

$V_{RM} = 600\text{ V}$ ,  $I_{F(AV)} = 10\text{ A}$ ,  $t_{rr} = 28\text{ ns}$   
**Fast Recovery Diode**  
**FMXA-1106S**

**Description**

The FMXA-1106S is a fast recovery diode of 600 V / 10 A. The maximum  $t_{rr}$  of 28 ns is realized by optimizing a life-time control.

**Package**

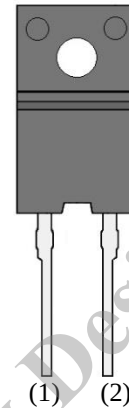
TO220F-2L

**Features**

- $V_{RM}$ ----- 600 V
- $I_{F(AV)}$ ----- 10 A
- $V_F$ ----- 1.98 V
- $t_{rr1}$ ----- 28 ns
- Bare lead frame: Pb-free (RoHS compliant)

**Applications**

- PFC circuit
- Freewheel Diode  
(Offline Buck and Buck-boost Converter)



(1) Cathode  
(2) Anode

Not to scale

### Absolute Maximum Ratings

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

| Parameter                       | Symbol             | Rating     | Unit                 | Conditions                                         |
|---------------------------------|--------------------|------------|----------------------|----------------------------------------------------|
| Peak Repetitive Reverse Voltage | $V_{\text{RSM}}$   | 600        | V                    |                                                    |
| Repetitive Reverse Voltage      | $V_{\text{RM}}$    | 600        | V                    |                                                    |
| Average Forward Current         | $I_{\text{F(AV)}}$ | 10         | A                    | See Figure 1 and Figure 2                          |
| Surge Forward Current           | $I_{\text{FSM}}$   | 100        | A                    | Half cycle sine wave, positive side, 10 ms, 1 shot |
| $I^2t$ Limiting Value           | $I^2t$             | 50         | $\text{A}^2\text{s}$ | $1\text{ ms} \leq t \leq 10\text{ ms}$             |
| Junction Temperature            | $T_J$              | -40 to 150 | $^{\circ}\text{C}$   |                                                    |
| Storage Temperature             | $T_{\text{STG}}$   | -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                           | $V_F$                | $T_J = 25\text{ }^{\circ}\text{C}, I_F = 10\text{ A}$                                              | —    | —    | 1.98 | V                    |
|                                                |                      | $T_J = 100\text{ }^{\circ}\text{C}, I_F = 10\text{ A}$                                             | —    | 1.5  | —    | V                    |
| Reverse Leakage Current                        | $I_R$                | $V_R = V_{\text{RM}}$                                                                              | —    | —    | 100  | $\mu\text{A}$        |
| Reverse Leakage Current Under High Temperature | $H \cdot I_R$        | $V_R = V_{\text{RM}}, T_J = 150\text{ }^{\circ}\text{C}$                                           | —    | —    | 30   | mA                   |
| Reverse Recovery Time                          | $t_{\text{rr1}}$     | $I_F = I_{\text{RP}} = 500\text{ mA}$<br>90% recovery point,<br>$T_J = 25\text{ }^{\circ}\text{C}$ | —    | —    | 28   | ns                   |
| Thermal Resistance <sup>(1)</sup>              | $R_{\text{th(J-C)}}$ |                                                                                                    | —    | —    | 4.0  | $^{\circ}\text{C/W}$ |

<sup>(1)</sup>  $R_{\text{th(J-C)}}$  is thermal resistance between junction and the case. The case temperature is measured at the back side near the screw hole.

# Rating and Characteristic Curves

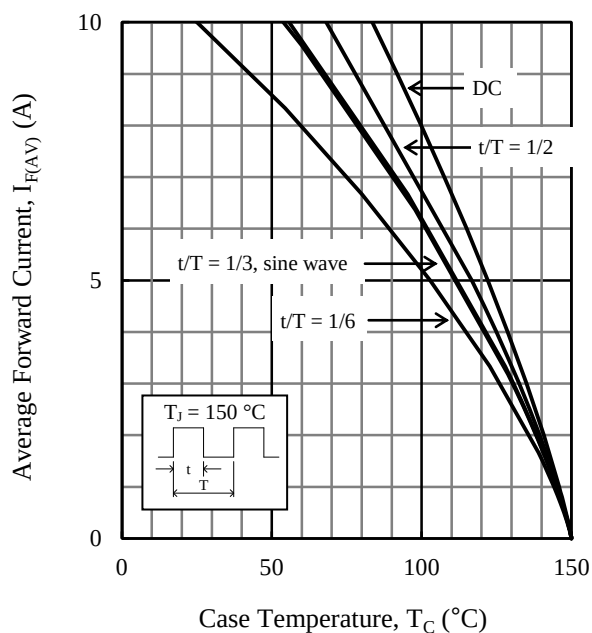


Figure 1.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 0$  V)

