V_{RM} = 300 V, $I_{F(AV)}$ = 20 A, t_{rr} = 25 ns
Fast Recovery Diode

FMXA-2203S

Data Sheet

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

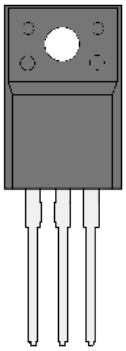
- V_{RM} ---------- 300 V
- $I_{F(AV)}$ ---------- 20 A
- V_F ---------- 1.3 V
- t_{rr} ---------- 25 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

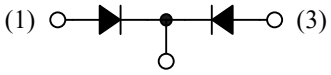
- Secondary Side Rectifier Diode
  (Flyback Converter, LLC Converter, etc.)
- Freewheel Diode
  (Offline Buck and Buck-boost Converter)

Package

TO220F-3L



(1) (2) (3)



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

Not to scale

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Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage(1)	V_{RSM}		300	V
Repetitive Peak Reverse Voltage(1)	V_{RM}		300	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 2	20	A
Surge Forward Current(1)	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	100	A
I^2t Limiting Value(1)	I^2t	1 ms ≤ t ≤ 10 ms	50	A^2s
Junction Temperature	T_J		−40 to 150	°C
Storage Temperature	T_{STG}		−40 to 150	°C

Electrical Characteristics

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop(1)	V_F	T_J = 25 °C, I_F = 10 A	—	—	1.3	V
		T_J = 100 °C, I_F = 10 A	—	1.0	—	V
Reverse Leakage Current(1)	I_R	$V_R = V_{RM}$	—	—	100	μA
Reverse Leakage Current under High Temperature(1)	$H \cdot I_R$	$V_R = V_{RM}$, T_J = 150 °C	—	—	30	mA
Reverse Recovery Time(1)	t_{rr}	$I_F = I_{RP}$ = 500 mA, 90% recovery point, T_J = 25 °C	—	—	25	ns
Thermal Resistance(2)	$R_{th(J-C)}$		—	—	4.0	°C/W

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Heatsink Mounting Screw Torque		0.490	—	0.686	N·m
Package Weight		—	1.8	—	g

(1) Specifies a value per chip; the FMXA-2203S consists of two chips.
(2) $R_{th\ (J-C)}$ is thermal resistance between junction and the case. The case temperature is measured at the back side near the screw hole.

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Derating Curves

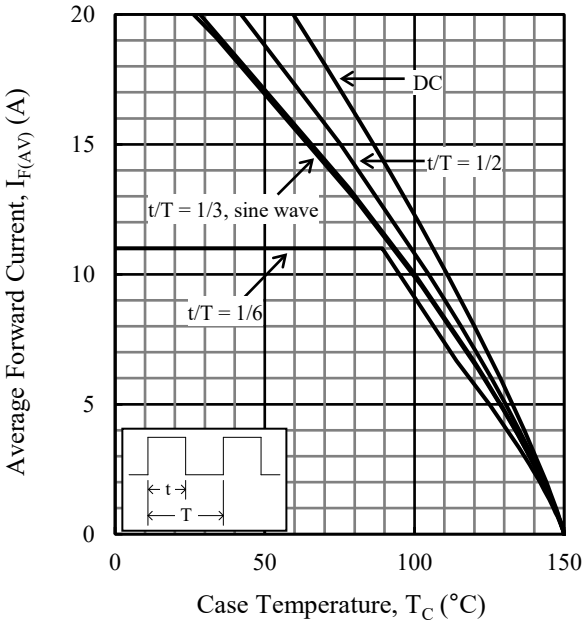


Figure 1. $I_{F(AV)}$ vs. T_C (T_J = 150 °C, V_R = 0 V)

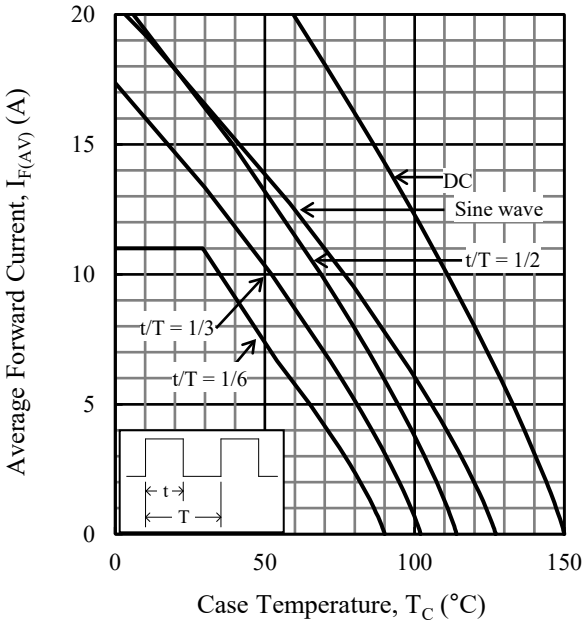


Figure 2. $I_{F(AV)}$ vs. T_C (T_J = 150 °C, V_R = 300 V)

