

**$V_{RM} = 600\text{ V}$ ,  $I_{F(AV)} = 1.0\text{ A}$**   
**General-purpose Rectifier Diode**  
**EM1A**

**Description**

The EM1A is a 600 V, 1.0 A general-purpose rectifier diode with low loss characteristics. This rectifier diode is for a commercial power supply.

**Features**

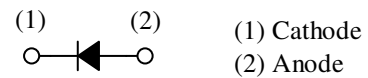
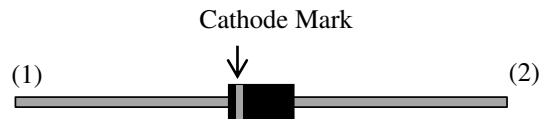
- $V_{RM}$  ----- 600 V
- $I_{F(AV)}$  ----- 1.0 A
- $V_F$  ( $I_F = 1.0\text{ A}$ ) ----- 0.89 V typ.
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

**Applications**

- Rectification Circuit
- Reverse Protection Circuit

**Package**

Axial ( $\phi 2.7 \times 5.0\text{L} / \phi 0.78$ )



(1) Cathode  
(2) Anode

Not to scale

## Absolute Maximum Ratings

Unless otherwise specified,  $T_A = 25\text{ }^{\circ}\text{C}$ .

| Parameter                          | Symbol      | Conditions                                            | Rating     | Unit                 |
|------------------------------------|-------------|-------------------------------------------------------|------------|----------------------|
| Nonrepetitive Peak Reverse Voltage | $V_{RSM}$   |                                                       | 650        | V                    |
| Repetitive Peak Reverse Voltage    | $V_{RM}$    |                                                       | 600        | V                    |
| Average Forward Current            | $I_{F(AV)}$ | See Figure 2 and Figure 3                             | 1.0        | A                    |
| Surge Forward Current              | $I_{FSM}$   | Half cycle sine wave,<br>positive side, 10 ms, 1 shot | 45         | A                    |
| $I^2t$ Limiting Value              | $I^2t$      | $1\text{ ms} \leq t \leq 10\text{ ms}$                | 10.1       | $\text{A}^2\text{s}$ |
| Junction Temperature               | $T_J$       |                                                       | -40 to 150 | $^{\circ}\text{C}$   |
| Storage Temperature                | $T_{STG}$   |                                                       | -40 to 150 | $^{\circ}\text{C}$   |

## Electrical Characteristics

Unless otherwise specified,  $T_A = 25\text{ }^{\circ}\text{C}$ .

| Parameter                                      | Symbol        | Conditions                                           | Min. | Typ. | Max. | Unit                 |
|------------------------------------------------|---------------|------------------------------------------------------|------|------|------|----------------------|
| Forward Voltage Drop                           | $V_F$         | $I_F = 1.0\text{ A}$                                 | —    | 0.89 | 0.97 | V                    |
| Reverse Leakage Current                        | $I_R$         | $V_R = V_{RM}$                                       | —    | —    | 10   | $\mu\text{A}$        |
| Reverse Leakage Current under High Temperature | $H \cdot I_R$ | $V_R = V_{RM}$ , $T_J = 150\text{ }^{\circ}\text{C}$ | —    | —    | 500  | $\mu\text{A}$        |
| Thermal Resistance <sup>(1)</sup>              | $R_{th(J-L)}$ | See Figure 1                                         | —    | —    | 17   | $^{\circ}\text{C/W}$ |

## Mechanical Characteristics

| Parameter      | Conditions | Min. | Typ. | Max. | Unit |
|----------------|------------|------|------|------|------|
| Package Weight |            | —    | 0.3  | —    | g    |

