

$V_{RM} = 300\text{ V}$ ,  $I_{F(AV)} = 20\text{ A}$ ,  $t_{rr} = 25\text{ ns}$   
**Fast Recovery Diode**  
**FMXA-4203S**

### Description

The FMXA-4203S is a fast recovery diode of 300 V / 20 A. The maximum  $t_{rr}$  of 25 ns is realized by optimizing a life-time control.

### Package

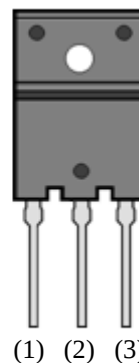
TO3PF-3L

### Features

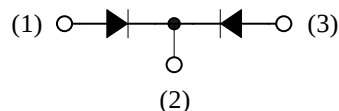
- $V_{RM}$ ----- 300 V
- $I_{F(AV)}$ ----- 20 A
- $V_F$ ----- 1.30 V
- $t_{rr}$ ----- 25 ns
- Bare lead frame: Pb-free (RoHS compliant)

### Applications

- Secondary Side Rectifier Diode  
(Flyback Converter, LLC Converter, etc.)
- Freewheel Diode  
(Offline Buck and Buck-boost Converter)



Not to scale



- (1) Anode
- (2) Cathode
- (3) Anode

## Absolute Maximum Ratings

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

| Parameter                                      | Symbol             | Rating     | Unit                 | Conditions                                         |
|------------------------------------------------|--------------------|------------|----------------------|----------------------------------------------------|
| Peak Repetitive Reverse Voltage <sup>(1)</sup> | $V_{\text{RSM}}$   | 300        | V                    |                                                    |
| Repetitive Reverse Voltage <sup>(1)</sup>      | $V_{\text{RM}}$    | 300        | V                    |                                                    |
| Average Forward Current                        | $I_{\text{F(AV)}}$ | 20         | A                    | See Figure 1 and Figure 2                          |
| Surge Forward Current <sup>(1)</sup>           | $I_{\text{FSM}}$   | 100        | A                    | Half cycle sine wave, positive side, 10 ms, 1 shot |
| $I^2t$ Limiting Value <sup>(1)</sup>           | $I^2t$             | 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 <sup>(1)</sup>                           | $V_F$                | $T_J = 25\text{ }^{\circ}\text{C}$ , $I_F = 10\text{ A}$                                           | —    | —    | 1.30 | V                    |
|                                                               |                      | $T_J = 100\text{ }^{\circ}\text{C}$ , $I_F = 10\text{ A}$                                          | —    | 1.03 | —    | V                    |
| Reverse Leakage Current <sup>(1)</sup>                        | $I_R$                | $V_R = V_{\text{RM}}$                                                                              | —    | —    | 100  | $\mu\text{A}$        |
| Reverse Leakage Current Under High Temperature <sup>(1)</sup> | $H \cdot I_R$        | $V_R = V_{\text{RM}}$ , $T_J = 150\text{ }^{\circ}\text{C}$                                        | —    | —    | 30   | mA                   |
| Reverse Recovery Time <sup>(1)</sup>                          | $t_{\text{rr}}$      | $I_F = I_{\text{RP}} = 500\text{ mA}$<br>90% recovery point,<br>$T_J = 25\text{ }^{\circ}\text{C}$ | —    | —    | 25   | ns                   |
| Thermal Resistance <sup>(2)</sup>                             | $R_{\text{th(J-C)}}$ |                                                                                                    | —    | —    | 2.0  | $^{\circ}\text{C/W}$ |

<sup>(1)</sup> Specifies a value per chip; the FMXA-4203S consists of two chips.

<sup>(2)</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

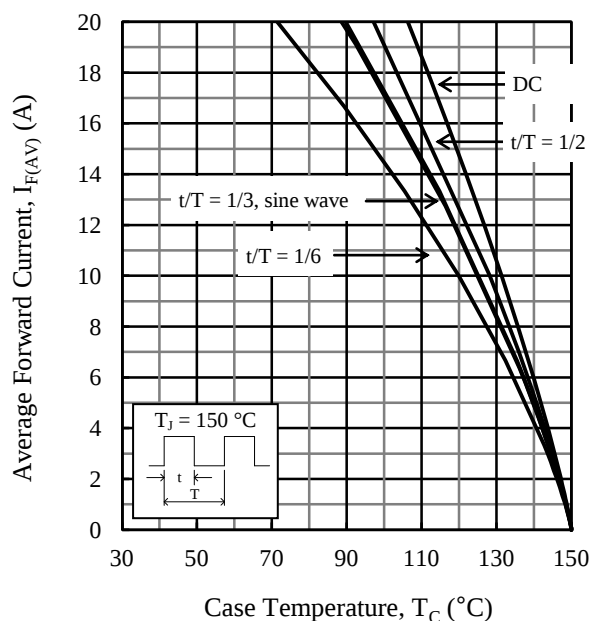


Figure 1.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 0$  V)

