

# ASRM1JA1K50 Datasheet



|                              |   |
|------------------------------|---|
| DiGi Electronics Part Number | ASRM1JA1K50-DG  |
| Manufacturer                 | <a href="#">Stackpole Electronics Inc</a>   |
| Manufacturer Product Number  | ASRM1JA1K50   |
| Description                  | RES 1.5K OHM 5% 1W AXIAL  |
| Detailed Description         | 1.5 kOhms ±5% 1W Through Hole Resistor Axial Flame Retardant Coating, Pulse Withstanding, Safety Metal Film |

<https://www.DiGi-Electronics.com>

This model ASRM1JA1K50 is available at DiGi Electronics.

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## Purchase and inquiry

Manufacturer Product Number:

ASRM1JA1K50

Series:

ASRM

Resistance:

1.5 kOhms

Power (Watts):

1W

Features:

Flame Retardant Coating, Pulse Withstanding, Safety

Operating Temperature:

-55°C ~ 155°C

Supplier Device Package:

Axial

Height - Seated (Max):

-

Failure Rate:

-

Manufacturer:

Stackpole Electronics Inc

Product Status:

Active

Tolerance:

±5%

Composition:

Metal Film

Temperature Coefficient:

0/ -1800ppm/°C

Package / Case:

Axial

Size / Dimension:

0.157" Dia x 0.433" L (4.00mm x 11.00mm)

Number of Terminations:

2

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8533.21.0090

Moisture Sensitivity Level (MSL):

Not Applicable

ECCN:

EAR99

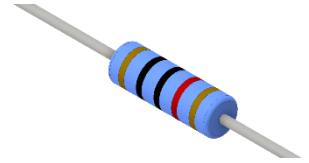
# ASR / ASRM Series

## Anti-Surge Resistor

Stackpole Electronics, Inc.  
Resistive Product Solutions

### Features:

- Excellent anti-surge characteristics
- Stable characteristics through the resistance range
- Good alternative to carbon composition resistors
- Applications include power supplies, CRT's, and anti-surge circuits
- Cut and formed product is available on select sizes; contact Stackpole for details
- Flameproof coating per UL94 V-0
- RoHS compliant, REACH compliant, lead free, and halogen free



### Electrical Specifications - Standard

| Type/Code | Power Rating (W)<br>@ 70°C | Maximum Working Voltage <sup>(1)</sup><br>(V) | Maximum Overload Voltage (V) | Dielectric Withstand Voltage (VAC) | Surge Withstanding <sup>(2)</sup><br>(V) | Ohmic Range (Ω) and Tolerance |
|-----------|----------------------------|---|------------------------------|------------------------------------|--|-------------------------------|
|           |                            |   |                              |                                    |  | 5%                            |
| ASR14     | 0.25                       | DC 1600<br>AC 1150                            | DC 2000<br>AC 1500           | 400                                | 1000<br>3000                             | 3.3 - 510K<br>560K - 12M      |
| ASR1      | 1                          | 4000  | 5000                         | 500                                | 5000<br>10000                            | 3.3 - 510K<br>560K - 12M      |

(1) Lesser of  $\sqrt{P \cdot R}$  or maximum working voltage.

(2) 10 discharges from a 0.01μF capacitor every 5 seconds.