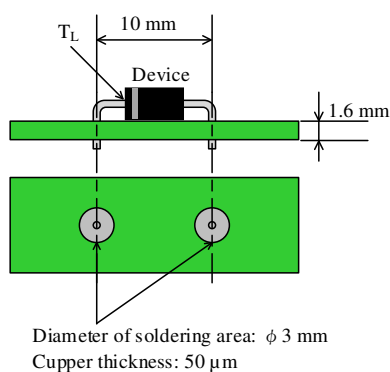
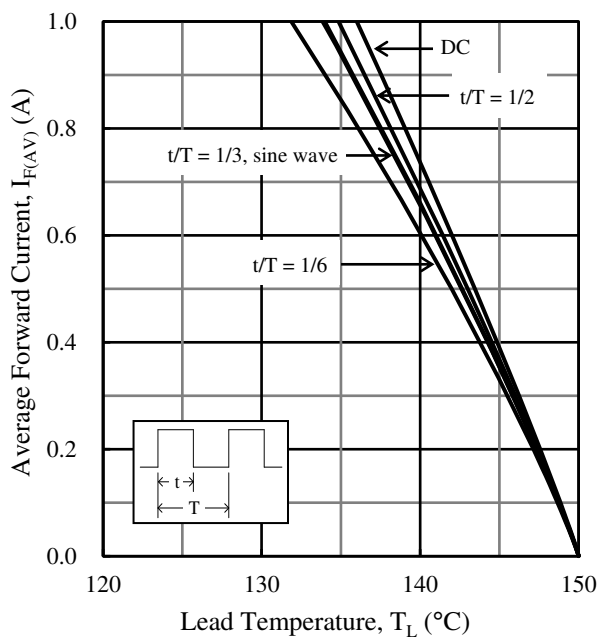
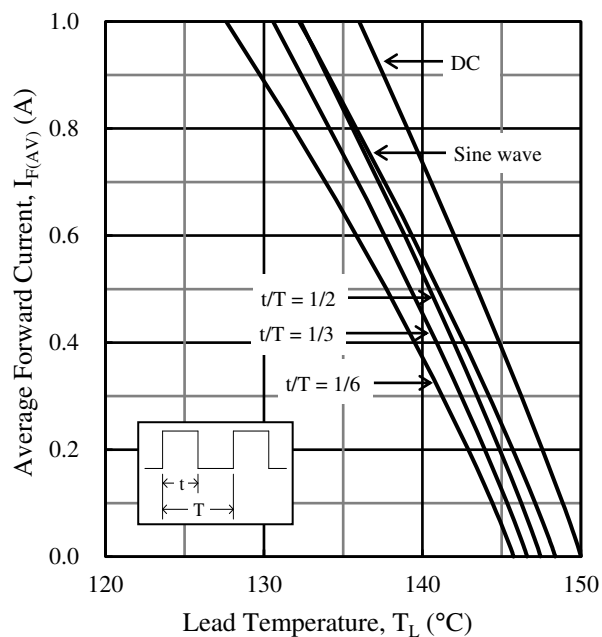


