

$V_{RM} = 600\text{ V}$ ,  $I_{F(AV)} = 20\text{ A}$ ,  $t_{rr} = 35\text{ ns}$   
Fast Recovery Diode  
**FMXS-1206S**

**Description**

The FMXS-1206S is a fast recovery diode of 600 V / 20 A. The maximum  $t_{rr}$  of 35 ns is realized by optimizing a life-time control.

**Package**

TO220F-2L

**Features**

- $V_{RM}$ ----- 600 V
- $I_{F(AV)}$ ----- 20 A
- $V_F$ ----- 1.6 V
- $t_{rr1}$ ----- 35 ns
- Bare lead frame: Pb-free (RoHS compliant)

**Applications**

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



(1) (2)



(1) Cathode  
(2) Anode

Not to scale

Not Recommended for New Designs

## FMXS-1206S

### Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage	$V_{RSM}$	600	V	
Repetitive Reverse Voltage	$V_{RM}$	600	V	
Average Forward Current	$I_{F(AV)}$	20	A	See Figure 1 and Figure 2
Surge Forward Current	$I_{FSM}$	180	A	Half cycle sine wave, positive side, 10 ms, 1 shot
$I^2t$ Limiting Value	$I^2t$	162	$A^2s$	$1\text{ ms} \leq t \leq 10\text{ ms}$
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	$V_F$	$T_J = 25\text{ }^\circ\text{C}, I_F = 20\text{ A}$	—	—	1.6	V
		$T_J = 100\text{ }^\circ\text{C}, I_F = 20\text{ A}$	—	1.3	—	V
Reverse Leakage Current	$I_R$	$V_R = V_{RM}$	—	—	100	$\mu\text{A}$
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{RM}, T_J = 150\text{ }^\circ\text{C}$	—	—	30	mA
Reverse Recovery Time	$t_{rr1}$	$I_F = I_{RP} = 500\text{ mA}$ 90% recovery point, $T_J = 25\text{ }^\circ\text{C}$	—	—	35	ns
Thermal Resistance <sup>(1)</sup>	$R_{th(J-C)}$		—	—	4.0	$^\circ\text{C/W}$

<sup>(1)</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

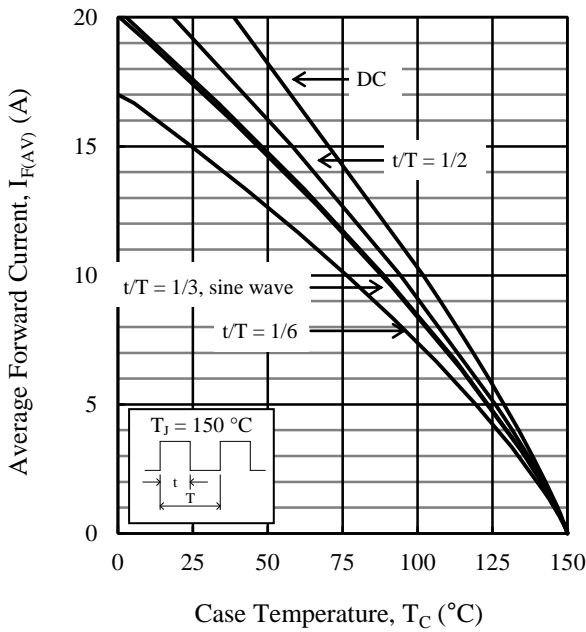


Figure 1.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 0\text{ V}$ )

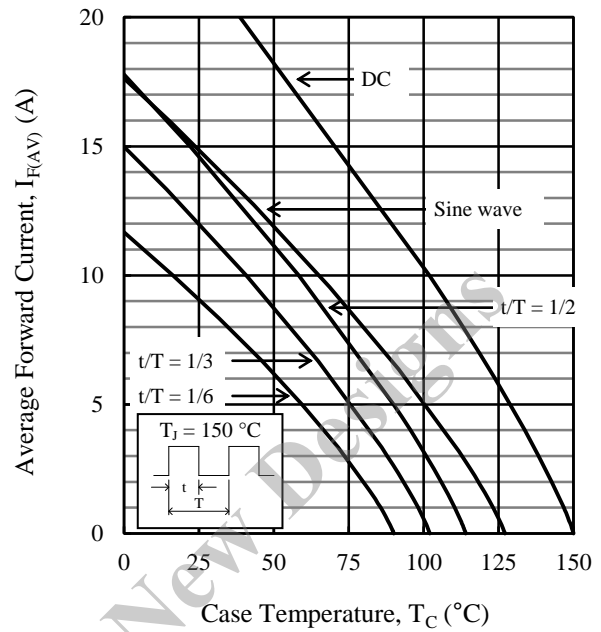


Figure 2.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 600\text{ V}$ )