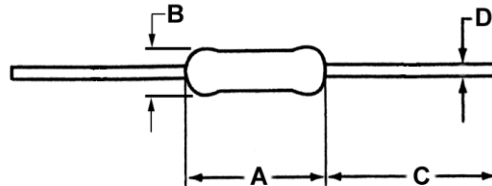
### Electrical Specifications - Mini

| Type/Code | Power Rating (W)<br>@ 70°C | Maximum Working Voltage <sup>(1)</sup><br>(V) | Maximum Overload Voltage (V) | Dielectric Withstand Voltage (VAC) | Surge Withstanding <sup>(2)</sup><br>(V) | Ohmic Range (Ω) and Tolerance |
|-----------|----------------------------|---|------------------------------|------------------------------------|--|-------------------------------|
|           |                            |   |                              |                                    |  | 5%                            |
| ASRM14    | 0.25                       | 500   | 1000                         | 200                                | 2000                                     | 100K - 22M                    |
| ASRM12    | 0.5                        | 2000  | 2500                         | 500                                | 5000<br>10000                            | 3.3 - 510K<br>560K - 12M      |
| ASRM1     | 1                          | 4000  | 5000                         | 500                                | 5000<br>10000                            | 3.3 - 510K<br>560K - 12M      |
| ASRM2     | 2                          | 4000  | 5000                         | 500                                | 5000<br>10000                            | 3.3 - 510K<br>560K - 12M      |

(1) Lesser of  $\sqrt{P \cdot R}$  or maximum working voltage.

(2) 10 discharges from a 0.01μF capacitor every 5 seconds.

### Mechanical Specifications - Standard



| Type/Code | Typical Unit Weight (mg) | A<br>Body Length              | B<br>Body Diameter           | C<br>Lead Length (Bulk)       | D<br>Lead Diameter           | Unit         |
|-----------|--------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|--------------|
| ASR14     | 210                      | 0.236 ± 0.012<br>6.00 ± 0.30  | 0.091 ± 0.008<br>2.30 ± 0.20 | 1.102 ± 0.118<br>28.00 ± 3.00 | 0.022 ± 0.002<br>0.55 ± 0.05 | inches<br>mm |
| ASR1      | 1340                     | 0.591 ± 0.039<br>15.00 ± 1.00 | 0.197 ± 0.020<br>5.00 ± 0.50 | 1.378 ± 0.118<br>35.00 ± 3.00 | 0.031 ± 0.002<br>0.80 ± 0.05 | inches<br>mm |

Rev Date: 6/27/2024

1

This specification may be changed at any time without prior notice.  
Please confirm technical specifications before use.

[www.seielect.com](http://www.seielect.com)  
[marketing@seielect.com](mailto:marketing@seielect.com)

### Mechanical Specifications - Mini

| Type/Code | Typical Unit Weight (mg) | A<br>Body Length              | B<br>Body Diameter           | C<br>Lead Length (Bulk)       | D<br>Lead Diameter           | Unit         |
|-----------|--------------------------|-------------------------------|------------------------------|-------------------------------|------------------------------|--------------|
| ASRM14    | 110                      | 0.126 ± 0.008<br>3.20 ± 0.20  | 0.073 ± 0.008<br>1.85 ± 0.20 | 1.102 ± 0.118<br>28.00 ± 3.00 | 0.018 ± 0.002<br>0.45 ± 0.05 | inches<br>mm |
| ASRM12    | 330                      | 0.354 ± 0.039<br>9.00 ± 1.00  | 0.118 ± 0.020<br>3.00 ± 0.50 | 1.102 ± 0.118<br>28.00 ± 3.00 | 0.028 ± 0.002<br>0.70 ± 0.05 | inches<br>mm |
| ASRM1     | 570                      | 0.433 ± 0.039<br>11.00 ± 1.00 | 0.157 ± 0.020<br>4.00 ± 0.50 | 1.102 ± 0.118<br>28.00 ± 3.00 | 0.031 ± 0.002<br>0.80 ± 0.05 | inches<br>mm |
| ASRM2     | 1340                     | 0.591 ± 0.039<br>15.00 ± 1.00 | 0.197 ± 0.020<br>5.00 ± 0.50 | 1.378 ± 0.118<br>35.00 ± 3.00 | 0.031 ± 0.002<br>0.80 ± 0.05 | inches<br>mm |

