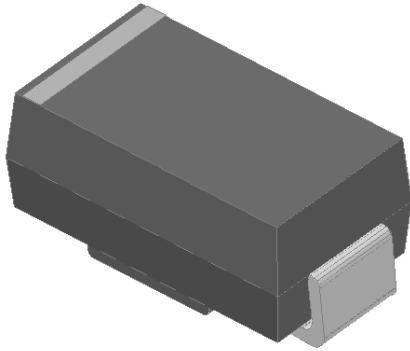




## Surface Mount Zener Diodes



### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Part no. with suffix "Q" means AEC-Q101 qualified

### Mechanical Data

- **Package:** DO-214AC (SMA)  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

### ■Maximum Ratings (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                                    | SYMBOL           | UNIT | MAX         |
|--------------------------------------------------------------|------------------|------|-------------|
| DC power dissipation at T <sub>L</sub> = 75 °C               | P <sub>D</sub>   | W    | 1.5         |
| Maximum instantaneous forward voltage@ I <sub>F</sub> =200mA | V <sub>F</sub>   | V    | 1.5         |
| Maximum junction temperature                                 | T <sub>j</sub>   | °C   | -55 to +150 |
| Storage temperature range                                    | T <sub>stg</sub> | °C   | -55 to +150 |

### ■Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                   | SYMBOL                           | UNIT | Conditions          | VALUE |
|-----------------------------|----------------------------------|------|---------------------|-------|
| Thermal resistance(Typical) | R <sub>θJ-L</sub> <sup>(1)</sup> | °C/W | junction to lead    | 30    |
|                             | R <sub>θJ-A</sub> <sup>(1)</sup> | °C/W | junction to ambient | 120   |

Note

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.4" x 0.4" (10 mm x 10 mm) copper pad areas

### ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| Part Number | Nominal Zener voltage                                   |                                                          |                                                         | Test current<br>I <sub>ZT</sub> | Maximum dynamic impedance resistance |                                    |                 | Maximum reverse leakage current |                             | Maximum DC Zener Current<br>I <sub>ZM</sub> |
|-------------|---------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------|---------------------------------|--------------------------------------|------------------------------------|-----------------|---------------------------------|-----------------------------|---------------------------------------------|
|             | Min<br>V <sub>Z</sub> <sup>(1)</sup> at I <sub>ZT</sub> | Typ.<br>V <sub>Z</sub> <sup>(1)</sup> at I <sub>ZT</sub> | Max<br>V <sub>Z</sub> <sup>(1)</sup> at I <sub>ZT</sub> |                                 | Z <sub>YT</sub> at I <sub>ZT</sub>   | Z <sub>ZK</sub> at I <sub>ZK</sub> | I <sub>ZK</sub> | I <sub>R</sub>                  | Test voltage V <sub>R</sub> |                                             |
|             | V                                                       | V                                                        | V                                                       |                                 | Ω                                    | Ω                                  | mA              | μA                              | V                           |                                             |
| SMA5921AQ   | 6.46                                                    | 6.8                                                      | 7.14                                                    | 55.1                            | 2.5                                  | 200                                | 1.00            | 10.0                            | 5.2                         | 221.0                                       |
| SMA5922AQ   | 7.13                                                    | 7.5                                                      | 7.88                                                    | 50.0                            | 3.0                                  | 400                                | 0.50            | 10.0                            | 6.0                         | 200.0                                       |
| SMA5923AQ   | 7.79                                                    | 8.2                                                      | 8.61                                                    | 45.7                            | 3.5                                  | 400                                | 0.50            | 10.0                            | 6.5                         | 183.0                                       |
| SMA5924AQ   | 8.65                                                    | 9.1                                                      | 9.56                                                    | 41.2                            | 4.0                                  | 500                                | 0.50            | 10.0                            | 7.0                         | 165.0                                       |
| SMA5925AQ   | 9.50                                                    | 10.0                                                     | 10.50                                                   | 37.5                            | 4.5                                  | 500                                | 0.25            | 2.5                             | 8.0                         | 150.0                                       |



