

### Absolute Maximum Ratings

| Symbol     | Parameter                            | Value      | Units |
|------------|--------------------------------------|------------|-------|
| $P_{pk}$   | Peak Pulse Power ( $t_p=8/20\mu s$ ) | 200        | W     |
| $T_{OP}$   | Operating Temperature                | -40 to 150 | °C    |
| $T_{STOR}$ | Storage Temperature                  | -55 to 150 | °C    |

Notes:

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

### AQHV12 Electrical Characteristics ( $T_{OP}=25^\circ C$ )

| Parameter                          | Symbol      | Test Conditions                     | Min      | Typ  | Max  | Units    |
|------------------------------------|-------------|-------------------------------------|----------|------|------|----------|
| Reverse Standoff Voltage           | $V_{RWM}$   | $I_R \leq 1\mu A$                   |          |      | 12.0 | V        |
| Breakdown Voltage                  | $V_{BR}$    | $I_R = 1mA$                         | 13.3     |      |      | V        |
| Leakage Current                    | $I_{LEAK}$  | $V_R = 12V$                         |          |      | 1.0  | $\mu A$  |
| Clamp Voltage <sup>1</sup>         | $V_C$       | $I_{PP} = 1A, t_p = 8/20\mu s, Fwd$ |          |      | 19.0 | V        |
|                                    |             | $I_{PP} = 8A, t_p = 8/20\mu s, Fwd$ |          |      | 25.0 | V        |
| Dynamic Resistance <sup>2</sup>    | $R_{DYN}$   | TLP, $t_p = 100ns$ , I/O to GND     |          | 0.37 |      | $\Omega$ |
| Peak Pulse Current                 | $I_{PP}$    | $t_p = 8/20\mu s$                   |          |      | 8.0  | A        |
| ESD Withstand Voltage <sup>1</sup> | $V_{ESD}$   | IEC 61000-4-2 (Contact Discharge)   | $\pm 30$ |      |      | kV       |
|                                    |             | IEC 61000-4-2 (Air Discharge)       | $\pm 30$ |      |      | kV       |
| Diode Capacitance <sup>1</sup>     | $C_{D-GND}$ | Reverse Bias=0V, f=1MHz             |          |      | 60   | pF       |

### AQHV15 Electrical Characteristics ( $T_{OP}=25^\circ C$ )

| Parameter                          | Symbol        | Test Conditions                     | Min      | Typ  | Max  | Units    |
|------------------------------------|---------------|-------------------------------------|----------|------|------|----------|
| Reverse Standoff Voltage           | $V_{RWM}$     | $I_R \leq 1\mu A$                   |          |      | 15.0 | V        |
| Breakdown Voltage                  | $V_{BR}$      | $I_R = 1mA$                         | 16.7     |      |      | V        |
| Leakage Current                    | $I_{LEAK}$    | $V_R = 15V$                         |          |      | 1.0  | $\mu A$  |
| Clamp Voltage <sup>1</sup>         | $V_C$         | $I_{PP} = 1A, t_p = 8/20\mu s, Fwd$ |          |      | 22.0 | V        |
|                                    |               | $I_{PP} = 5A, t_p = 8/20\mu s, Fwd$ |          |      | 28.0 | V        |
| Dynamic Resistance <sup>2</sup>    | $R_{DYN}$     | TLP, $t_p = 100ns$ , I/O to GND     |          | 0.40 |      | $\Omega$ |
| Peak Pulse Current                 | $I_{PP}$      | $t_p = 8/20\mu s$                   |          |      | 5.0  | A        |
| ESD Withstand Voltage <sup>1</sup> | $V_{ESD}$     | IEC 61000-4-2 (Contact Discharge)   | $\pm 30$ |      |      | kV       |
|                                    |               | IEC 61000-4-2 (Air Discharge)       | $\pm 30$ |      |      | kV       |
| Diode Capacitance <sup>1</sup>     | $C_{I/O-GND}$ | Reverse Bias=0V, f=1MHz             |          |      | 46   | pF       |