### Performance Characteristics

| Test                                  | Test Specification   | Test Condition  |             |          |                               |      |                                |        |                           |      |                                |        |
|---------------------------------------|--|---|-------------|----------|-------------------------------|------|--------------------------------|--------|---------------------------|------|--------------------------------|--------|
| Temperature Coefficient of Resistance | ASRM14: ± 200 ppm/°C<br>All Other Sizes:<br>-1800 ~ 0 ppm/°C           | Measure resistance ( $R^0$ ) at room temperature ( $t$ ), after that, measure again the resistance ( $R$ ) at 100°C higher than room temperature<br>$TCR = -\frac{R - R_0}{R_3} \times \frac{10^6}{(t + 100) - t} \text{ (ppm/°C)}$   |             |          |                               |      |                                |        |                           |      |                                |        |
| Voltage Proof                         | Change of resistance<br>≤ ± (0.5% + 0.05Ω)<br>No mechanical damage     | Lay the resistor on the 90° angle metal V block and apply rated AC voltage for one minute   |             |          |                               |      |                                |        |                           |      |                                |        |
| Insulation Resistance                 | ≥ 1000 Mohm  | Lay the resistor on the 90° angle metal V block and apply 100 Vdc between V block and lead wire for a minute. The insulation resistance will be measured while applying the voltage.  |             |          |                               |      |                                |        |                           |      |                                |        |
| Solvent Resistance                    | There will be no damage on the insulating surface                      | Soak in a Isopropyl alcohol for 5 minutes. After drying up for 5 minutes, the stress of 5 N is added with the absorbent cotton. Five round trips at the rate of one round trip a second.  |             |          |                               |      |                                |        |                           |      |                                |        |
| Overload (Short Time)                 | ≤ ± (1% + 0.05Ω)   | Apply 2.5 times rated voltage or max overload voltage whichever is lower for 5 seconds and leave in room temperature for one hour after test.   |             |          |                               |      |                                |        |                           |      |                                |        |
| Robustness of Terminations            | Change of resistance<br>≤ ± (0.5% + 0.05Ω)                             | Tensile:<br>The body of the resistor is fixed, a static load is added in the direction of drawing out of the terminal, and it maintains it for 10 ± 1 seconds.<br>Tensile strength: 10 N<br><br>Bend:<br>Component body will be fixed so that terminals are perpendicular to the floor. A static load specified below shall be applied to the terminal acting in a direction away from the body. The body of piezoelectric oscillator will be inclined through an angle of 90° and then returned to its initial position in 2 or 3 seconds<br>Bending strength: 5 N |             |          |                               |      |                                |        |                           |      |                                |        |
| Resistance to Soldering Heat          | Change of resistance<br>≤ ± (1% + 0.05Ω)                               | Dip the lead into a solder bath having a temperature of 260 ± 5°C up to 1.5 ± 0.5 mm from the body of the resistors and hold it for 10 ± 0.5 seconds and leave in room temperature for one hour after test.   |             |          |                               |      |                                |        |                           |      |                                |        |
| Solderability                         | More than 95% of the surface of the lead will be covered by new solder | Dip the lead into a solder bath having a temperature of 245 ± 5°C up to 1.5 ± 0.5 mm from the body of the resistors and hold it for 5 ± 0.5 seconds.  |             |          |                               |      |                                |        |                           |      |                                |        |
| Rapid Change of Temperature           | Change of resistance<br>≤ ± (1% + 0.05Ω)                               | The resistor shall be subjected to 5 continuous cycle, each as shown in the table below:<br><table border="1"> <thead> <tr> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>Minimum Operating Temperature</td> <td>30 m</td> </tr> <tr> <td>Standard Atmospheric Condition</td> <td>≤ 30 s</td> </tr> <tr> <td>Max Operating Temperature</td> <td>30 m</td> </tr> <tr> <td>Standard Atmospheric Condition</td> <td>≤ 30 s</td> </tr> </tbody> </table>   | Temperature | Duration | Minimum Operating Temperature | 30 m | Standard Atmospheric Condition | ≤ 30 s | Max Operating Temperature | 30 m | Standard Atmospheric Condition | ≤ 30 s |
| Temperature                           | Duration   |   |             |          |                               |      |                                |        |                           |      |                                |        |
| Minimum Operating Temperature         | 30 m   |   |             |          |                               |      |                                |        |                           |      |                                |        |
| Standard Atmospheric Condition        | ≤ 30 s   |   |             |          |                               |      |                                |        |                           |      |                                |        |
| Max Operating Temperature             | 30 m   |   |             |          |                               |      |                                |        |                           |      |                                |        |
| Standard Atmospheric Condition        | ≤ 30 s   |   |             |          |                               |      |                                |        |                           |      |                                |        |

