

$V_{RM} = 400\text{ V}$, $I_{F(AV)} = 1.0\text{ A}$
General-purpose Rectifier Diode
EM1

Description

The EM1 is a 400 V, 1.0 A general-purpose rectifier diode with low loss characteristics. This rectifier diode is for a commercial power supply.

Features

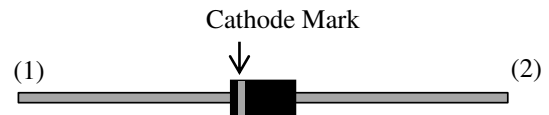
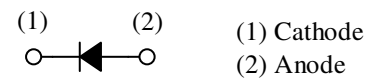
- V_{RM} ----- 400 V
- $I_{F(AV)}$ ----- 1.0 A
- V_F ($I_F = 1.0\text{ A}$) ----- 0.88 V typ.
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

- Rectification Circuit
- Reverse Protection Circuit

Package

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



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}		450	V
Repetitive Peak Reverse Voltage	V_{RM}		400	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, 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	A^2s
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	$I_F = 1.0\text{ A}$	—	0.88	0.97	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	—	10	μA
Reverse Leakage Current under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, $T_J = 150\text{ }^{\circ}\text{C}$	—	—	500	μA
Thermal Resistance ⁽¹⁾	$R_{th(J-L)}$	See Figure 1	—	—	17	$^{\circ}\text{C/W}$

Mechanical Characteristics

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

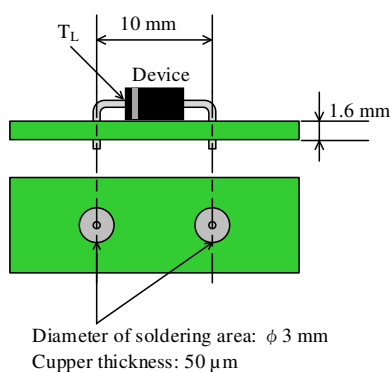
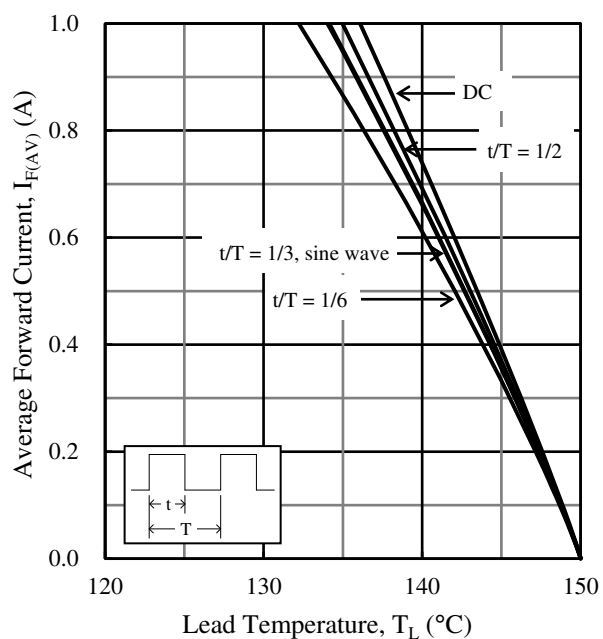
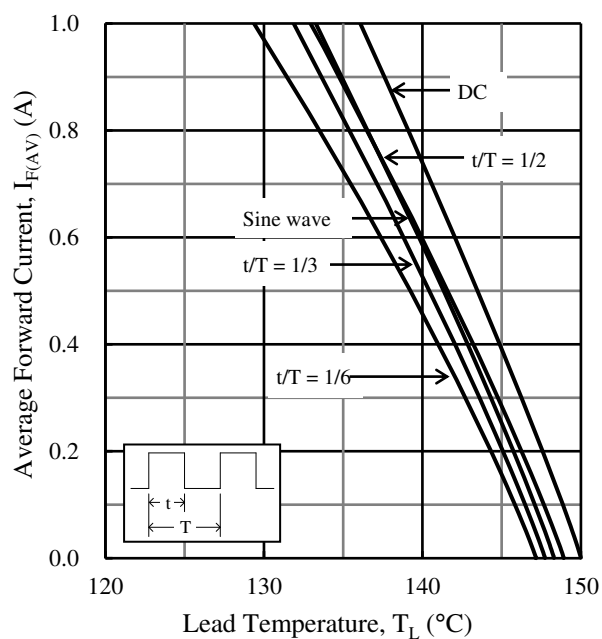