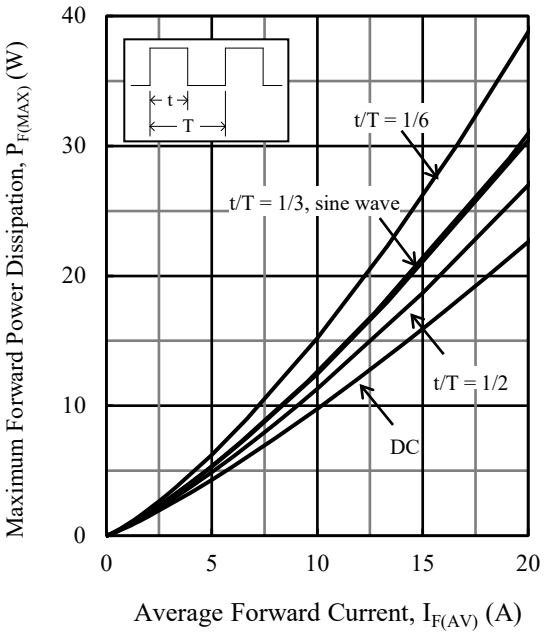


Figure 3. $P_{F(MAX)}$ vs. $I_{F(AV)}$ (T_J = 150 °C)

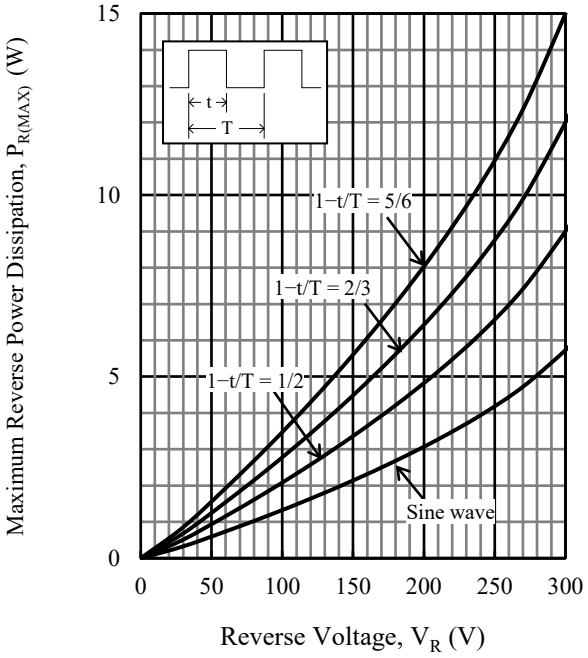


Figure 4. $P_{R(MAX)}$ vs. V_R (T_J = 150 °C)