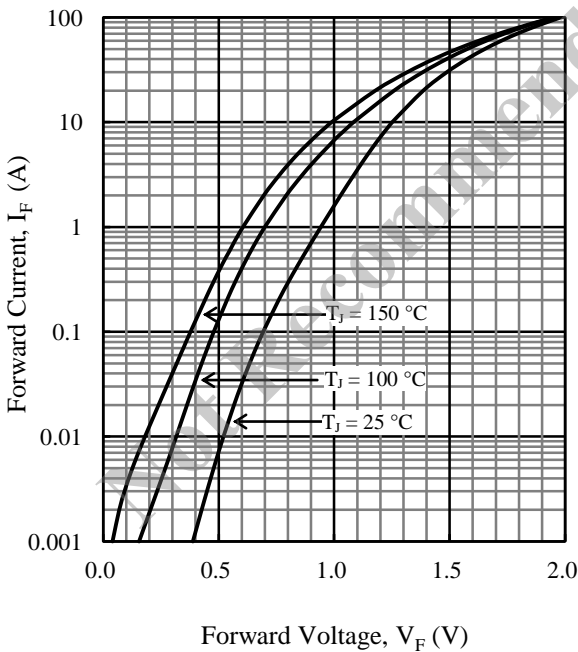


Figure 3.  $V_F$  vs.  $I_F$  Typical Characteristics

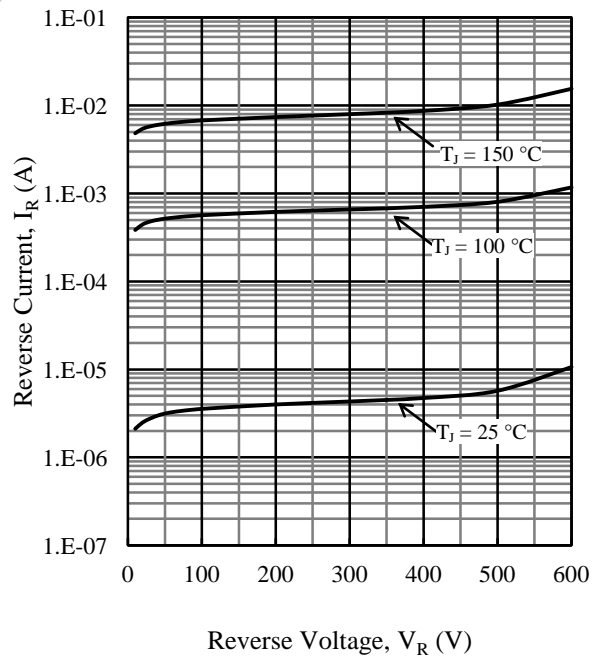
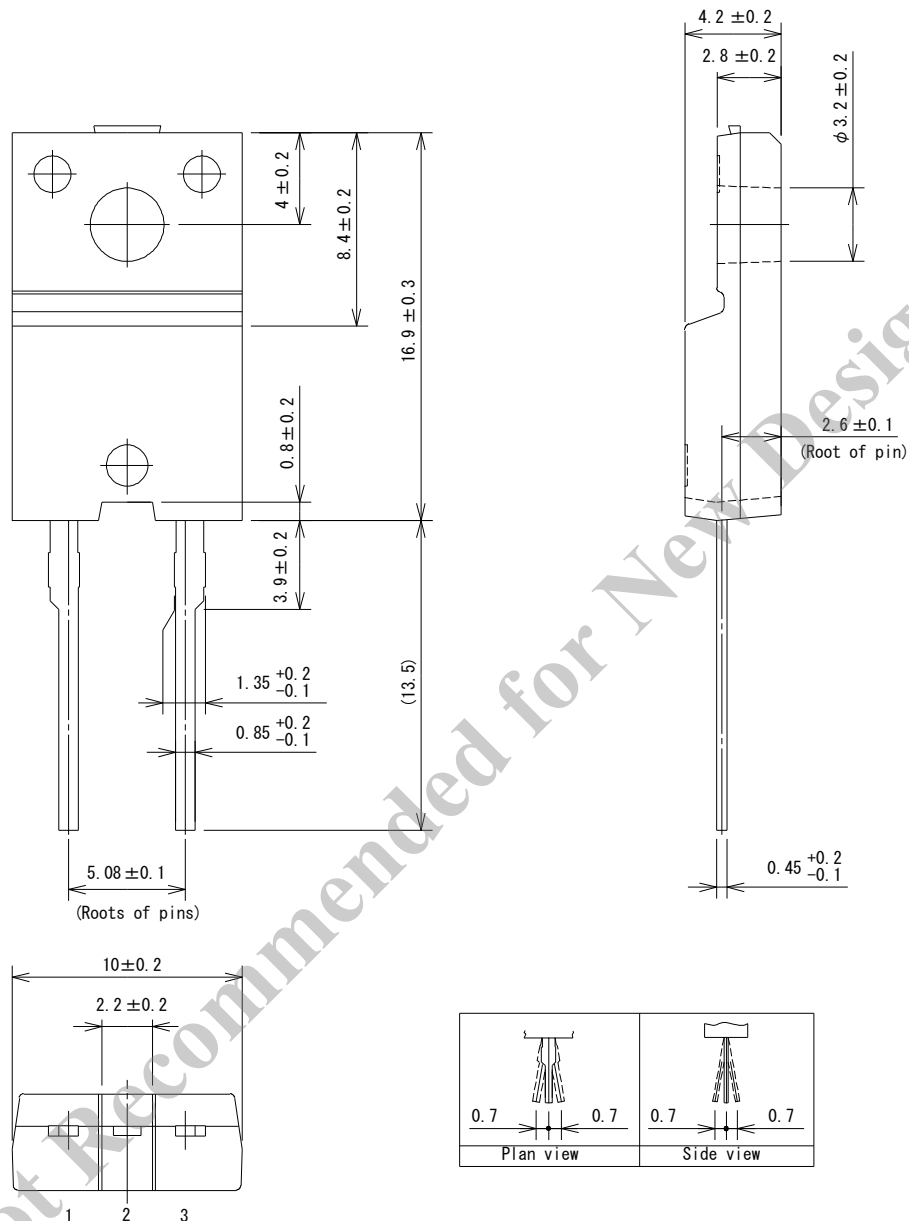


