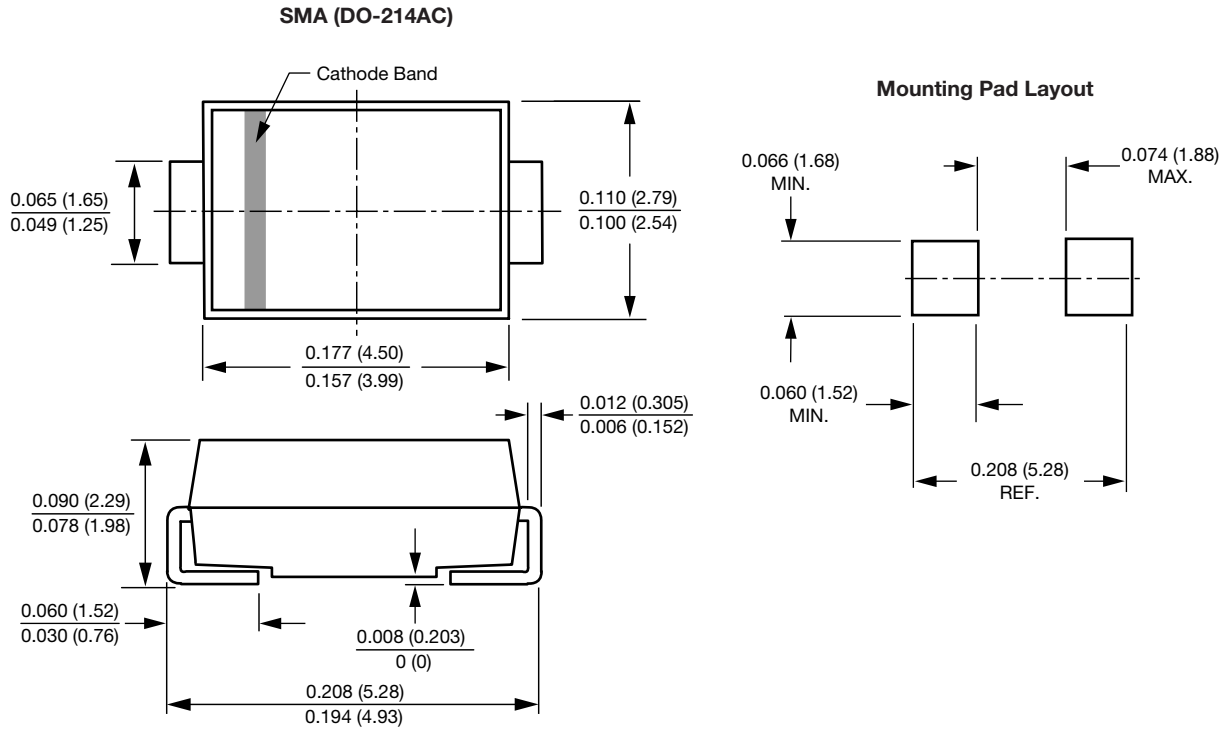


17927

Fig. 3 - Typical Temperature Coefficients



## PACKAGE DIMENSIONS in inches (millimeters): SMA (DO-214AC)





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