## SMA5921AQ THRU SMA5956AQ

| Part Number | Nominal Zener voltage       |                              |                             | Test current | Maximum dynamic impedance resistance |                      |          | Maximum reverse leakage current |                    | Maximum DC Zener Current |
|-------------|-----------------------------|------------------------------|-----------------------------|--------------|--------------------------------------|----------------------|----------|---------------------------------|--------------------|--------------------------|
|             | Min $V_Z^{(1)}$ at $I_{ZT}$ | Typ. $V_Z^{(1)}$ at $I_{ZT}$ | Max $V_Z^{(1)}$ at $I_{ZT}$ | $I_{ZT}$     | $Z_{ZT}$ at $I_{ZT}$                 | $Z_{ZK}$ at $I_{ZK}$ | $I_{ZK}$ | $I_R$                           | Test voltage $V_R$ | $I_{ZM}$                 |
|             | V                           | V                            | V                           | mA           | $\Omega$                             | $\Omega$             | mA       | $\mu A$                         | V                  | mA                       |
| SMA5926AQ   | 10.45                       | 11.0                         | 11.55                       | 34.1         | 5.5                                  | 550                  | 0.25     | 0.5                             | 8.4                | 136.0                    |
| SMA5927AQ   | 11.40                       | 12.0                         | 12.60                       | 31.2         | 6.5                                  | 550                  | 0.25     | 0.5                             | 9.1                | 125.0                    |
| SMA5928AQ   | 12.35                       | 13.0                         | 13.65                       | 28.8         | 7.0                                  | 550                  | 0.25     | 0.5                             | 9.9                | 115.0                    |
| SMA5929AQ   | 14.25                       | 15.0                         | 15.75                       | 25.0         | 9.0                                  | 600                  | 0.25     | 0.5                             | 11.4               | 100.0                    |
| SMA5930AQ   | 15.20                       | 16.0                         | 16.80                       | 23.4         | 10.0                                 | 600                  | 0.25     | 0.5                             | 12.2               | 94.0                     |
| SMA5931AQ   | 17.10                       | 18.0                         | 18.90                       | 20.8         | 12.0                                 | 650                  | 0.25     | 0.5                             | 13.7               | 83.0                     |
| SMA5932AQ   | 19.00                       | 20.0                         | 21.00                       | 18.7         | 14.0                                 | 650                  | 0.25     | 0.5                             | 15.2               | 75.0                     |
| SMA5933AQ   | 20.90                       | 22.0                         | 23.10                       | 17.0         | 17.5                                 | 650                  | 0.25     | 0.5                             | 16.7               | 68.0                     |
| SMA5934AQ   | 22.80                       | 24.0                         | 25.20                       | 15.6         | 19.0                                 | 700                  | 0.25     | 0.5                             | 18.2               | 63.0                     |
| SMA5935AQ   | 25.65                       | 27.0                         | 28.35                       | 13.9         | 23.0                                 | 700                  | 0.25     | 0.5                             | 20.6               | 56.0                     |
| SMA5936AQ   | 28.50                       | 30.0                         | 31.50                       | 12.5         | 26.0                                 | 750                  | 0.25     | 0.5                             | 22.8               | 50.0                     |
| SMA5937AQ   | 31.35                       | 33.0                         | 34.65                       | 11.4         | 33.0                                 | 800                  | 0.25     | 0.5                             | 25.1               | 45.0                     |
| SMA5938AQ   | 34.20                       | 36.0                         | 37.80                       | 10.4         | 38.0                                 | 850                  | 0.25     | 0.5                             | 27.4               | 42.0                     |
| SMA5939AQ   | 37.05                       | 39.0                         | 40.95                       | 9.6          | 45.0                                 | 900                  | 0.25     | 0.5                             | 29.7               | 38.0                     |
| SMA5940AQ   | 40.85                       | 43.0                         | 45.15                       | 8.7          | 53.0                                 | 950                  | 0.25     | 0.5                             | 32.7               | 35.0                     |
| SMA5941AQ   | 44.65                       | 47.0                         | 49.35                       | 8.0          | 67.0                                 | 1000                 | 0.25     | 0.5                             | 35.8               | 32.0                     |
| SMA5942AQ   | 48.45                       | 51.0                         | 53.55                       | 7.3          | 70.0                                 | 1100                 | 0.25     | 0.5                             | 38.8               | 29.0                     |
| SMA5943AQ   | 53.20                       | 56.0                         | 58.80                       | 6.7          | 86.0                                 | 1300                 | 0.25     | 0.5                             | 42.6               | 27.0                     |
| SMA5944AQ   | 58.90                       | 62.0                         | 65.10                       | 6.0          | 100.0                                | 1500                 | 0.25     | 0.5                             | 47.1               | 24.0                     |
| SMA5945AQ   | 64.60                       | 68.0                         | 71.40                       | 5.5          | 120.0                                | 1700                 | 0.25     | 0.5                             | 51.7               | 22.0                     |
| SMA5946AQ   | 71.25                       | 75.0                         | 78.75                       | 5.0          | 140.0                                | 2000                 | 0.25     | 0.5                             | 56.0               | 20.0                     |
| SMA5947AQ   | 77.90                       | 82.0                         | 86.10                       | 4.6          | 160.0                                | 2500                 | 0.25     | 0.5                             | 62.2               | 18.0                     |
| SMA5948AQ   | 86.45                       | 91.0                         | 95.55                       | 4.1          | 200.0                                | 3000                 | 0.25     | 0.5                             | 69.2               | 16.0                     |
| SMA5949AQ   | 95.00                       | 100.0                        | 105.00                      | 3.7          | 250.0                                | 3100                 | 0.25     | 0.5                             | 76.0               | 15.0                     |
| SMA5950AQ   | 104.50                      | 110.0                        | 115.50                      | 3.4          | 300.0                                | 4000                 | 0.25     | 0.5                             | 83.6               | 14.0                     |
| SMA5951AQ   | 114.00                      | 120.0                        | 126.00                      | 3.1          | 380.0                                | 4500                 | 0.25     | 0.5                             | 91.2               | 13.0                     |
| SMA5952AQ   | 123.50                      | 130.0                        | 136.50                      | 2.9          | 450.0                                | 5000                 | 0.25     | 0.5                             | 98.8               | 12.0                     |
| SMA5953AQ   | 142.50                      | 150.0                        | 157.50                      | 2.5          | 600.0                                | 6000                 | 0.25     | 0.5                             | 114.0              | 10.0                     |
| SMA5954AQ   | 152.00                      | 160.0                        | 168.00                      | 2.3          | 700.0                                | 6500                 | 0.25     | 0.5                             | 121.6              | 9.4                      |
| SMA5955AQ   | 171.00                      | 180.0                        | 189.00                      | 2.1          | 900.0                                | 7000                 | 0.25     | 0.5                             | 136.8              | 8.3                      |
| SMA5956AQ   | 190.00                      | 200.0                        | 210.00                      | 1.9          | 1200.0                               | 8000                 | 0.25     | 0.5                             | 152.0              | 7.5                      |