Figure 1. Lead Temperature Measurement Conditions

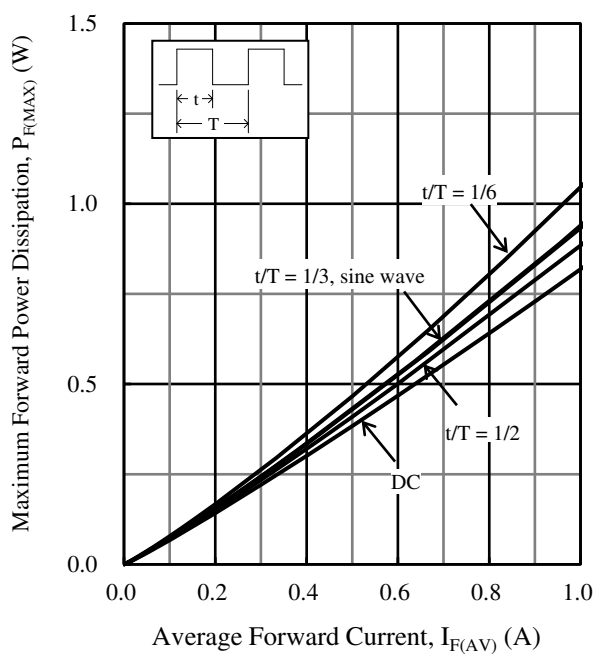
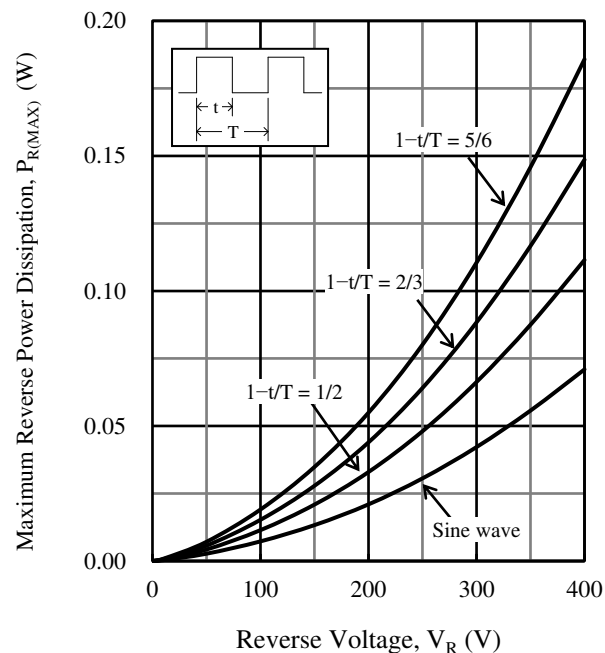
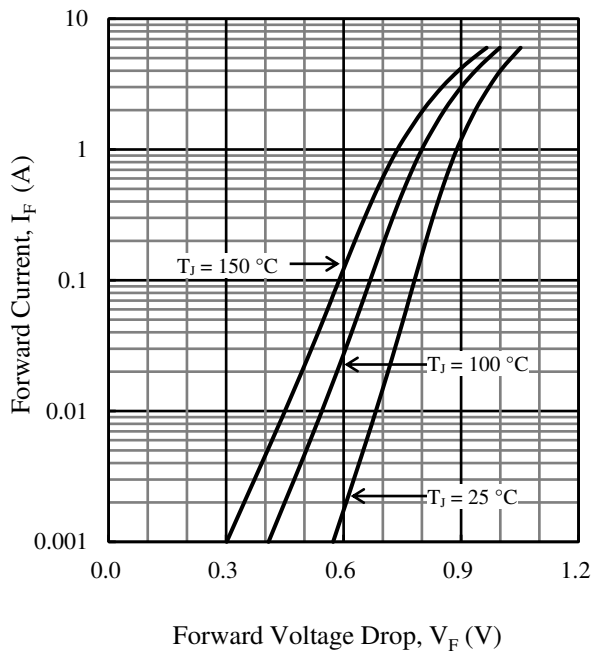
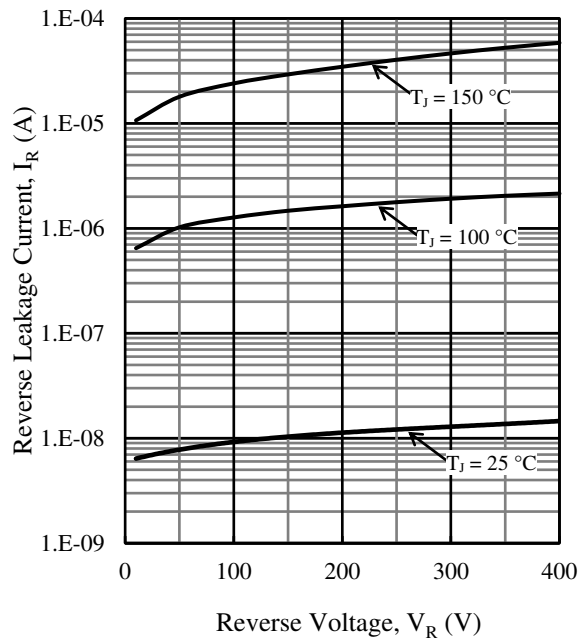
⁽¹⁾ $R_{th(J-L)}$ is thermal resistance between junction and lead. . Lead temperature (T_L) is measured near the root of pin (see Figure 1).