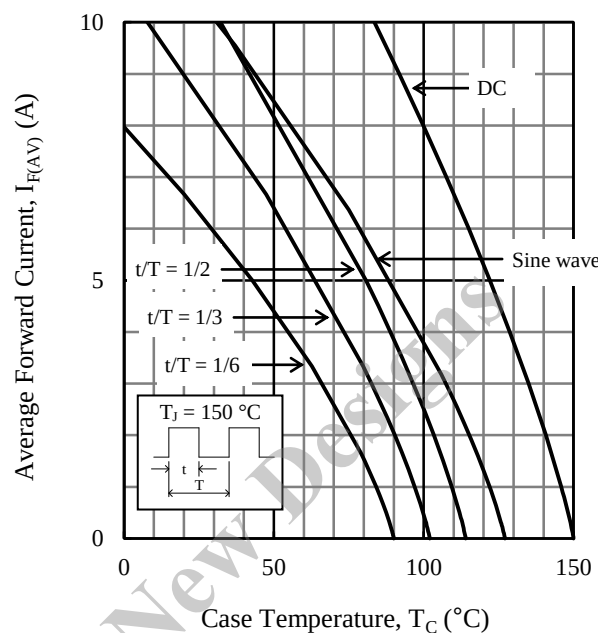


Figure 2.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 600$  V)