### Performance Characteristics

| Test                            | Test Specification                                    | Test Condition  |
|---------------------------------|---|---|
| Vibration                       | Change of resistance<br>$\leq \pm (1\% + 0.05\Omega)$ | Apply 1.5 mm amplitude vibration to three directions perpendicular to each other 2 hours each, total 6 hours. Vibrating frequency is 10 Hz - 55 Hz - 10 Hz cycle in 1 minute sweeping and repeat cycle                                      |
| Damp Heat, Steady State         | Change of resistance<br>$\leq \pm (5\% + 0.05\Omega)$ | In the chamber having temperature of $40 \pm 2^\circ\text{C}$ and relative humidity of $93 \pm 3\%$ , apply one percent of the rated power, 1.5 hour ON, 0.5 hour OFF for 1000 hours and leave in room temperature for one hour after test. |
| Endurance at $70^\circ\text{C}$ | Change of resistance<br>$\leq \pm (5\% + 0.05\Omega)$ | At $70 \pm 2^\circ\text{C}$ , apply rated DC voltage 1.5 ON, 0.5 hour OFF for 1000 hours and leave in room temperature for one hour after test.   |

Operating temperature range is  $-55$  to  $+155^\circ\text{C}$

### Anti-Surge Characteristics

| Test                         | Test Specification                                     | Test Condition   |
|------------------------------|--|--|
| Anti-Surge Characteristics 1 | Change of resistance<br>$\leq \pm (10\% + 0.05\Omega)$ | Discharge from $0.01\mu\text{F}$ capacitor for 10 times every 5 seconds. The discharge voltage is shown in Surge Withstanding Voltage table. |
| Anti-Surge Characteristics 2 | Change of resistance<br>$\leq \pm (5\% + 0.05\Omega)$  | Discharge from $1\text{nF}$ capacitor for 50 times every 5 seconds. The discharge voltage is shown in Surge Withstanding Voltage table.      |

### Surge Withstanding Voltage - Standard

| Type/Code | Resistance Range ( $\Omega$ ) | Surge Withstanding (KV) |
|-----------|-------------------------------|-------------------------|
| ASR14     | 3.3 - 510K                    | 1                       |
|           | 560K - 33M                    | 3                       |
| ASR1      | 3.3 - 510K                    | 5                       |
|           | 560K - 100M                   | 10                      |

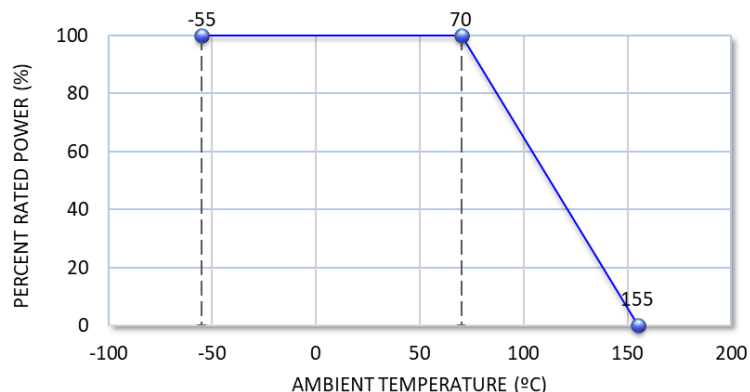
Reference standards: JIS C 5201-1, IEC60115-1, IEC60065, UL1676