### AQHV24 Electrical Characteristics (T<sub>OP</sub>=25°C)

| Parameter                          | Symbol               | Test Conditions                                      | Min  | Typ  | Max  | Units |
|------------------------------------|----------------------|------------------------------------------------------|------|------|------|-------|
| Reverse Standoff Voltage           | V <sub>RWM</sub>     | I <sub>R</sub> ≤ 1 μA                                |      |      | 24.0 | V     |
| Breakdown Voltage                  | V <sub>BR</sub>      | I <sub>R</sub> = 1 mA                                | 26.7 |      |      | V     |
| Leakage Current                    | I <sub>LEAK</sub>    | V <sub>R</sub> = 24 V                                |      |      | 1.0  | μA    |
| Clamp Voltage <sup>1</sup>         | V <sub>C</sub>       | I <sub>PP</sub> = 1 A, t <sub>p</sub> = 8/20 μs, Fwd |      |      | 36.0 | V     |
|                                    |                      | I <sub>PP</sub> = 3 A, t <sub>p</sub> = 8/20 μs, Fwd |      |      | 50.0 | V     |
| Dynamic Resistance <sup>2</sup>    | R <sub>DYN</sub>     | TLP, t <sub>p</sub> = 100 ns, I/O to GND             |      | 0.56 |      | Ω     |
| Peak Pulse Current                 | I <sub>PP</sub>      | t <sub>p</sub> = 8/20 μs                             |      |      | 3.0  | A     |
| ESD Withstand Voltage <sup>1</sup> | V <sub>ESD</sub>     | IEC 61000-4-2 (Contact Discharge)                    | ±24  |      |      | kV    |
|                                    |                      | IEC 61000-4-2 (Air Discharge)                        | ±30  |      |      | kV    |
| Diode Capacitance <sup>1</sup>     | C <sub>I/O-GND</sub> | Reverse Bias = 0 V, f = 1 MHz                        |      |      | 32   | pF    |

### AQHV36 Electrical Characteristics (T<sub>OP</sub>=25°C)

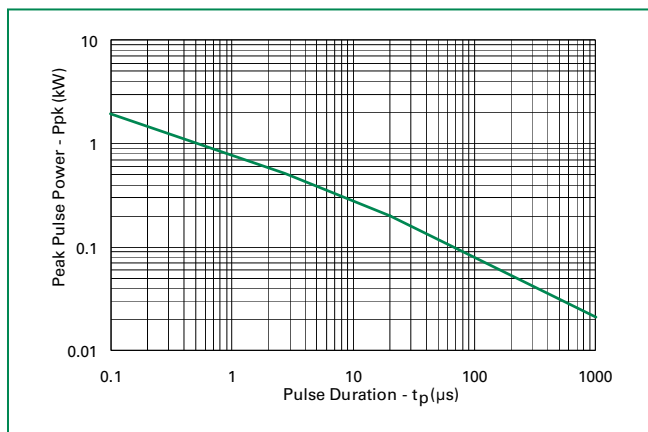
| Parameter                          | Symbol               | Test Conditions                                      | Min  | Typ  | Max  | Units |
|------------------------------------|----------------------|------------------------------------------------------|------|------|------|-------|
| Reverse Standoff Voltage           | V <sub>RWM</sub>     | I <sub>R</sub> ≤ 1 μA                                |      |      | 36.0 | V     |
| Breakdown Voltage                  | V <sub>BR</sub>      | I <sub>R</sub> = 1 mA                                | 40.0 |      |      | V     |
| Leakage Current                    | I <sub>LEAK</sub>    | V <sub>R</sub> = 36 V                                |      |      | 1.0  | μA    |
| Clamp Voltage <sup>1</sup>         | V <sub>C</sub>       | I <sub>PP</sub> = 1 A, t <sub>p</sub> = 8/20 μs, Fwd |      |      | 52.0 | V     |
|                                    |                      | I <sub>PP</sub> = 2 A, t <sub>p</sub> = 8/20 μs, Fwd |      |      | 60.0 | V     |
| Dynamic Resistance <sup>2</sup>    | R <sub>DYN</sub>     | TLP, t <sub>p</sub> = 100 ns, I/O to GND             |      | 1.28 |      | Ω     |
| Peak Pulse Current                 | I <sub>PP</sub>      | t <sub>p</sub> = 8/20 μs                             |      |      | 2.0  | A     |
| ESD Withstand Voltage <sup>1</sup> | V <sub>ESD</sub>     | IEC 61000-4-2 (Contact Discharge)                    | ±15  |      |      | kV    |
|                                    |                      | IEC 61000-4-2 (Air Discharge)                        | ±20  |      |      | kV    |
| Diode Capacitance <sup>1</sup>     | C <sub>I/O-GND</sub> | Reverse Bias = 0 V, f = 1 MHz                        |      |      | 25   | pF    |