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Characteristic Curves

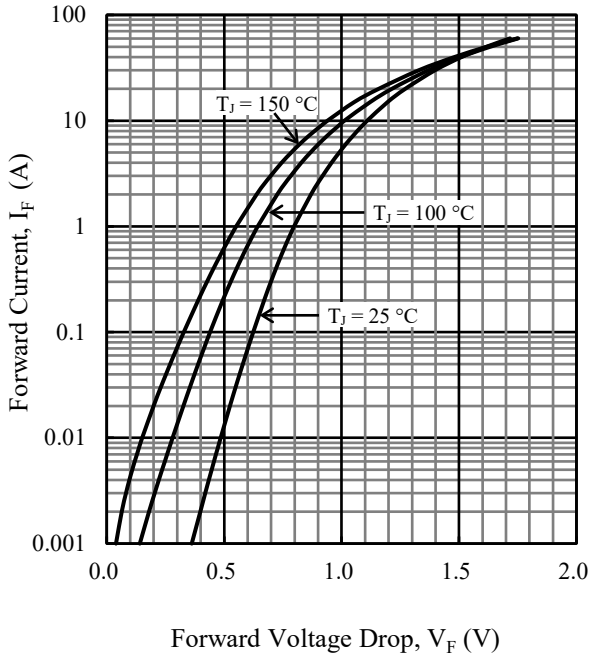


Figure 5. Typical Characteristics: I_F vs. V_F

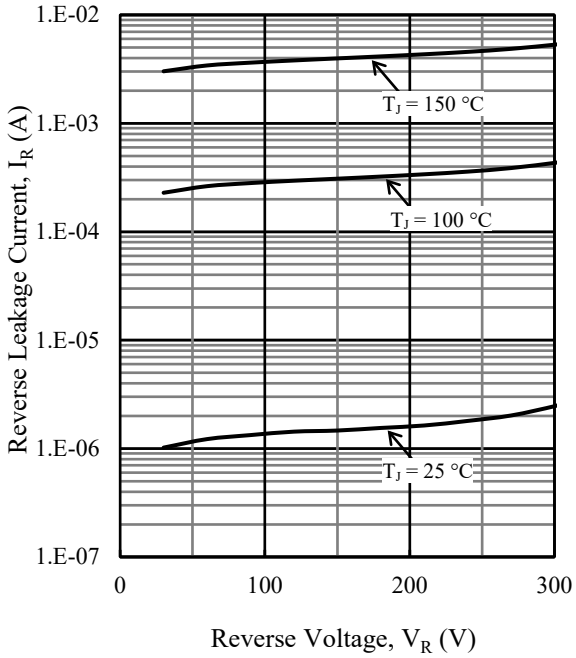


Figure 6. Typical Characteristics: I_R vs. V_R

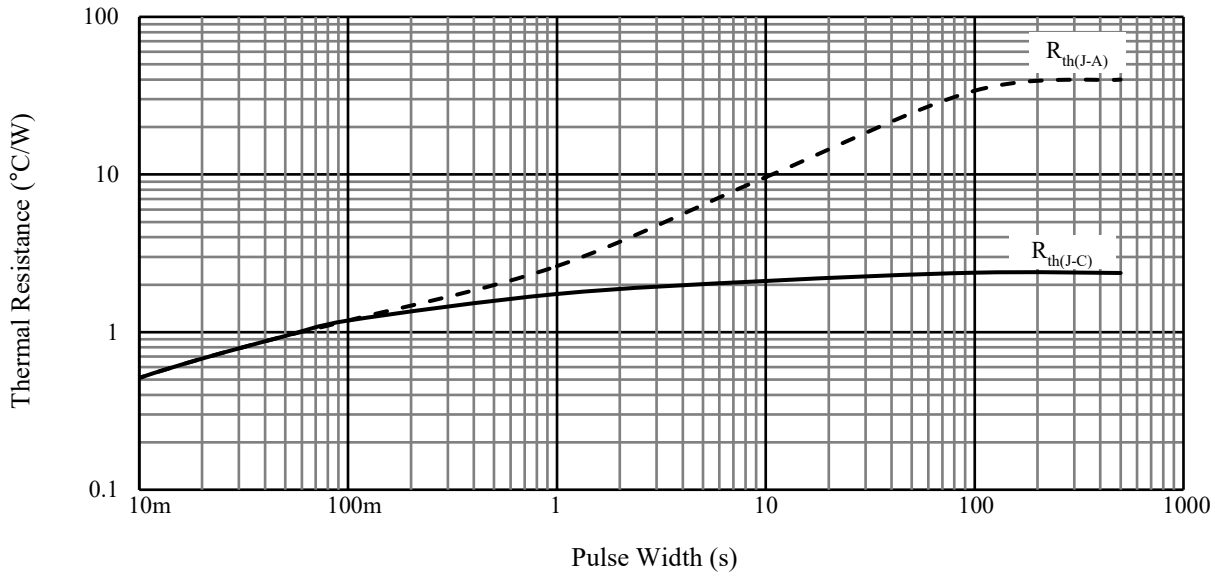
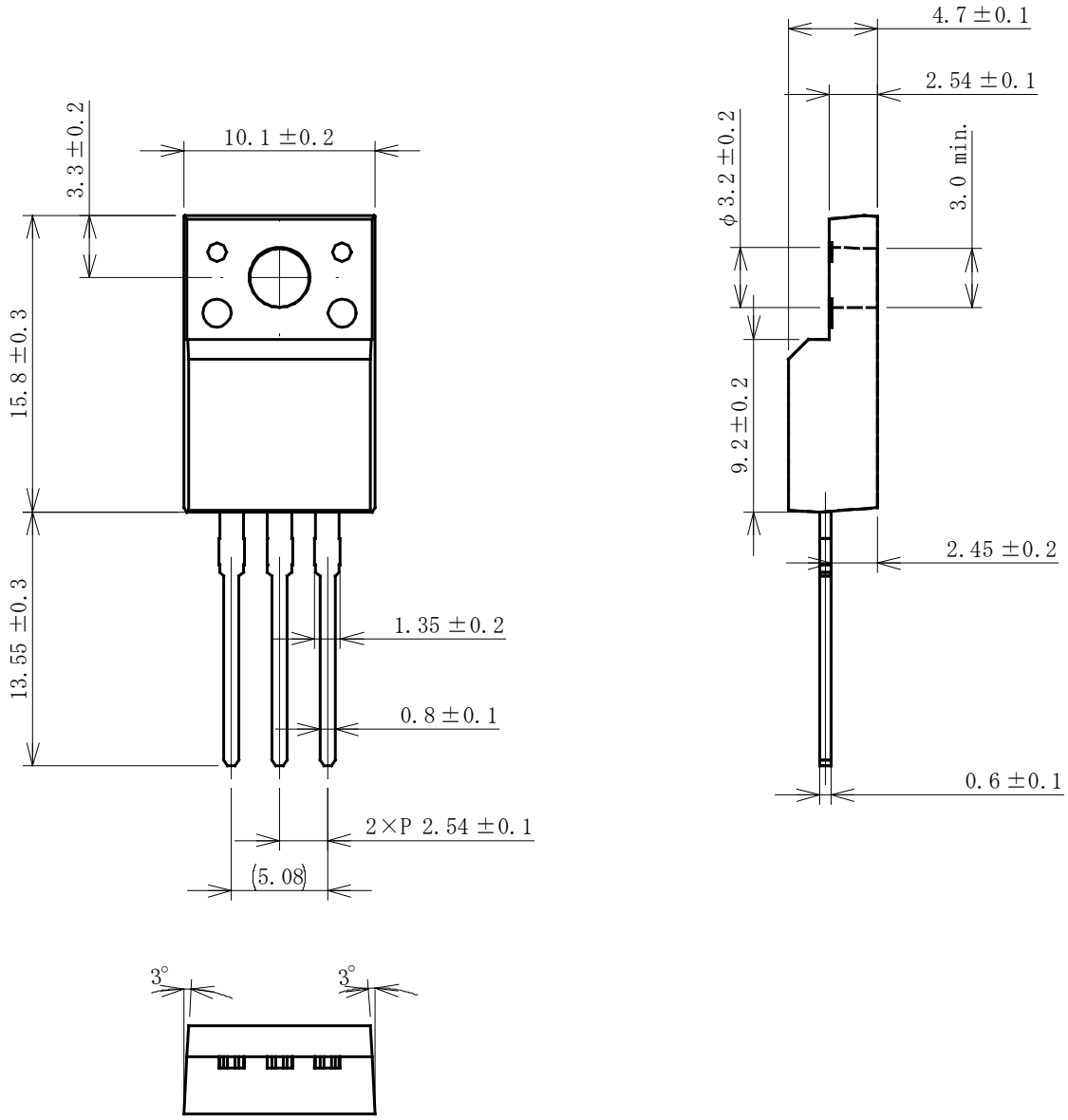


Figure 7. Typical Transient Thermal Resistance Characteristics

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Physical Dimensions

● **TO220F-3L**

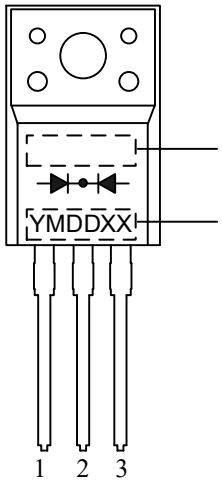


NOTES:

- 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: 270 °C / 7 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.

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Marking Diagram



Specific Device Code (See Table 1)

Lot Number:
Y is the last digit of the year of manufacture (0 to 9)
M is the month of the year (1 to 9, O, N, or D)
DD is the day of the month (01 to 31)
XX is the control number

Table 1. Specific Device Code

Specific Device Code	Part Number
XA2203	FMXA-2203S

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- No anti-radioactive ray design has been adopted for the Sanken Products.
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