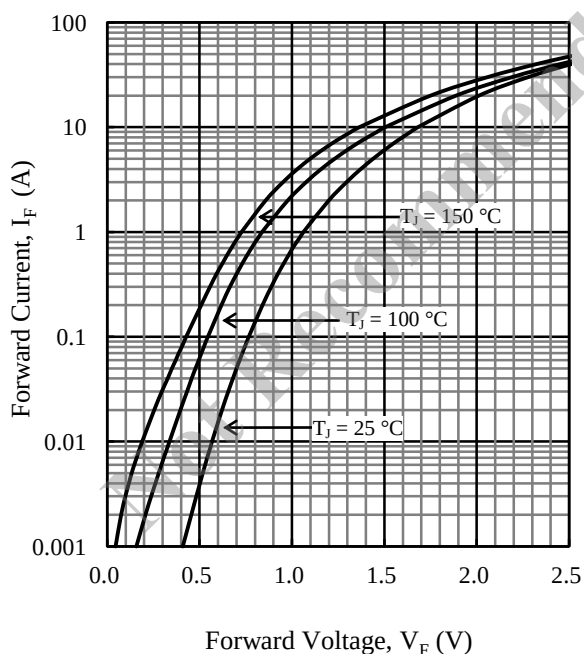


Figure 3.  $V_F$  vs.  $I_F$  Typical Characteristics

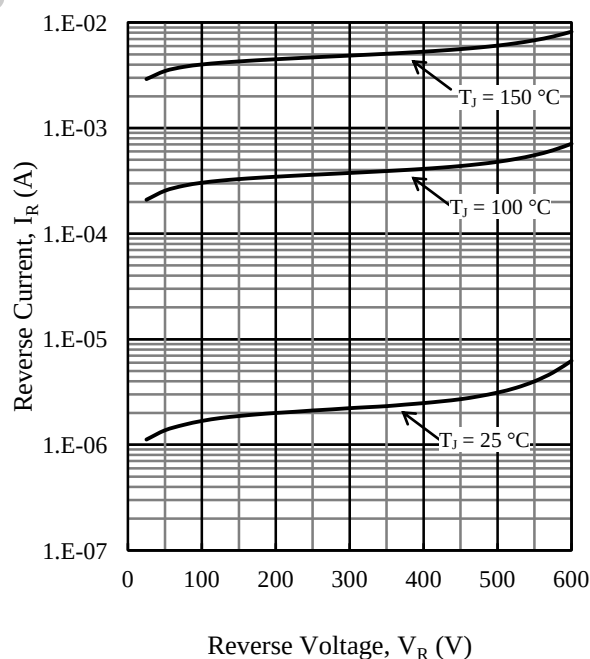
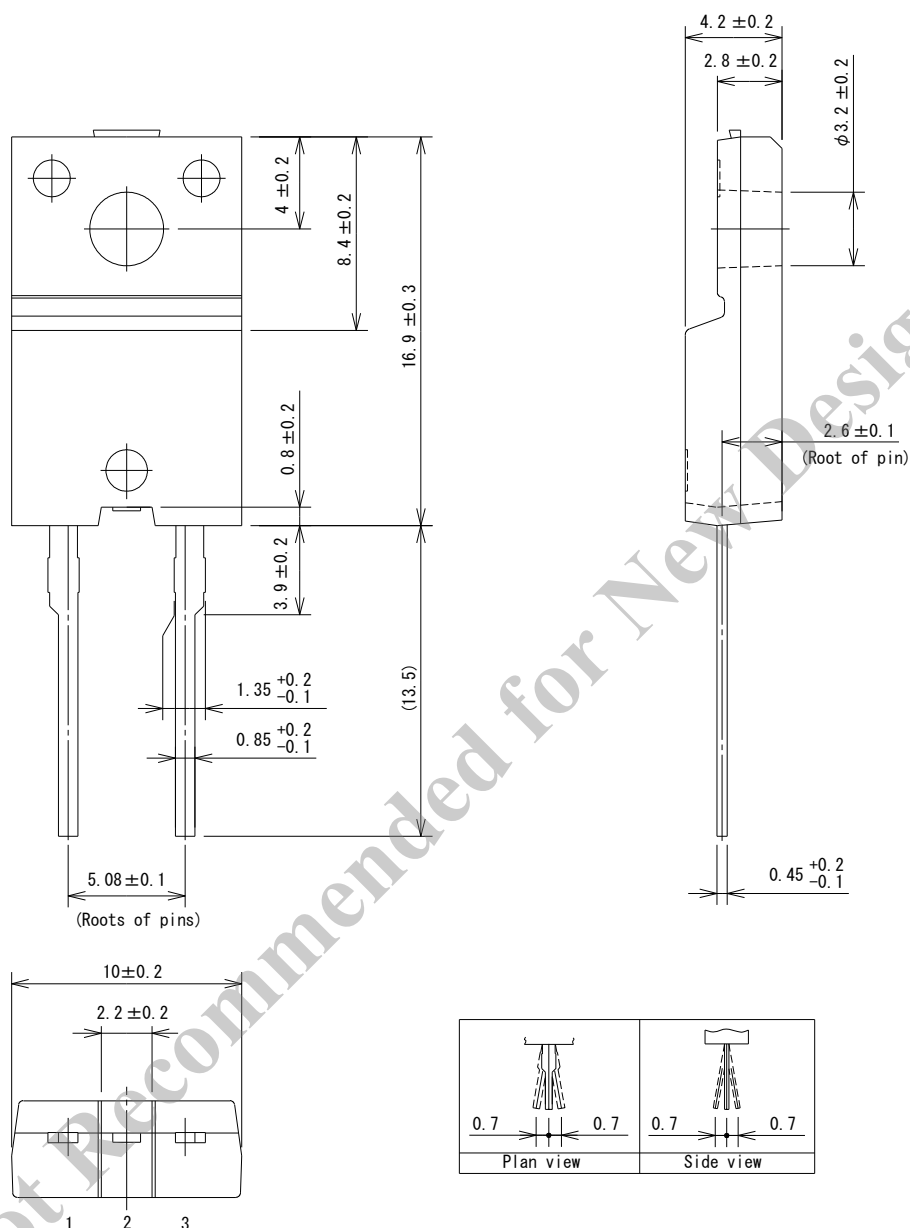


Figure 4.  $V_R$  vs.  $I_R$  Typical Characteristics

# Physical Dimensions

## • TO220F-3L



### NOTES:

- Dimensions in millimeters
- Maximum gate burr height is 0.3 mm.
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, it is required to minimize the working time, within the following limits:  
 Flow:  $260 \pm 5$  °C /  $10 \pm 1$  s, 2 times  
 Soldering Iron:  $380 \pm 10$  °C /  $3.5 \pm 0.5$  s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)  
 Recommended screw torque for TO220F: 0.490 N·m to 0.686 N·m (5 kgf·cm to 7 kgf·cm)

Marking Diagram

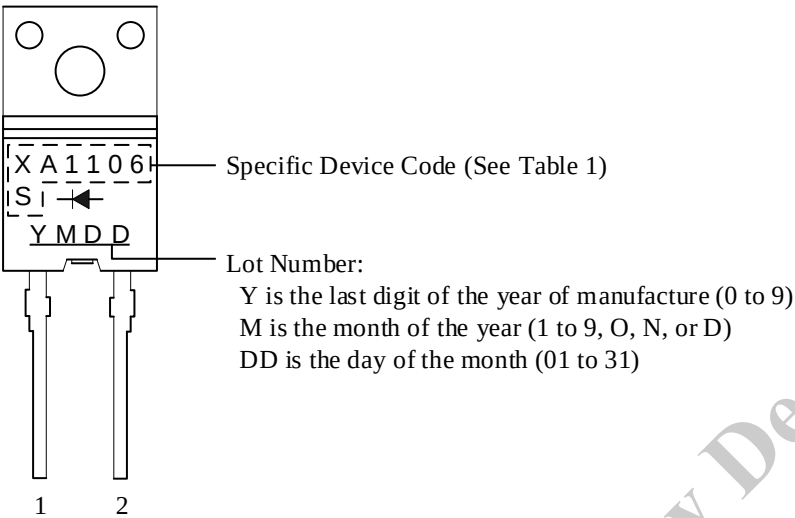


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| XA1106S              | FMXA-1106S  |

## Important Notes

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