Note:

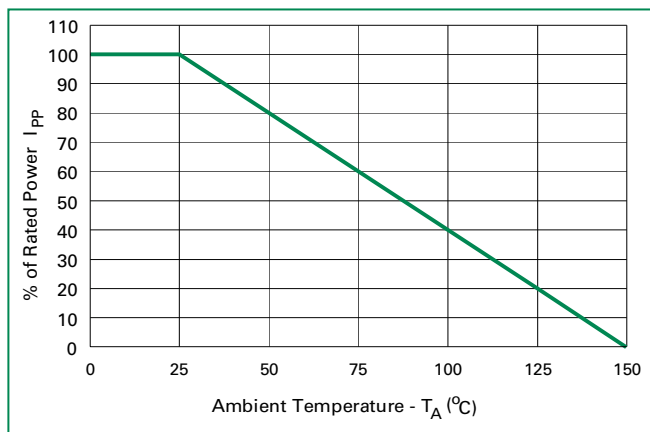
<sup>1</sup> Parameter is guaranteed by design and/or component characterization.

<sup>2</sup> Transmission Line Pulse (TLP) with 100 ns width, 2 ns rise time, and average window t1 = 70 ns to t2 = 90 ns

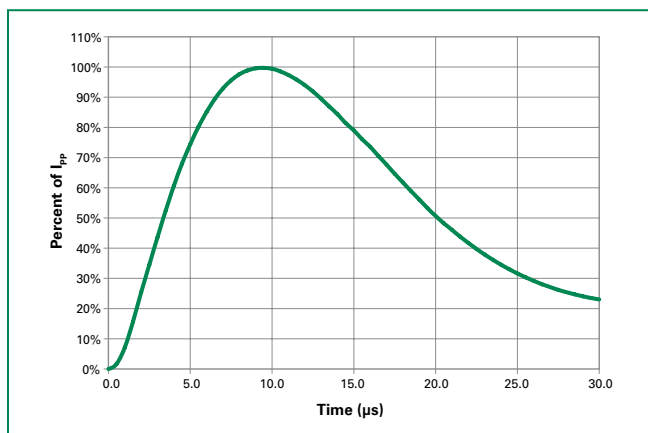
### Non-Repetitive Peak Pulse Power vs. Pulse Time



