

$V_{RM} = 300\text{ V}$ ,  $I_{F(AV)} = 20\text{ A}$ ,  $t_{rr} = 25\text{ ns}$   
**Fast Recovery Diode**  
**FMXA-2203S**

**Description**

The FMXA-2203S 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.

**Features**

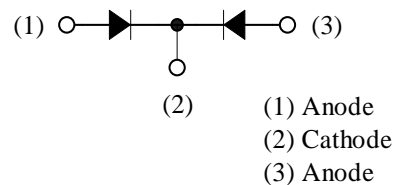
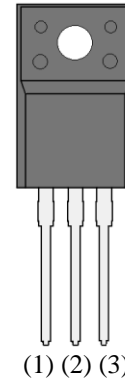
- $V_{RM}$ ----- 300 V
- $I_{F(AV)}$ ----- 20 A
- $V_F$ ----- 1.3 V
- $t_{rr}$ ----- 25 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

**Applications**

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

**Package**

TO220F-3L



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 <sup>(1)</sup>	$V_{RSM}$		300	V
Repetitive Peak Reverse Voltage <sup>(1)</sup>	$V_{RM}$		300	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 2	20	A
Surge Forward Current <sup>(1)</sup>	$I_{FSM}$	Half cycle sine wave, positive side, 10 ms, 1 shot	100	A
$I^2t$ Limiting Value <sup>(1)</sup>	$I^2t$	$1\text{ ms} \leq t \leq 10\text{ ms}$	50	$\text{A}^2\text{s}$
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 <sup>(1)</sup>	$V_F$	$T_J = 25\text{ }^{\circ}\text{C}$ , $I_F = 10\text{ A}$	—	—	1.3	V
		$T_J = 100\text{ }^{\circ}\text{C}$ , $I_F = 10\text{ A}$	—	1.0	—	V
Reverse Leakage Current <sup>(1)</sup>	$I_R$	$V_R = V_{RM}$	—	—	100	$\mu\text{A}$
Reverse Leakage Current under High Temperature <sup>(1)</sup>	$H \cdot I_R$	$V_R = V_{RM}$ , $T_J = 150\text{ }^{\circ}\text{C}$	—	—	30	mA
Reverse Recovery Time <sup>(1)</sup>	$t_{rr}$	$I_F = I_{RP} = 500\text{ mA}$ , 90% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	25	ns
Thermal Resistance <sup>(2)</sup>	$R_{th(J-C)}$		—	—	4.0	$^{\circ}\text{C/W}$

## Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Heatsink Mounting Screw Torque		0.490	—	0.686	N·m

<sup>(1)</sup> Specifies a value per chip; the FMXA-2203S consists of two chips.

<sup>(2)</sup>  $R_{th(J-C)}$  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

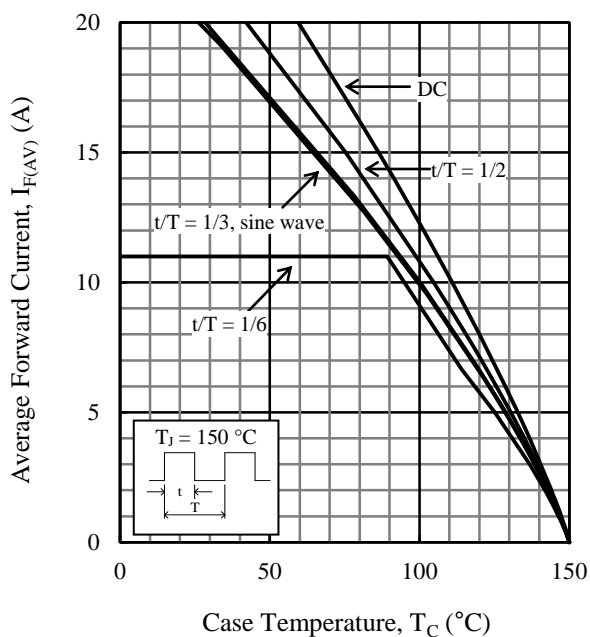


Figure 1. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_C$   
( $V_R = 0$  V)

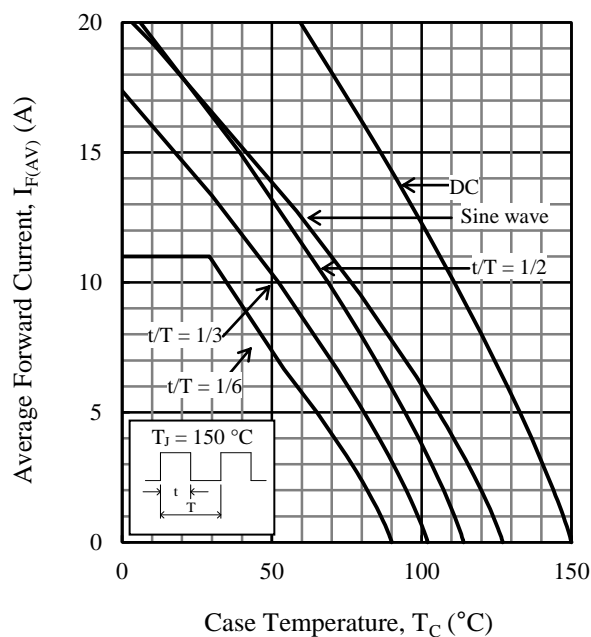


Figure 2. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_C$   
( $V_R = 300$  V)