### Surge Withstanding Voltage - Mini

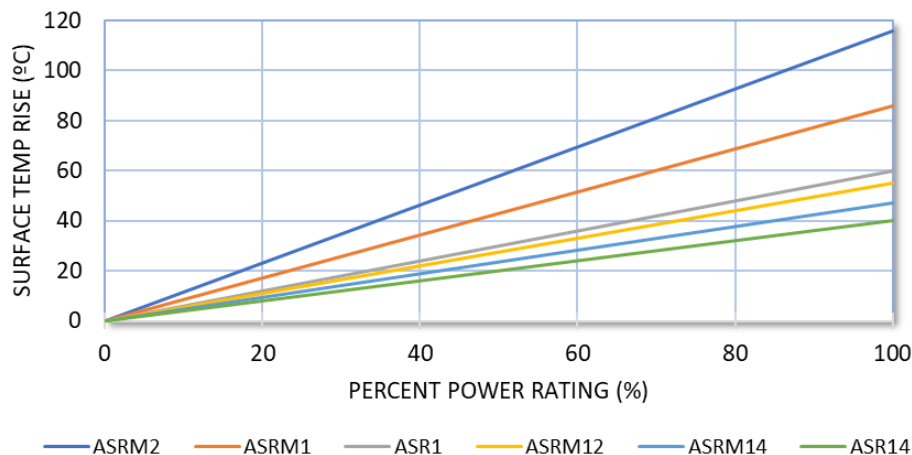
| Type/Code | Resistance Range ( $\Omega$ ) | Surge Withstanding (KV) |
|-----------|-------------------------------|-------------------------|
| ASRM14    | 100K - 22M                    | 2                       |
| ASRM12    | 3.3 - 510K                    | 5                       |
|           | 560K - 33M                    | 10                      |
| ASRM1     | 3.3 - 510K                    | 5                       |
|           | 560K - 100M                   | 10                      |
| ASRM2     | 3.3 - 510K                    | 5                       |
|           | 560K - 100M                   | 10                      |

Reference standards: JIS C 5201-1, IEC60115-1, IEC60065, UL1676

### Power Derating Curve:



Heat Rise:



Pulse Limiting Power (single square shaped pulse):



**Color Code**

Description



Color code No. 1 2 3 4 5

1, 1st band significant figure

2, 2nd band significant figure

3, Multiplier

4, Tolerance

5, Color code 5<sup>th</sup> Color Black(Anti-Surge Resistor)

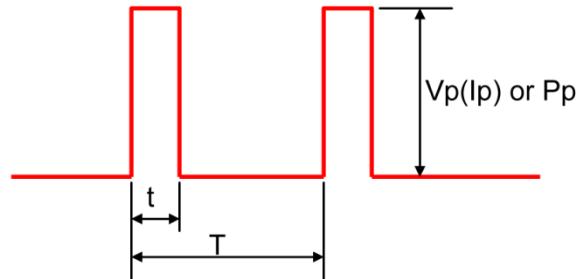
## Repetitive Pulse Information

If repetitive pulses are applied to resistors, pulse wave form must be less than “Pulse limiting voltage”, “Pulse limiting current” or “Pulse limiting wattage” calculated by the formula below.

$$V_p = K\sqrt{P \times R \times T/t}$$

$$I_p = K\sqrt{P/R \times T/t}$$

$$P_p = K^2 \times P \times T/t$$



Where:  $V_p$ : Pulse limiting voltage (V)  
 $I_p$ : Pulse limiting current (A)  
 $P_p$ : Pulse limiting wattage (W)  
 $P$ : Power rating (W)  
 $R$ : Nominal resistance (ohm)  
 $T$ : Repetitive period (sec)  
 $t$ : Pulse duration (sec)  
 $K$ : Coefficient: 1  
 $[V_r$ : Rated Voltage (V),  $I_r$ : Rated Current (A)]

Note 1: If  $T > 10 \rightarrow T = 10$  (sec),  $T / t > 1000 \rightarrow T / t = 1000$ .

Note 2: If  $T > 10$  and  $T / t > 1000$ , “Pulse Limiting power (Single pulse) is applied.”

