V_{RM} = 600 V, $I_{F(AV)}$ = 10 A, t_{rr} = 100 ns
Fast Recovery Diode

FMNS-1106S

Data Sheet

Description

The FMNS-1106S is a fast recovery diode of 600 V / 10 A, and has a low forward voltage drop characteristic. The maximum t_{rr} of 100 ns is realized by optimizing a life-time control.

Features

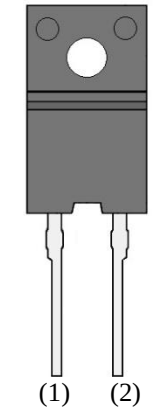
- V_{RM} ---------- 600 V
- $I_{F(AV)}$ ---------- 10 A
- V_F ---------- 1.3 V
- t_{rr1} ---------- 100 ns
- Bare lead frame: Pb-free (RoHS compliant)

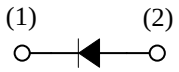
Applications

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

Package

TO220F-2L





(1) Cathode
(2) Anode

Not to scale

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage	V_{RSM}	600	V	
Repetitive Reverse Voltage	V_{RM}	600	V	
Average Forward Current	$I_{F(AV)}$	10	A	See Figure 1 and Figure 2
Surge Forward Current	I_{FSM}	100	A	Half cycle sine wave, positive side, 10 ms, 1 shot
I^2t Limiting Value	I^2t	50	A^2s	1 ms ≤ t ≤ 10 ms
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	V_F	T_J = 25 °C, I_F = 10 A	—	—	1.3	V
		T_J = 100 °C, I_F = 10 A	—	1.1	—	V
Reverse Leakage Current	I_R	$V_R = V_{RM,}$	—	—	100	μA
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, T_J = 150 °C	—	—	10	mA
Reverse Recovery Time	t_{rr1}	$I_F = I_{RP}$ = 100 mA 90% recovery point, T_J = 25 °C	—	—	100	ns
	t_{rr2}	I_F = 100 mA, I_{RP} = 200 mA, 75% recovery point, T_J = 25 °C	—	—	50	ns
Thermal Resistance[(1)]	$R_{th(J-C)}$		—	—	4.0	°C/W

[(1)] $R_{th\ (J-C)}$ 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

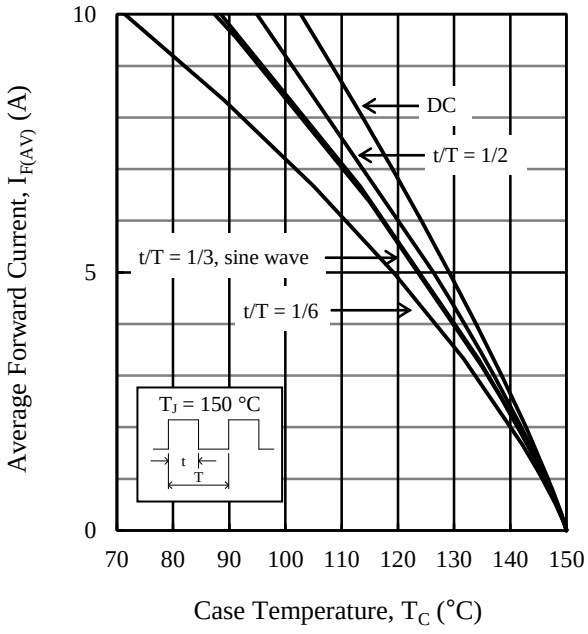


Figure 1. $I_{F(AV)}$ vs. T_C Typical Characteristics (V_R = 0 V)

