

$V_{RM} = 600\text{ V}$, $I_{F(AV)} = 10\text{ A}$, $t_{rr} = 100\text{ ns}$
Fast Recovery Diode
FMNS-1106S

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

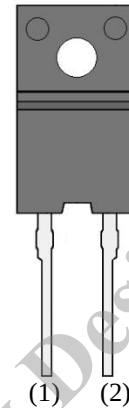
- V_{RM} ----- 600 V
- $I_{F(AV)}$ ----- 10 A
- V_F ----- 1.3 V
- t_{rr1} ----- 100 ns
- Bare lead frame: Pb-free (RoHS compliant)

Applications

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

Package

TO220F-2L



(1) Cathode
(2) Anode

Not to scale

Absolute Maximum RatingsUnless 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	$I_{\text{F(AV)}}$	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	$1\text{ ms} \leq t \leq 10\text{ ms}$
Junction Temperature	T_J	-40 to 150	$^{\circ}\text{C}$	
Storage Temperature	T_{STG}	-40 to 150	$^{\circ}\text{C}$	

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	$T_J = 25\text{ }^{\circ}\text{C}$, $I_F = 10\text{ A}$	—	—	1.3	V
		$T_J = 100\text{ }^{\circ}\text{C}$, $I_F = 10\text{ A}$	—	1.1	—	V
Reverse Leakage Current	I_R	$V_R = V_{\text{RM}}$	—	—	100	μA
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{\text{RM}}$, $T_J = 150\text{ }^{\circ}\text{C}$	—	—	10	mA
Reverse Recovery Time	t_{rr1}	$I_F = I_{\text{RP}} = 100\text{ mA}$ 90% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	100	ns
	t_{rr2}	$I_F = 100\text{ mA}$, $I_{\text{RP}} = 200\text{ mA}$, 75% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	50	ns
Thermal Resistance ⁽¹⁾	$R_{\text{th(J-C)}}$		—	—	4.0	$^{\circ}\text{C/W}$

⁽¹⁾ $R_{\text{th(J-C)}}$ 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

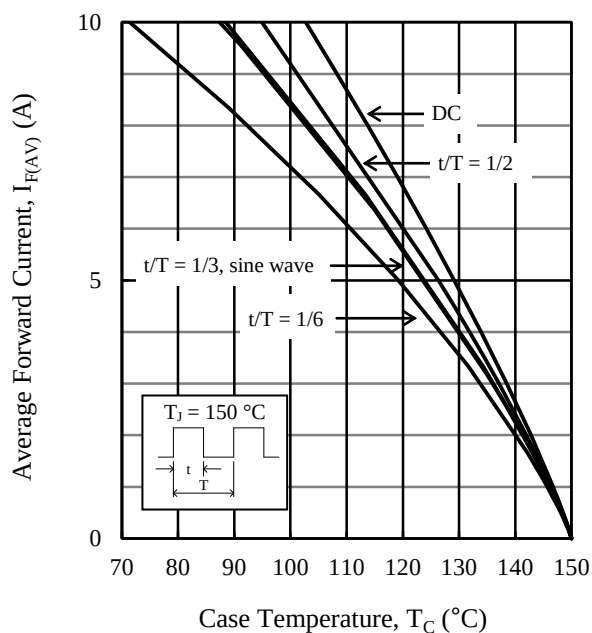


Figure 1. $I_{F(AV)}$ vs. T_C Typical Characteristics
($V_R = 0$ V)

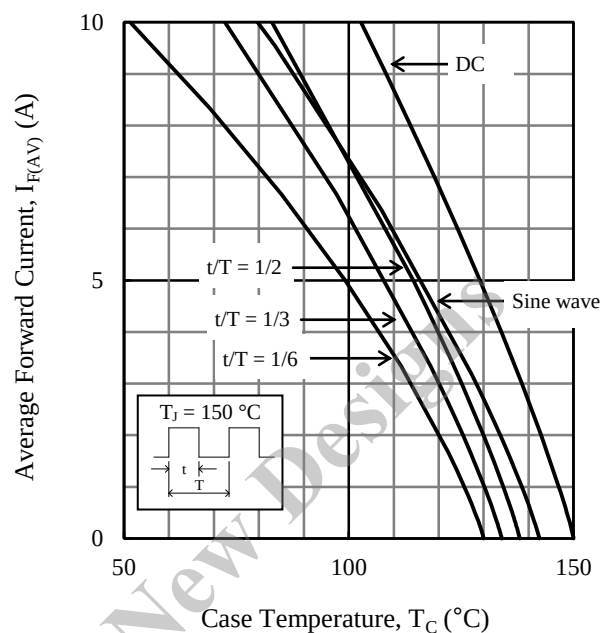


Figure 2. $I_{F(AV)}$ vs. T_C Typical Characteristics
($V_R = 600$ V)