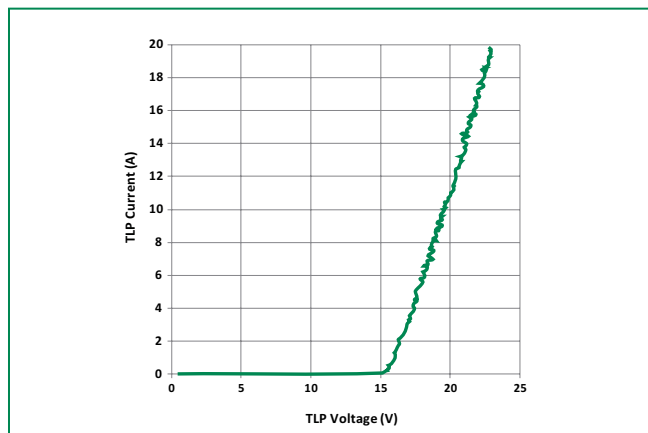
### Power Derating Curve



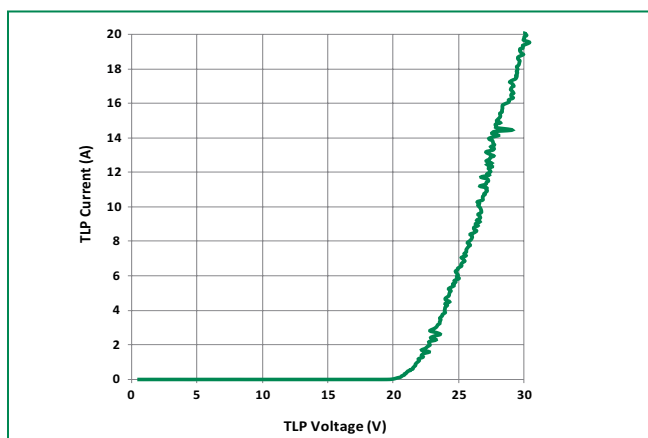
**8/20μs Pulse Waveform**



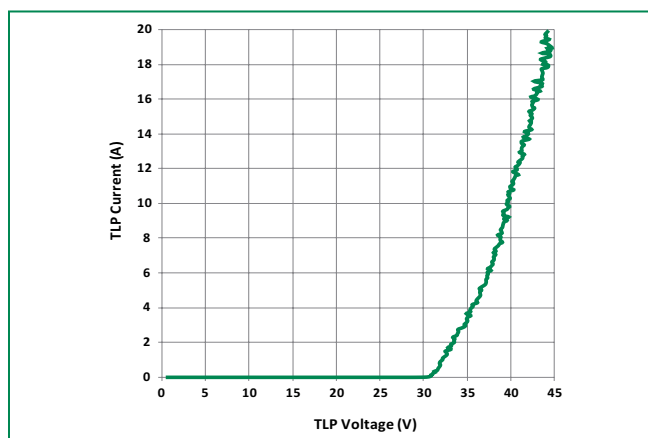
**AQHV12 Transmission Line Pulsing(TLP) Plot**



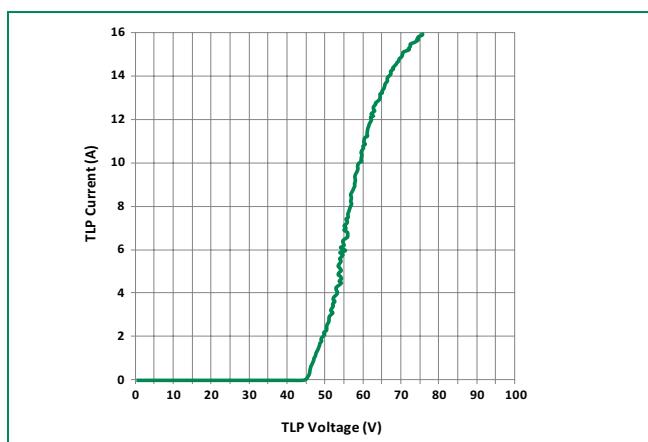
**AQHV15 Transmission Line Pulsing(TLP) Plot**