Note 3: If  $V_p < V_r$  ( $I_p < I_r$  or  $P_p < P$ ),  $V_r$  ( $I_r$ ,  $P$ ) is  $V_p$  ( $I_p$ ,  $P_p$ ).

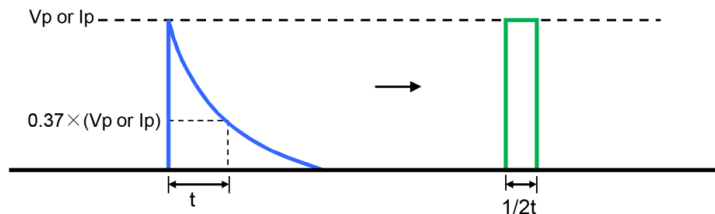
Note 4: Pulse limiting voltage (current, wattage) is applied at less than rated ambient temperature. If ambient temperature is more than the rated temperature (70°C), decrease power rating according to “Power Derating Curve”.

Note 5: Please assure sufficient margin for use period and conditions for “pulse limiting voltage”.

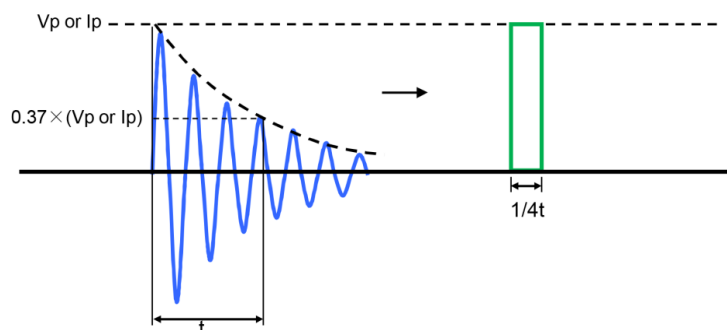
Note 6: If the pulse waveform is not square wave, please judge after transforming the waveform into square wave according to “Waveform Transformation to Square Wave” information.

## Waveform Transformation to Square Wave

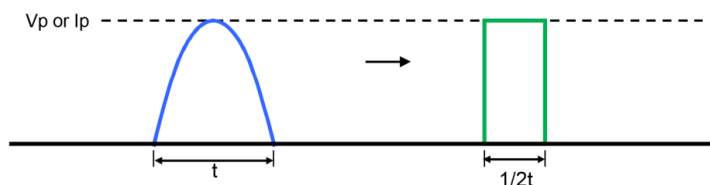
1. Discharge curve wave with time constant "t" → Square wave



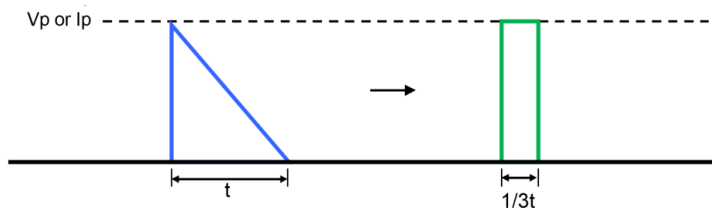
2. Damping oscillation wave with time constant of envelope "t" → Square wave



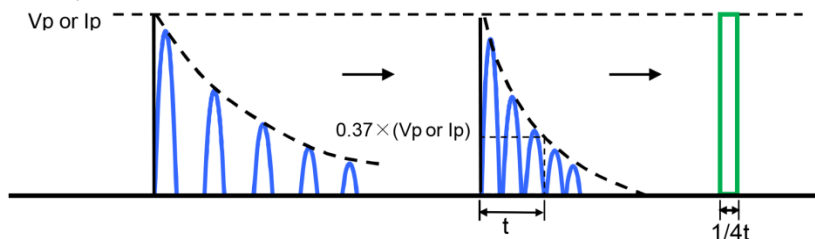
3. Half-wave rectification wave → Square wave