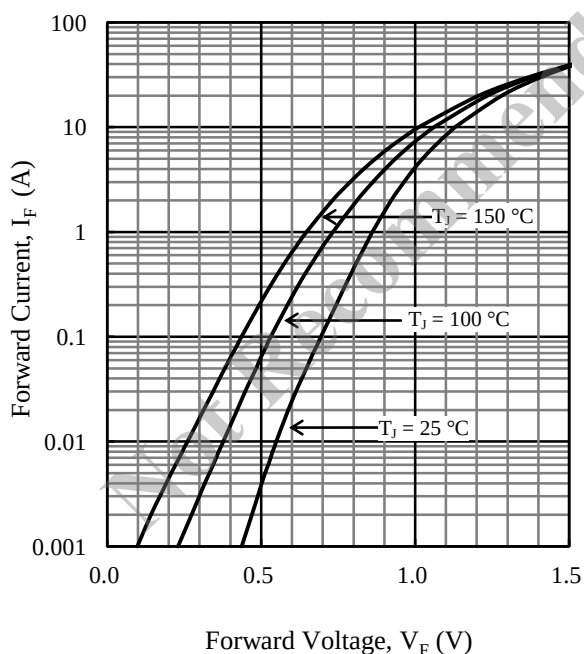


Figure 3. V_F vs. I_F Typical Characteristics

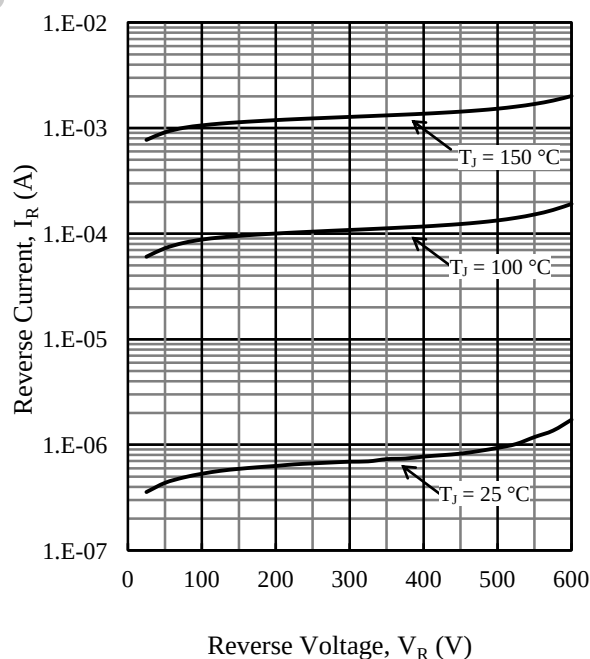
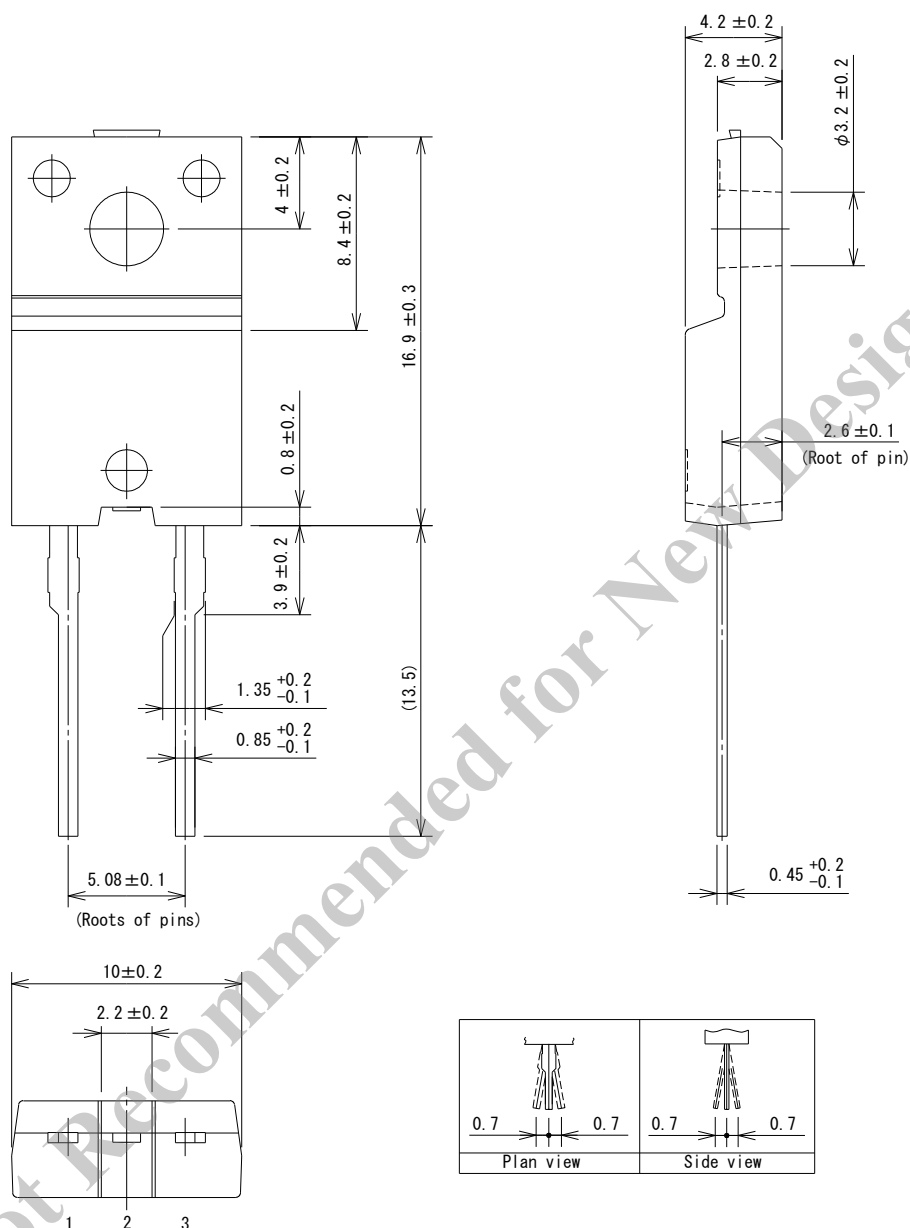


Figure 4. V_R vs. I_R Typical Characteristics