Figure 4.  $V_R$  vs.  $I_R$  Typical Characteristics

# FMXS-1206S

## Physical Dimensions

### • TO220F-2L



### 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:  $260 \pm 5 \text{ }^\circ\text{C} / 10 \pm 1 \text{ s}$ , 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 TO220F: 0.490 N·m to 0.686 N·m (5 kgf·cm to 7 kgf·cm)

Marking Diagram

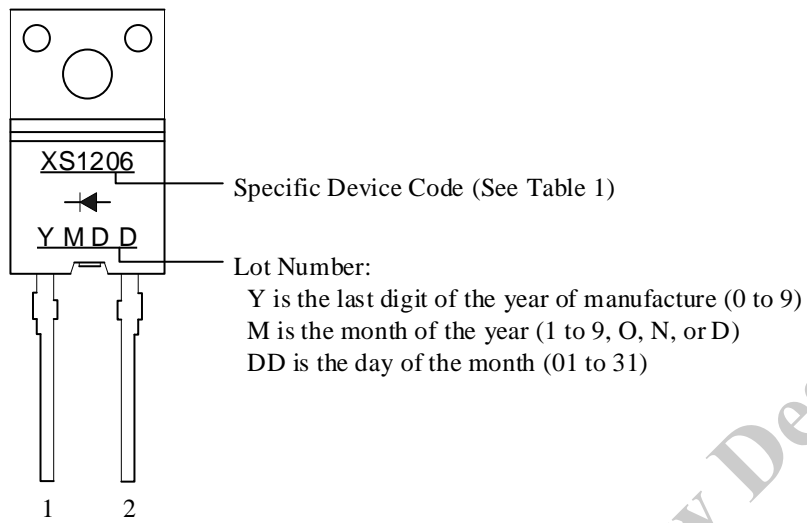


Table 1. Specific Device Code

Specific Device Code	Part Number
XS1206	FMXS-1206S

Not Recommended for New Designs

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