**AQHV24 Transmission Line Pulsing(TLP) Plot**

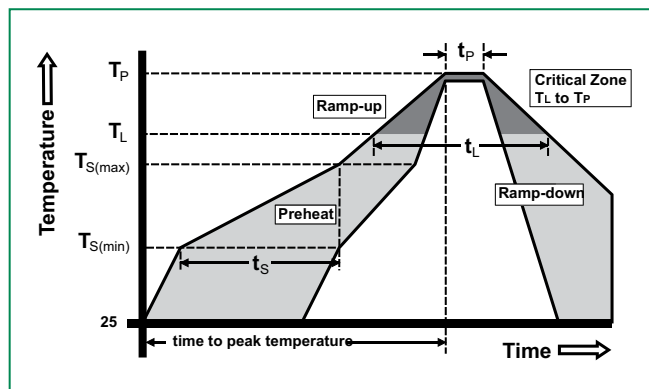


**AQHV36 Transmission Line Pulsing(TLP) Plot**

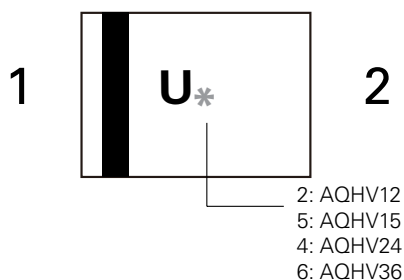


### Soldering Parameters

|                                                        |                                    |                         |
|--------------------------------------------------------|------------------------------------|-------------------------|
| Reflow Condition                                       |                                    | Pb – Free assembly      |
| Pre Heat                                               | - Temperature Min ( $T_{s(min)}$ ) | 150°C                   |
|                                                        | - Temperature Max ( $T_{s(max)}$ ) | 200°C                   |
|                                                        | - Time (min to max) ( $t_s$ )      | 60 – 180 secs           |
| Average ramp up rate (Liquidus) Temp ( $T_L$ ) to peak |                                    | 3°C/second max          |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                    | 3°C/second max          |
| Reflow                                                 | - Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|                                                        | - Temperature ( $t_L$ )            | 60 – 150 seconds        |
| Peak Temperature ( $T_p$ )                             |                                    | 260 <sup>+0/-5</sup> °C |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                    | 20 – 40 seconds         |
| Ramp-down Rate                                         |                                    | 6°C/second max          |
| Time 25°C to peak Temperature ( $T_p$ )                |                                    | 8 minutes Max.          |
| Do not exceed                                          |                                    | 260°C                   |



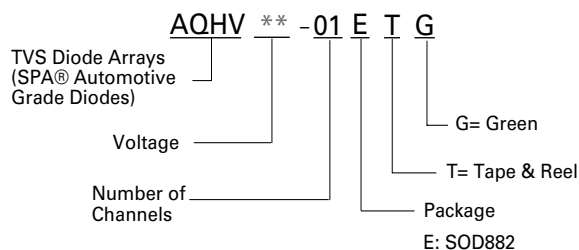
### Part Marking System



### Product Characteristics

|                           |                                                        |
|---------------------------|--------------------------------------------------------|
| <b>Lead Plating</b>       | Pre-Plated Frame                                       |
| <b>Lead Material</b>      | Copper Alloy                                           |
| <b>Substrate material</b> | Silicon                                                |
| <b>Body Material</b>      | Molded Compound                                        |
| <b>Flammability</b>       | UL Recognized compound meeting flammability rating V-0 |