4. Triangular wave → Square wave



5. Special wave → Square wave



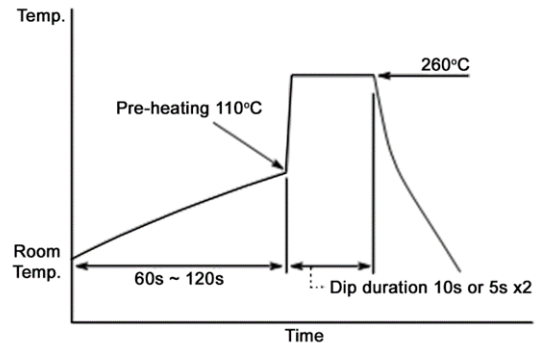
### Recommended Soldering Condition

#### Flow Soldering:

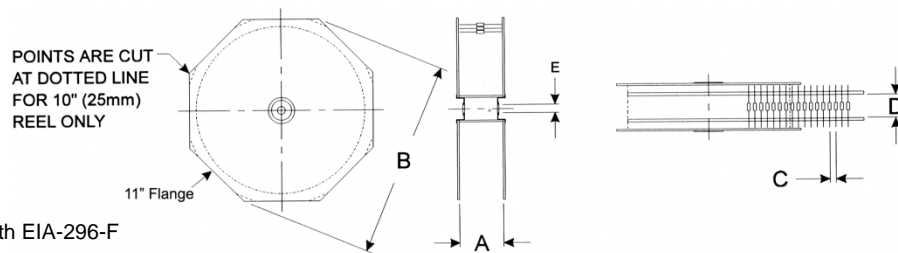
- Pre-heating: 110°C MAX
- Peak temperature/duration: 260°C within 10 seconds (1<sup>st</sup>, 2<sup>nd</sup> wave total)
- Temperature profile (see chart on the right)

#### Iron Soldering:

- 380°C, 5 seconds, once/terminal



### Reel Specifications



Reeled in accordance with EIA-296-F

| Series | Size (W) | A max <sup>(1)</sup>          | B max                           | C                             | D  | Tape          | Unit         |
|--------|----------|-------------------------------|---------------------------------|-------------------------------|--|---------------|--------------|
| ASR    | 0.25     | 2.756 ± 0.118<br>70.00 ± 3.00 | 11.811 ± 0.197<br>300.00 ± 5.00 | 0.197 ± 0.020<br>5.00 ± 0.50  | 2.047 +0.079/-0.039<br>52.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |
| ASR    | 1        | 3.189 ± 0.118<br>81.00 ± 3.00 | 11.811 ± 0.197<br>300.00 ± 5.00 | 0.394 ± 0.020<br>10.00 ± 0.50 | 2.480 +0.079/-0.039<br>63.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |
| ASRM   | 0.25     | 2.756 ± 0.118<br>70.00 ± 3.00 | 11.811 ± 0.197<br>300.00 ± 5.00 | 0.197 ± 0.020<br>5.00 ± 0.50  | 2.047 +0.079/-0.039<br>52.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |
| ASRM   | 0.5      | 2.756 ± 0.118<br>70.00 ± 3.00 | 11.811 ± 0.197<br>300.00 ± 5.00 | 0.197 ± 0.020<br>5.00 ± 0.50  | 2.047 +0.079/-0.039<br>52.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |
| ASRM   | 1        | 2.756 ± 0.118<br>70.00 ± 3.00 | 11.811 ± 0.197<br>300.00 ± 5.00 | 0.197 ± 0.020<br>5.00 ± 0.50  | 2.047 +0.079/-0.039<br>52.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |
| ASRM   | 2        | 3.189 ± 0.118<br>81.00 ± 3.00 | 11.811 ± 0.197<br>300.00 ± 5.00 | 0.394 ± 0.020<br>10.00 ± 0.50 | 2.480 +0.079/-0.039<br>63.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |

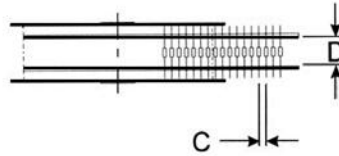
Dimension "E" This is a non-critic dimension that does not have a tolerance in the standard.