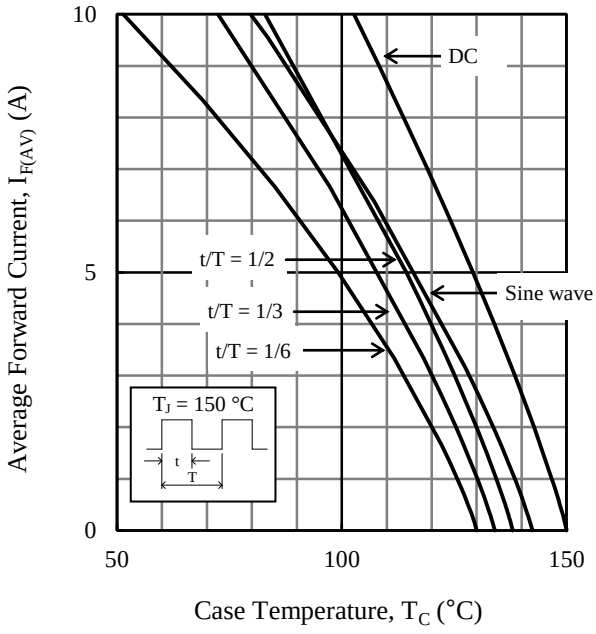


Figure 2. $I_{F(AV)}$ vs. T_C Typical Characteristics (V_R = 600 V)