Derating Curves

Figure 2. $I_{F(AV)}$ vs. T_L ⁽²⁾ ($T_J = 150$ °C, $V_R = 0$ V)Figure 3. $I_{F(AV)}$ vs. T_L ⁽²⁾ ($T_J = 150$ °C, $V_R = 400$ V)

⁽²⁾ 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

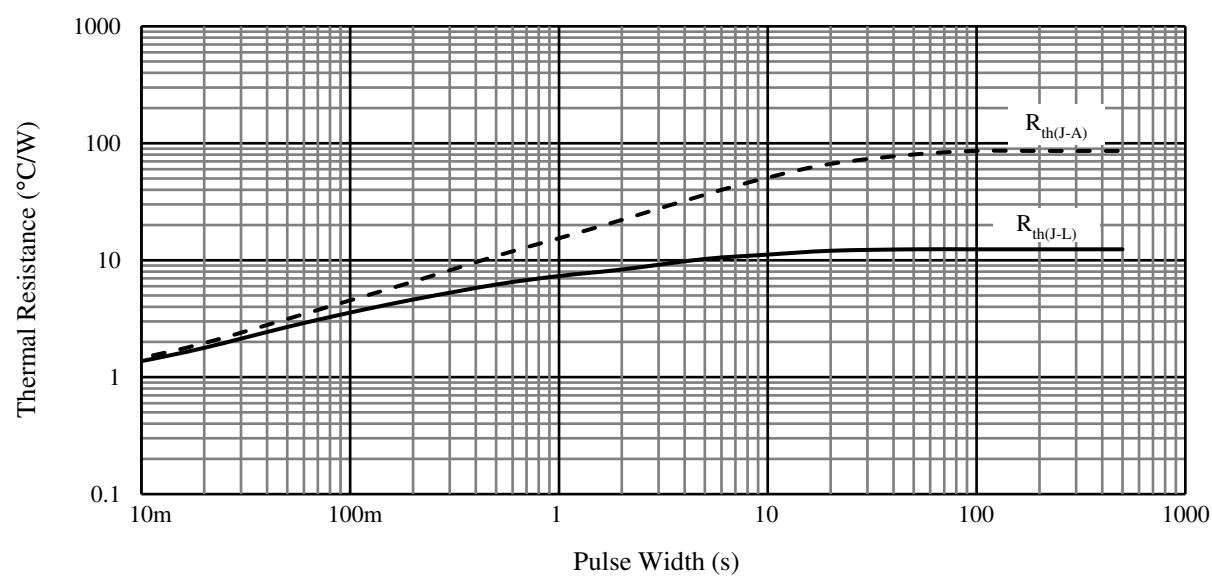
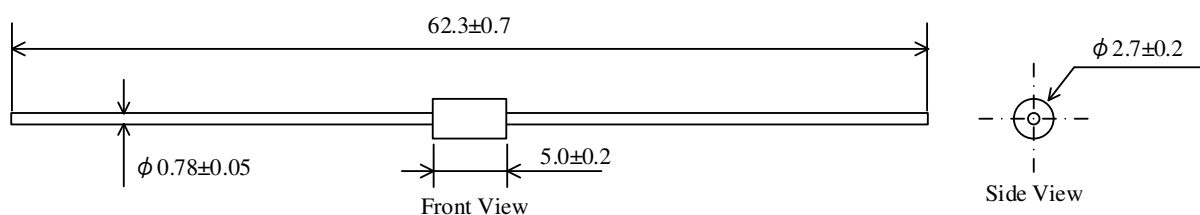


Figure 8. Typical Transient Thermal Resistance Characteristics

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

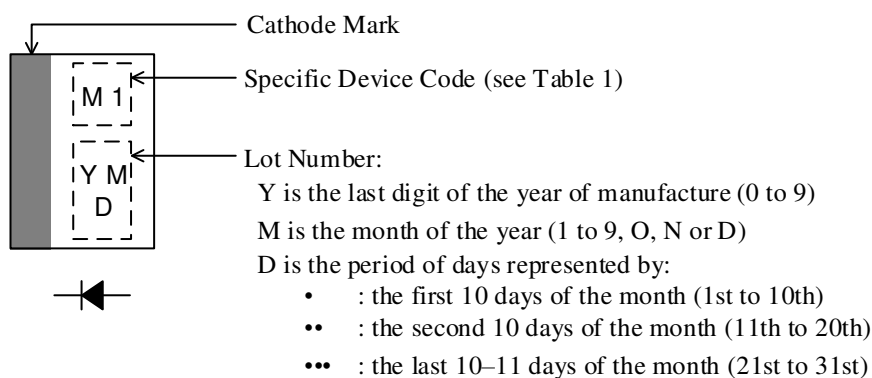


Table 1. Specific Device Code

Specific Device Code	Part Number
M1	EM1

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