Figure 1. Lead Temperature Measurement Conditions

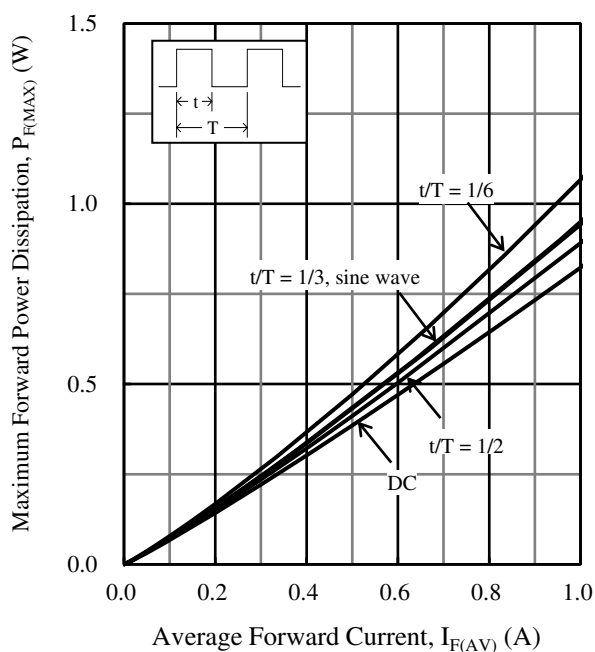
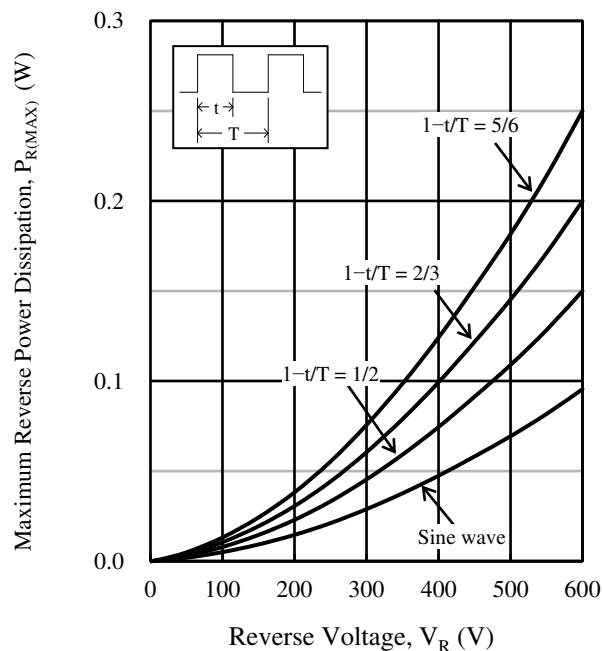
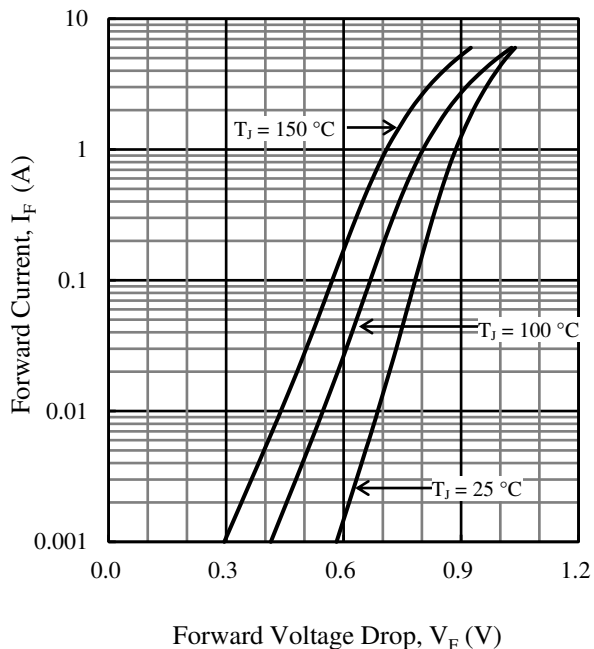
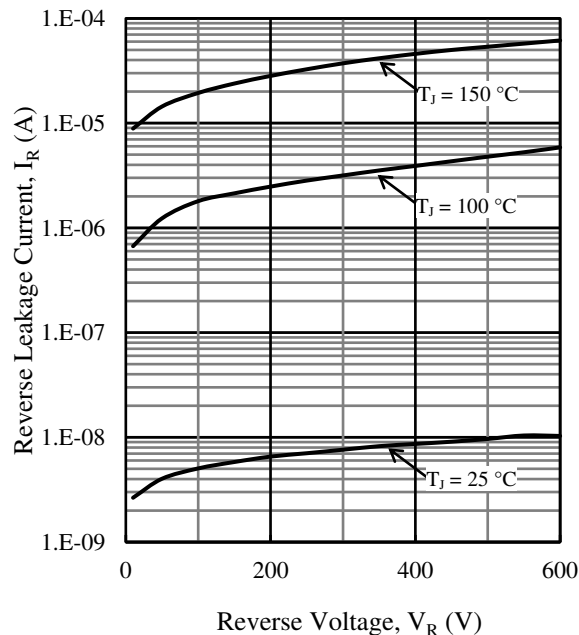
<sup>(1)</sup>  $R_{th(J-L)}$  is thermal resistance between junction and lead. Lead temperature ( $T_L$ ) is measured near the root of pin (see Figure 1.)

## Derating Curves

Figure 2.  $I_{F(AV)}$  vs.  $T_L$  <sup>(2)</sup> ( $T_J = 150$  °C,  $V_R = 0$  V)Figure 3.  $I_{F(AV)}$  vs.  $T_L$  <sup>(2)</sup> ( $T_J = 150$  °C,  $V_R = 600$  V)

<sup>(2)</sup> See Figure 1 for the lead temperature measurement conditions.

## Characteristic Curves

Figure 4.  $P_{F(MAX)}$  vs.  $I_{F(AV)}$  ( $T_J = 150\text{ }^{\circ}\text{C}$ )Figure 5.  $P_{R(MAX)}$  vs.  $V_R$  ( $T_J = 150\text{ }^{\circ}\text{C}$ )Figure 6. Typical Characteristics:  $I_F$  vs.  $V_F$ Figure 7. Typical Characteristics:  $I_R$  vs.  $V_R$