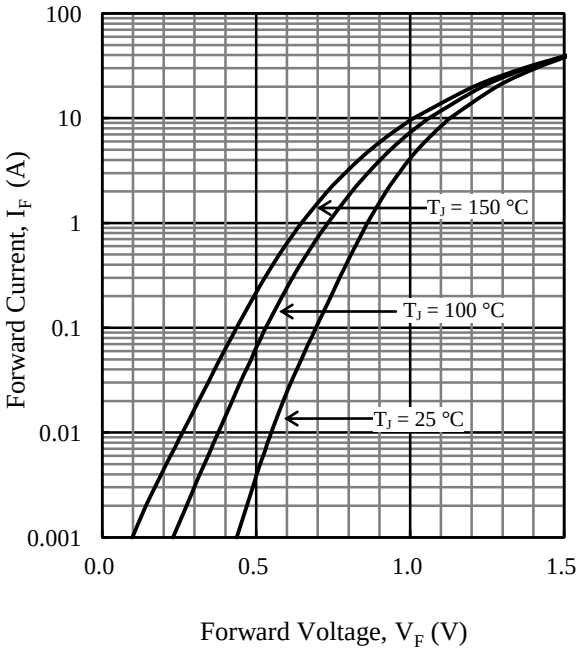


Figure 3. V_F vs. I_F Typical Characteristics

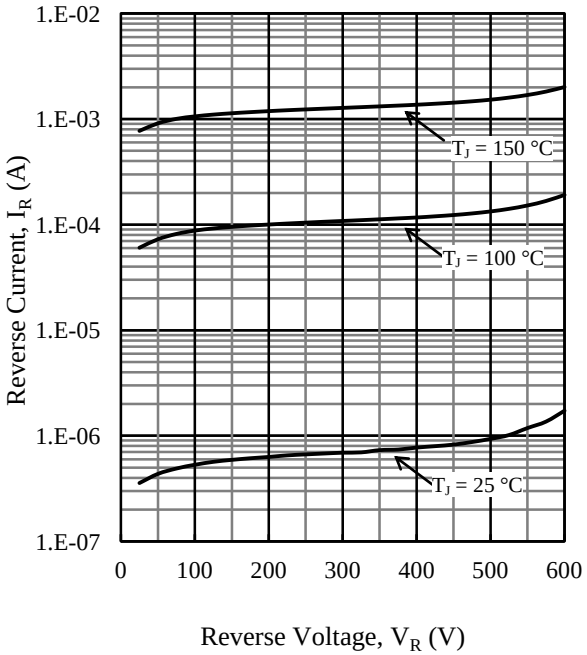
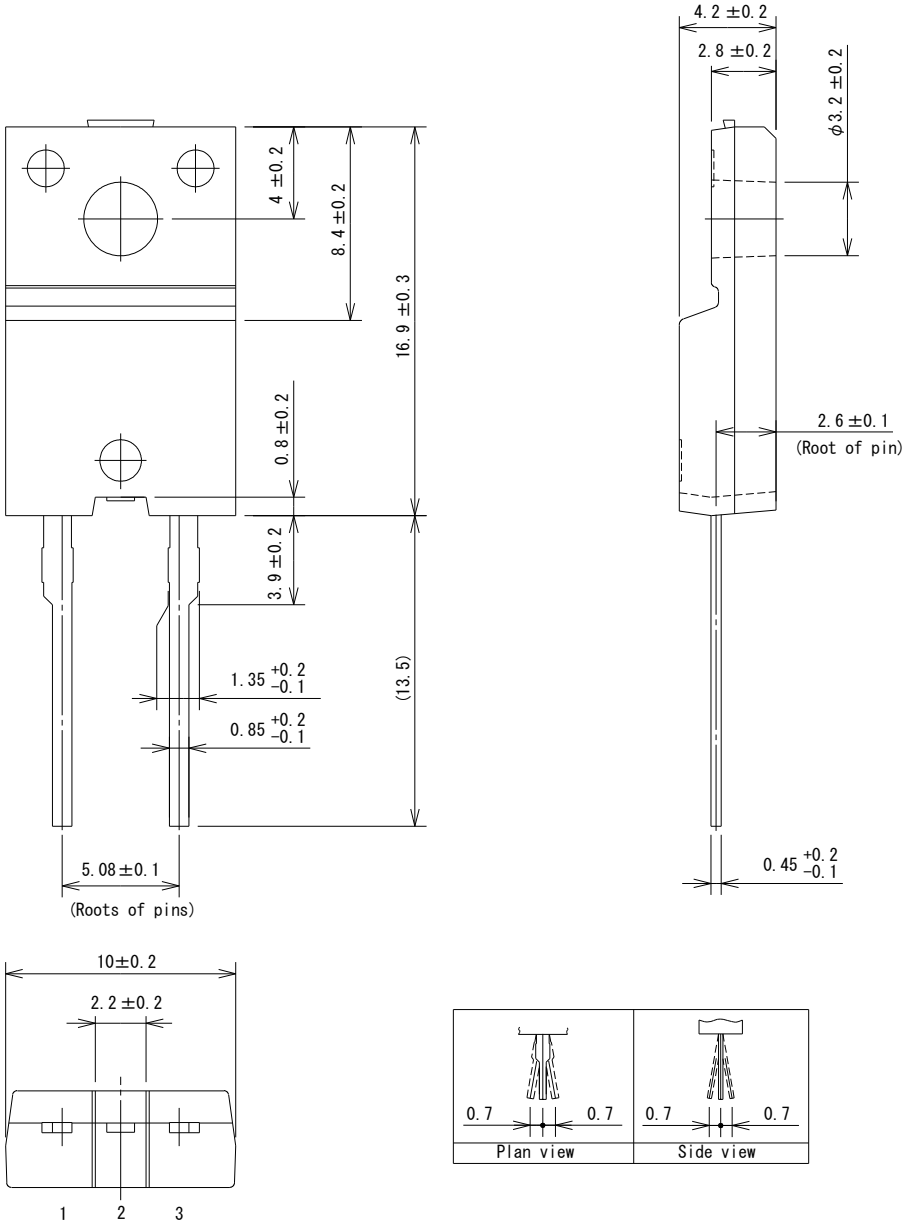


Figure 4. V_R vs. I_R Typical Characteristics

Physical Dimensions

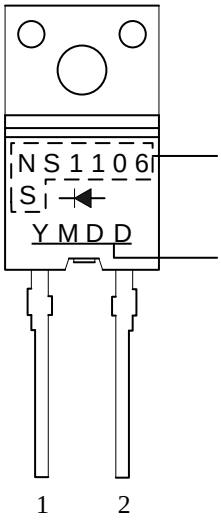
● **TO220F-3L**



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 ± 5 °C / 10 ± 1 s, 2 times
  Soldering Iron: 380 ± 10 °C / 3.5 ± 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



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)

Table 1. Specific Device Code

Specific Device Code	Part Number
NS1106S	FMNS-1106S

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DSGN-AEZ-16003