Notes:

(1) Nominal Zener voltage Range: 95% Typ.  $V_Z$  (1) at  $I_{ZT}$ ----105% Typ.  $V_Z$  (1) at  $I_{ZT}$



## SMA5921AQ THRU SMA5956AQ

### ■ Characteristics (Typical)

Fig1 : Power Temperature Derating Curve

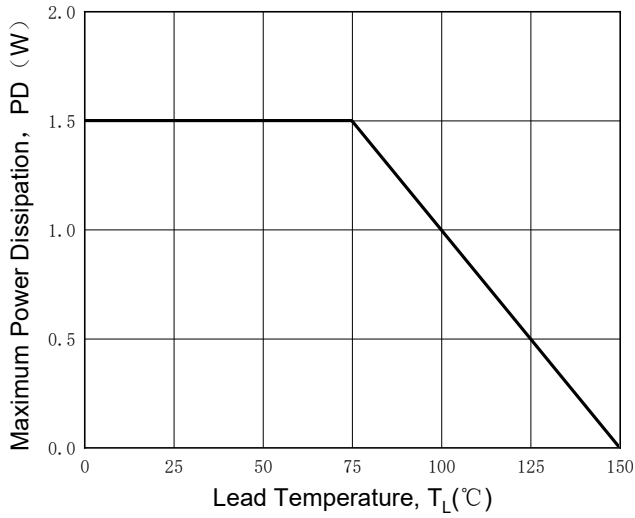


Fig2 : Typical Zener Breakdown Characteristics

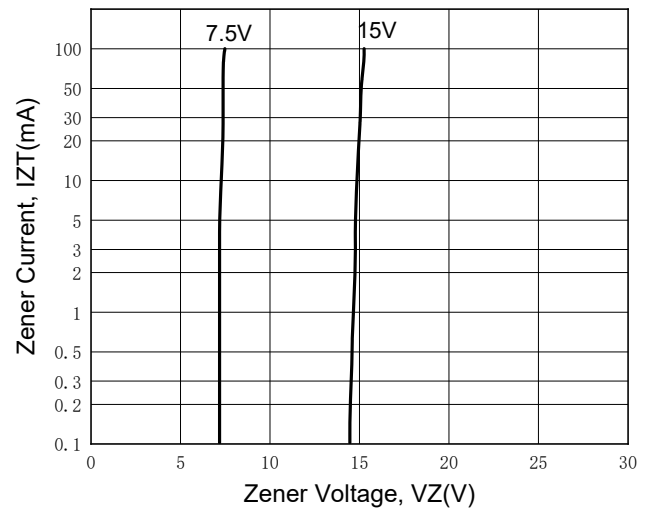
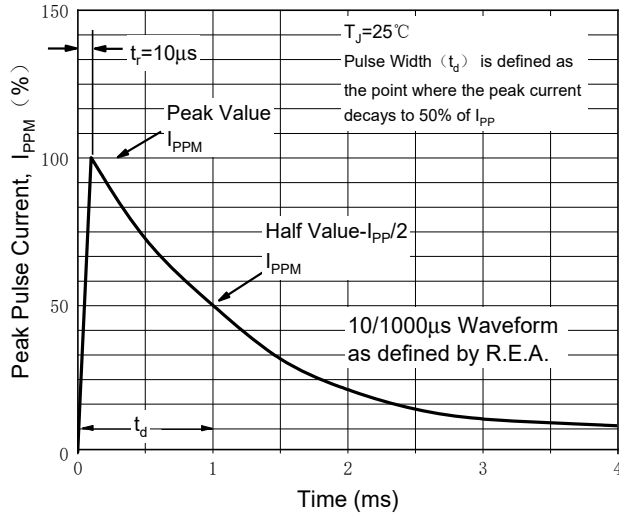