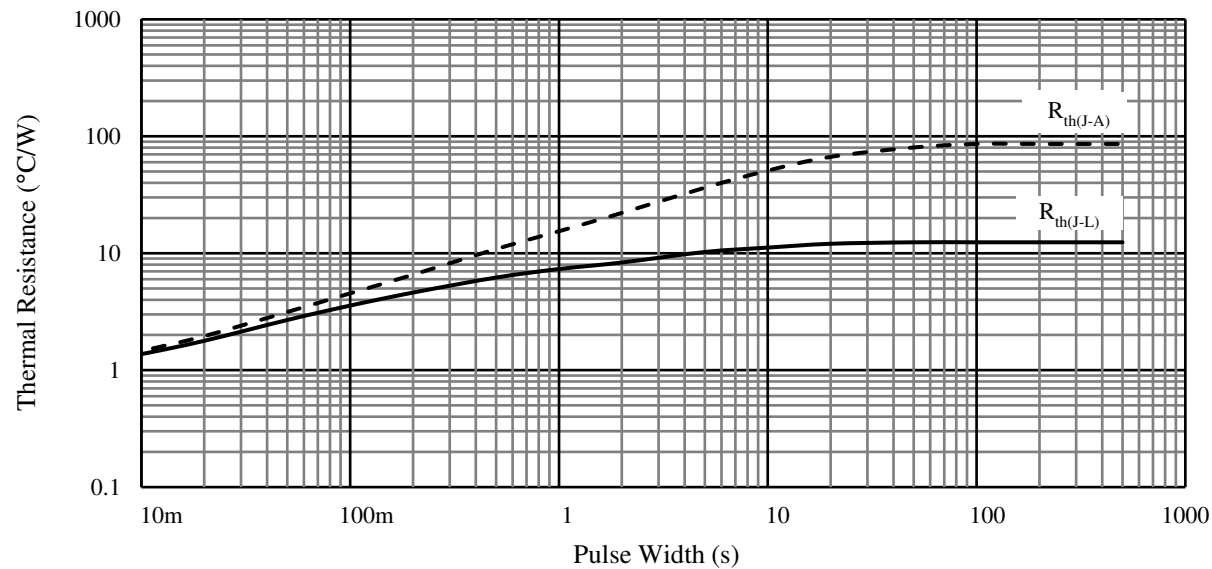
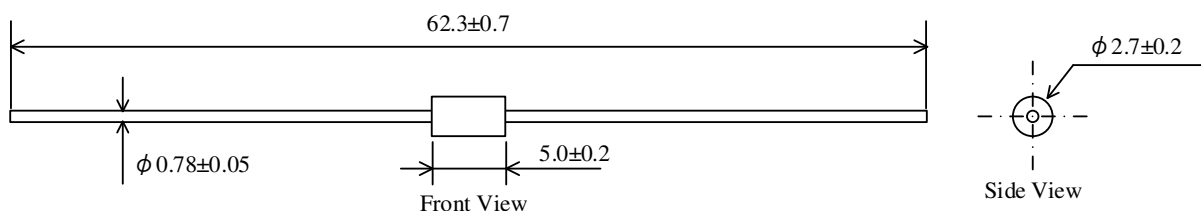


Figure 8. Typical Transient Thermal Resistance Characteristics

## EM1A

### Physical Dimensions

#### • Axial ( $\phi 2.7 \times 5.0L / \phi 0.78$ )



#### NOTES:

- Dimensions in millimeters
- Bare leads: Pb-free (RoHS compliant)
- The total length of the product is the dimension when delivered separately and depends on the taping and lead forming specifications.
- The allowance position of body against the center of the total length of the product is 0.5 mm (max.); see Front View.
- The allowance position of lead against the center of body is 0.2 mm (max.); see Side View.
- The burr may exist up to 2 mm from the body of lead root.
- When soldering the products, it is required to minimize the working time within the following limits:  
Flow: 260 °C / 10 s, 1 time  
Soldering Iron: 350 °C / 3.5 s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)

### Marking Diagram

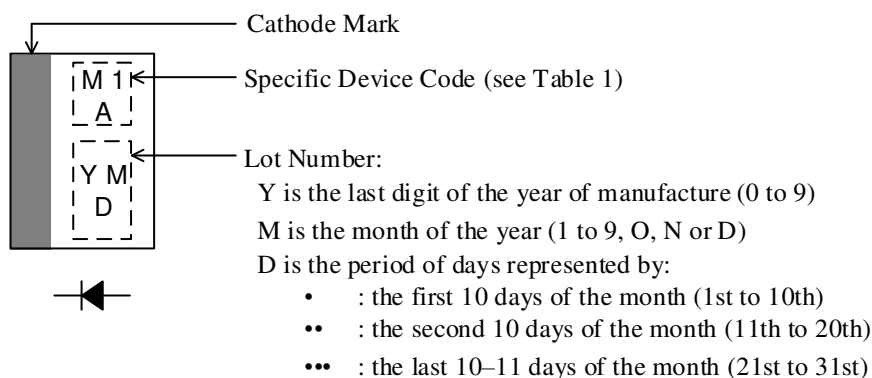


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| M1A                  | EM1A        |

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DSGN-CEZ-16003