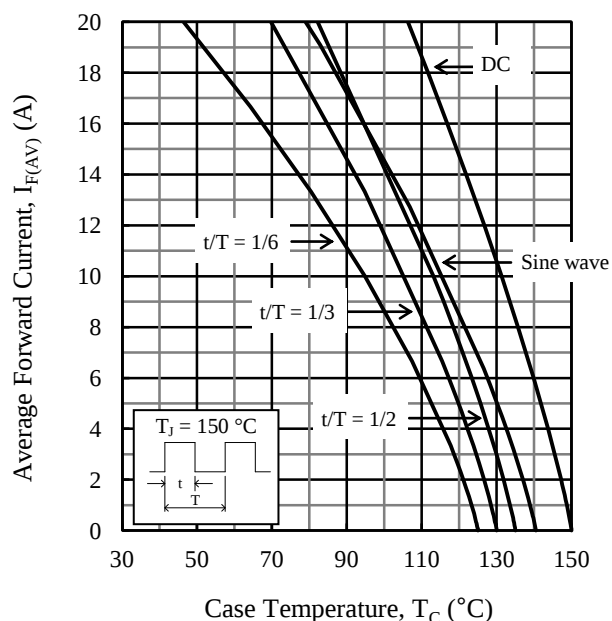


Figure 2.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 300$  V)