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

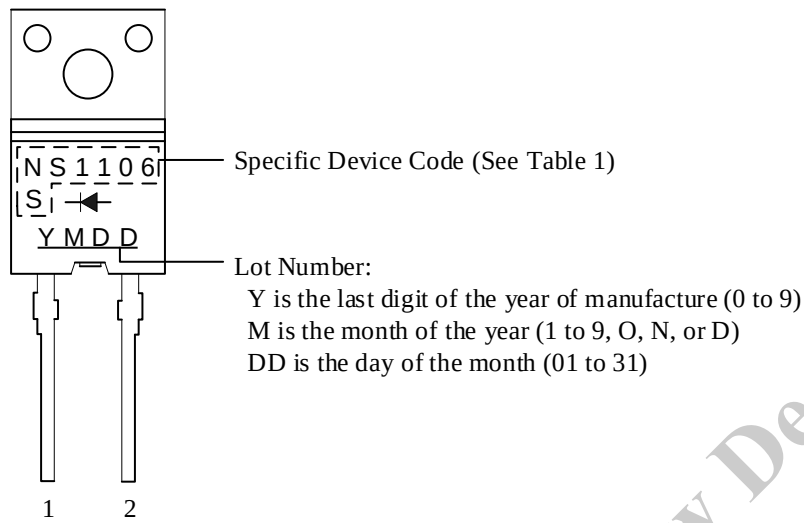


Table 1. Specific Device Code

Specific Device Code	Part Number
NS1106S	FMNS-1106S

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