Range of diameters is from 0.547" (13.9 mm) to 1.5" (38.1 mm)

(1) Reference value only. The "A" dimension shall be governed by the overall length of the taped component.

The distance between flanges shall be 0.059" (1.5 mm) to 0.315" (8 mm) greater than the overall component.

### Taping Specifications - Ammo



| Series                                     | C                             | D  | Tape          | Unit         |
|--|-------------------------------|--|---------------|--------------|
| ASR/ASRM All sizes<br>(except ASR1, ASRM2) | 0.197 ± 0.020<br>5.00 ± 0.50  | 2.047 +0.079/-0.039<br>52.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |
| ASR1, ASRM2                                | 0.394 ± 0.020<br>10.00 ± 0.50 | 2.047 +0.079/-0.039<br>52.00 +2.00/-1.00 | 0.250<br>6.35 | inches<br>mm |

### RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

### RoHS Compliance Status

| Standard Product Series | Description              | Package / Termination Type | Standard Series RoHS Compliant | Lead-Free Termination Composition | Lead-Free Mfg. Effective Date (Std Product Series) | Lead-Free Effective Date Code (YY/WW) |
|-------------------------|--------------------------|----------------------------|--------------------------------|-----------------------------------|--|---------------------------------------|
| ASR                     | Anti-Surge Resistor      | Axial                      | YES                            | 99.3/0.7 Sn/Cu                    | Apr-05   | 05/14                                 |
| ASRM                    | Mini Anti-Surge Resistor | Axial                      | YES                            | 99.3/0.7 Sn/Cu                    | Apr-05   | 05/14                                 |
| ASRM14                  | Mini Anti-Surge Resistor | Axial                      | YES <sup>(1)</sup>             | 99.3/0.7 Sn/Cu                    | Apr-05   | 05/14                                 |

Note (1): RoHS compliant by means of exemption 7c-I

### "Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

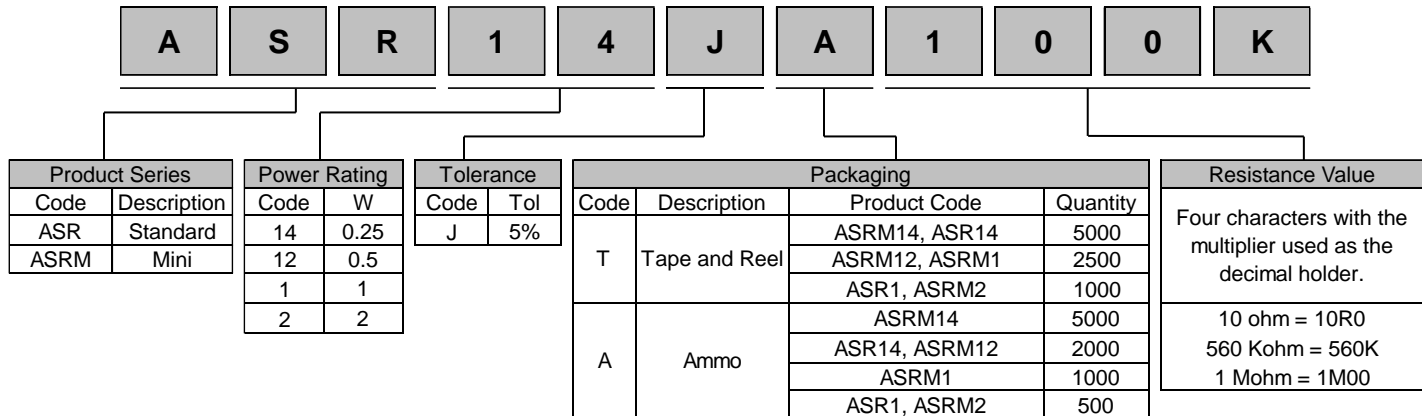
### Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

**Environmental Policy**

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

**How to Order**



## OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we stricly control the quality of products and services. Welcome your RFQ to

Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.