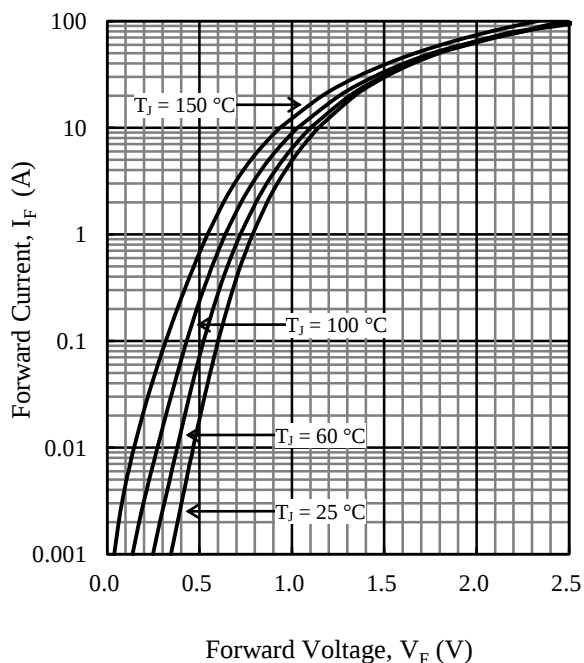


Figure 3.  $V_F$  vs.  $I_F$  Typical Characteristics

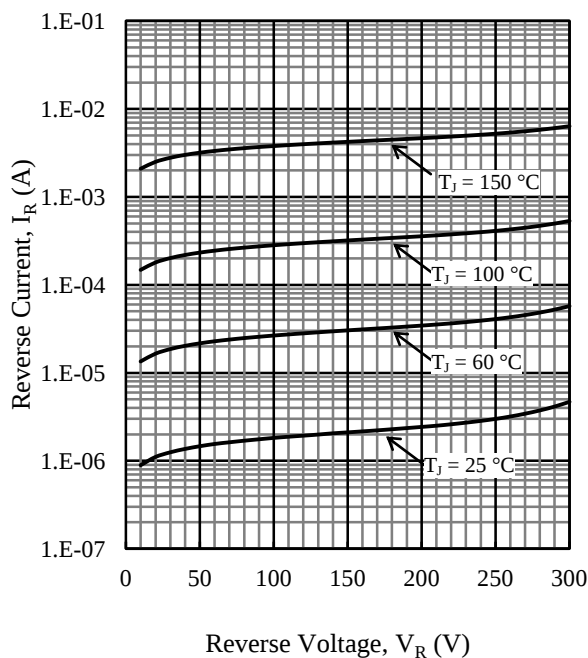
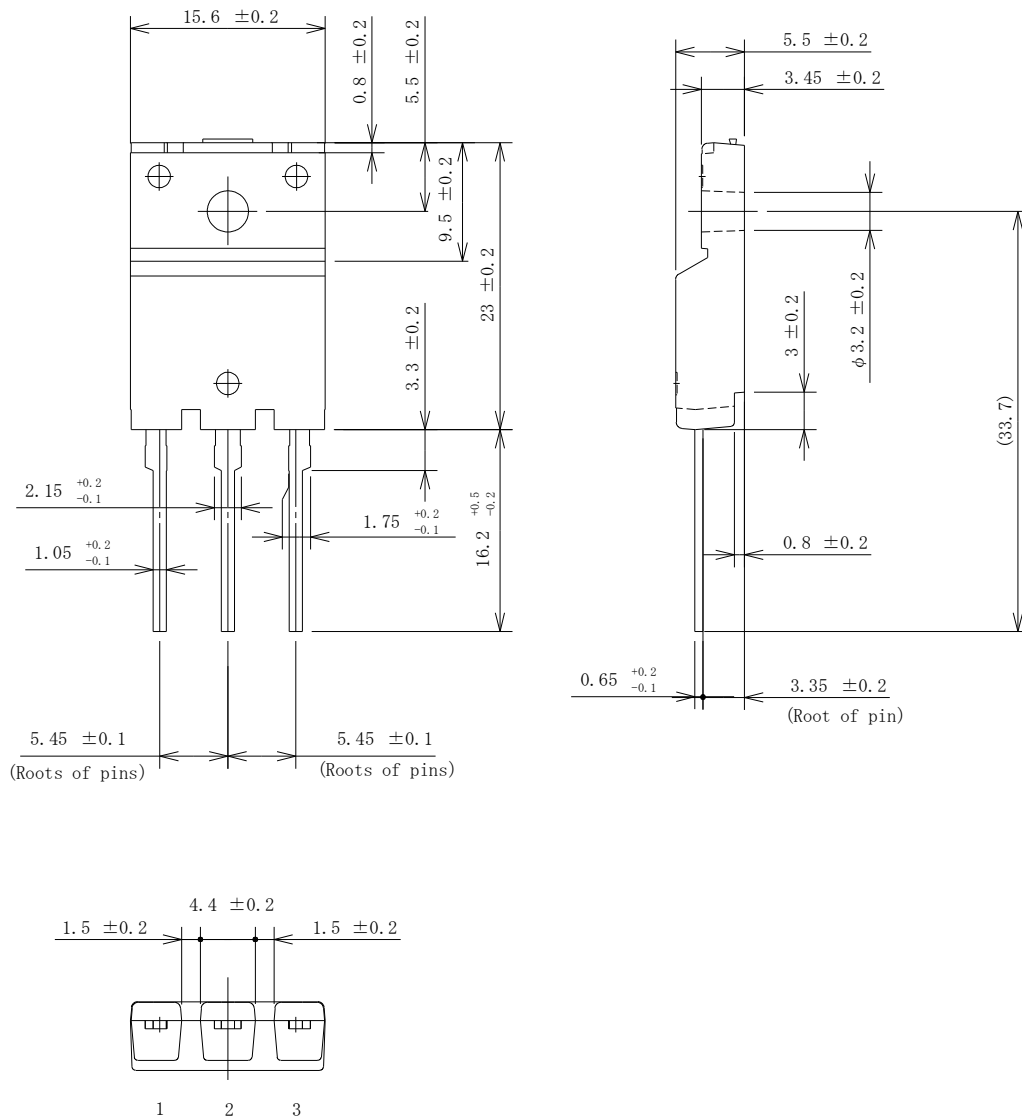


Figure 4.  $V_R$  vs.  $I_R$  Typical Characteristics

## Physical Dimensions

### • TO3PF-3L



### NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, it is required to minimize the working time, within the following limits:  
 Flow:  $260 \pm 5 \text{ }^{\circ}\text{C} / 10 \pm 1 \text{ s}$ , 2 times  
 Soldering Iron:  $380 \pm 10 \text{ }^{\circ}\text{C} / 3.5 \pm 0.5 \text{ s}$ , 1 time  
 Soldering should be at a distance of at least 1.5 mm from the body of the product.
- Recommended screw torque for TO3PFF: 0.686 N·m to 0.882 N·m (7 kgf·cm to 9 kgf·cm)

## Marking Diagram

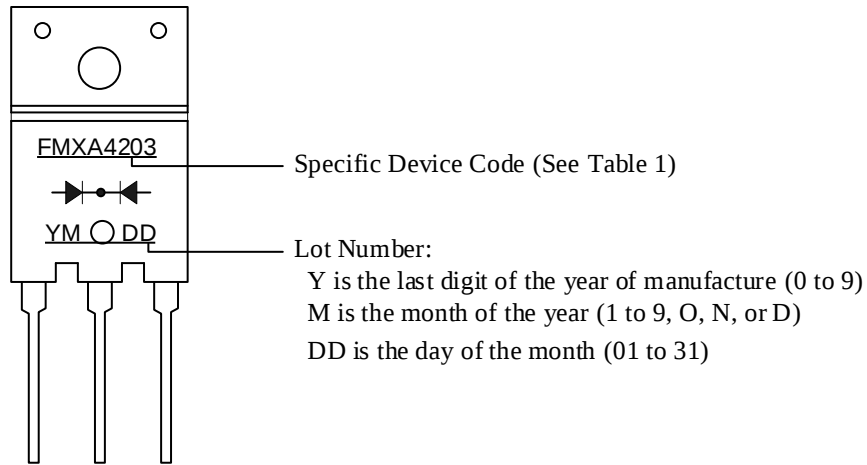


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| FMXA4203             | FMXA-4203S  |

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