Fig.3 Pulse Waveform





## SMA5921AQ THRU SMA5956AQ

### ■ Ordering Information (Example)

| PREFERRED P/N           | PACKAGE CODE | UNIT WEIGHT(g)    | MINIMUM PACKAGE(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|-------------------------|--------------|-------------------|----------------------|----------------------------|---------------|
| SMA5921AQ<br>~SMA5956AQ | F2           | Approximate 0.059 | 7500                 | 120000                     | 13" reel      |

### ■ Marking Information



Note:

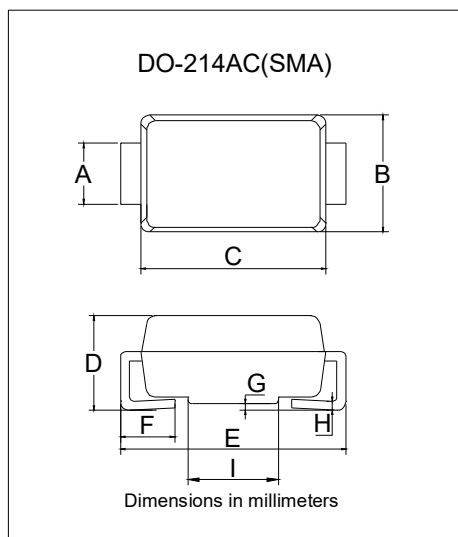
1. All marking is at middle of the product body
2. All marking is in laser printing
3. XXXXX is marking code, like SMA5921AQ marking code is 5921A
4. Body color: Black
5. YWW is date code, "Y" is year. "WW" is week.

For instance:

The 45<sup>th</sup> week of 2021, date code is 145

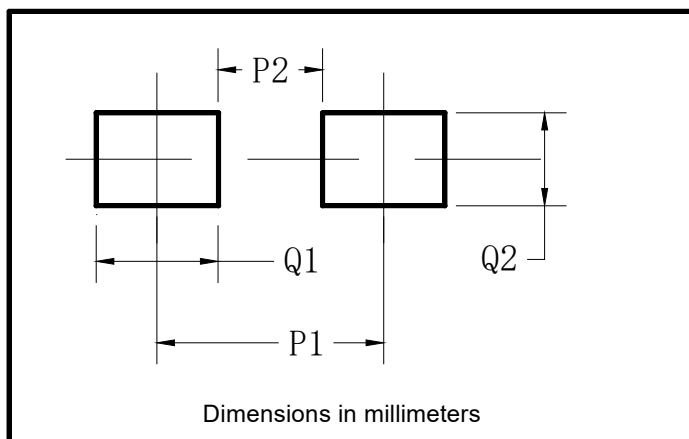
The 45<sup>th</sup> week of 2022, date code is 245

### ■ Outline Dimensions



| DO-214AC(SMA) |      |      |
|---------------|------|------|
| Dim           | Min  | Max  |
| A             | 1.25 | 1.58 |
| B             | 2.40 | 2.83 |
| C             | 4.00 | 4.75 |
| D             | 1.90 | 2.30 |
| E             | 4.93 | 5.28 |
| F             | 0.76 | 1.41 |
| G             | 0.05 | 0.20 |
| H             | 0.15 | 0.31 |
| I             | 1.7  | 2.1  |

### ■ Suggested Pad Layout



| DO-214AC(SMA) |             |
|---------------|-------------|
| Dim           | Millimeters |
| P1            | 4.00        |
| P2            | 1.50        |
| Q1            | 2.50        |
| Q2            | 1.70        |



## SMA5921AQ THRU SMA5956AQ

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