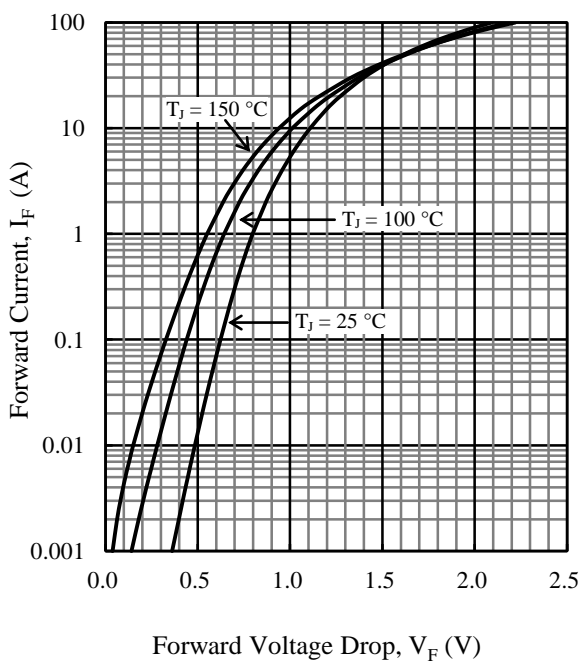


Figure 3. Typical Characteristics:  $I_F$  vs.  $V_F$

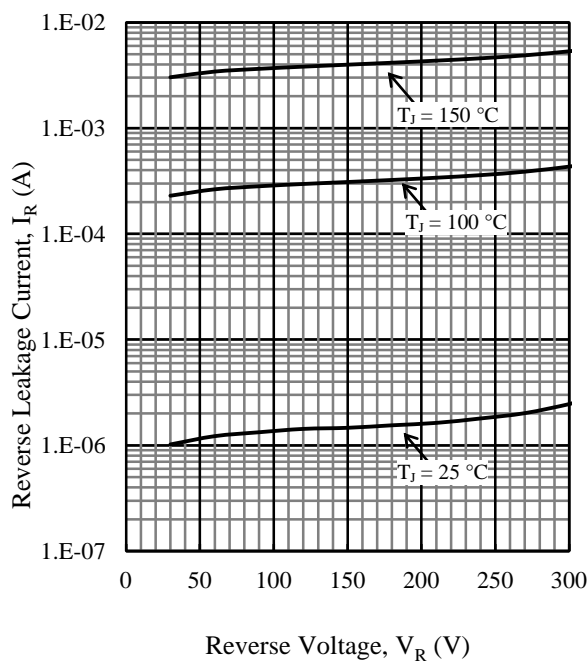
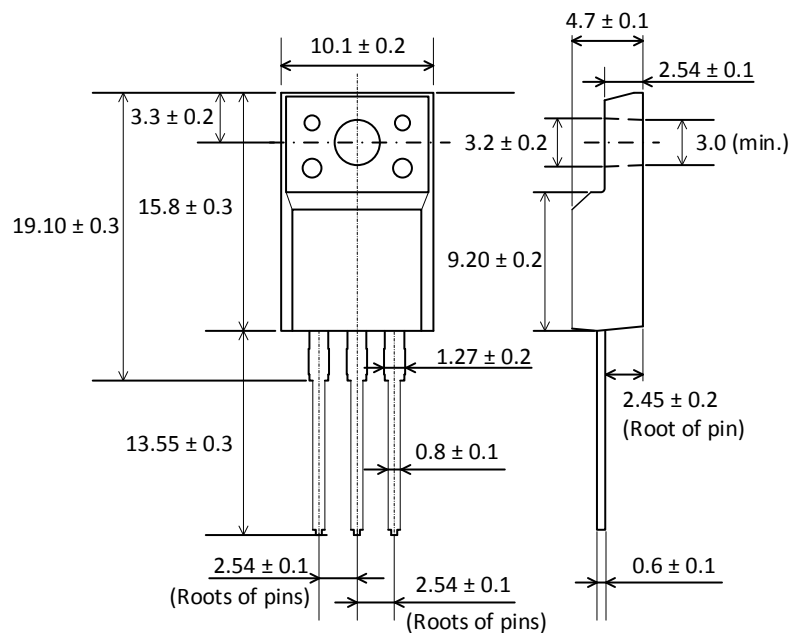


Figure 4. Typical Characteristics:  $I_R$  vs.  $V_R$

**Physical Dimensions**• **TO220F-3L****NOTES:**

- Dimensions in millimeters
- All the dimensions exclude mold flashes.
- 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.

Marking Diagram

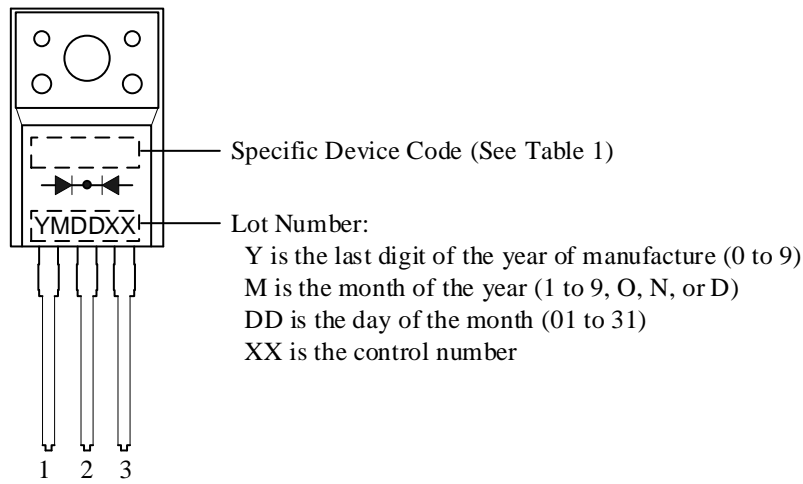


Table 1. Specific Device Code

Specific Device Code	Part Number
XA2203	FMXA-2203S

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