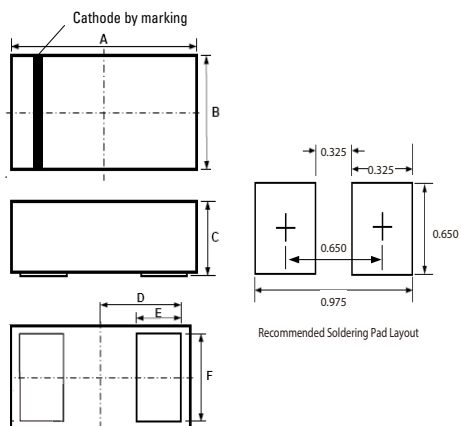
### Part Numbering System



### Ordering Information

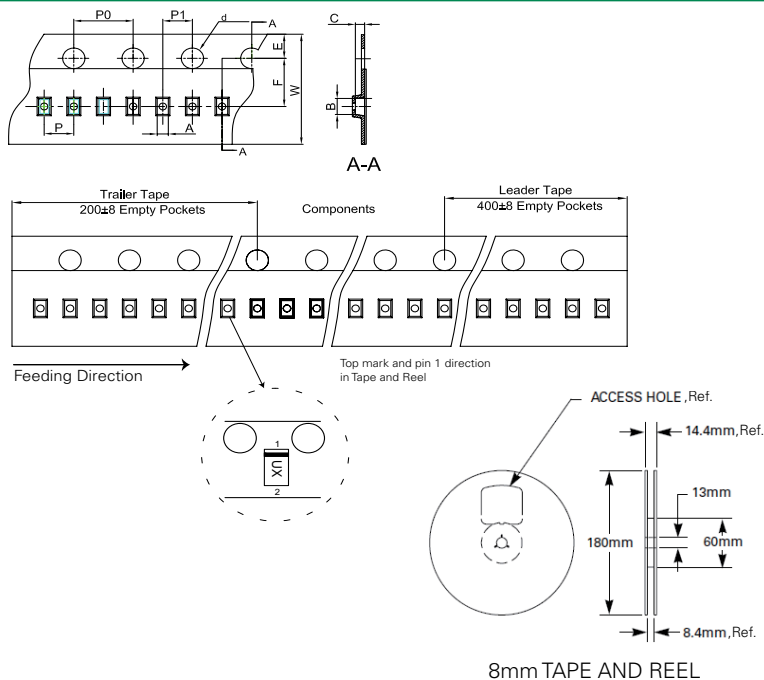
| Part Number  | Package | Min. Order Qty. |
|--------------|---------|-----------------|
| AQHV12-01ETG | SOD882  | 10000           |
| AQHV15-01ETG |         |                 |
| AQHV24-01ETG |         |                 |
| AQHV36-01ETG |         |                 |

## Package Dimensions — SOD882



| Symbol   | Package     | SOD882 |      |        |       |       |  |
|----------|-------------|--------|------|--------|-------|-------|--|
|          | JEDEC       | MO-236 |      |        |       |       |  |
|          | Millimeters |        |      | Inches |       |       |  |
|          | Min         | Typ    | Max  | Min    | Typ   | Max   |  |
| <b>A</b> | 0.90        | 1.00   | 1.10 | 0.037  | 0.039 | 0.041 |  |
| <b>B</b> | 0.50        | 0.60   | 0.70 | 0.022  | 0.024 | 0.026 |  |
| <b>C</b> | 0.40        | 0.50   | 0.60 | 0.016  | 0.020 | 0.024 |  |
| <b>D</b> | 0.45        |        |      | 0.018  |       |       |  |
| <b>E</b> | 0.20        | 0.25   | 0.35 | 0.008  | 0.010 | 0.012 |  |
| <b>F</b> | 0.45        | 0.50   | 0.55 | 0.018  | 0.020 | 0.022 |  |

## Embossed Carrier Tape & Reel Specification



| Symbol    | Millimeters       |
|-----------|-------------------|
| <b>A</b>  | 0.70+/-0.045      |
| <b>B</b>  | 1.10+/-0.045      |
| <b>C</b>  | 0.65+/-0.045      |
| <b>d</b>  | 1.55+/-0.10       |
| <b>E</b>  | 1.75+/-0.05       |
| <b>F</b>  | 3.50+/-0.05       |
| <b>P</b>  | 2.00+/-0.10       |
| <b>P0</b> | 4.00+/-0.10       |
| <b>P1</b> | 2.00+/-0.10       |
| <b>W</b>  | 8.00 + 0.30 -0.10 |

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