

**$V_{RM} = 800\text{ V}$ ,  $I_{F(AV)} = 6.0\text{ A}$ ,  $t_{rr} = 70\text{ ns}$**   
**Fast Recovery Diode**  
**FMC-28U**

### Description

The FMC-28U is a high voltage fast recovery diode of 800 V / 6.0 A. The maximum  $t_{rr}$  of 70 ns is realized by optimizing a life-time control.

### Features

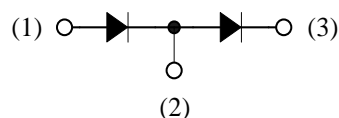
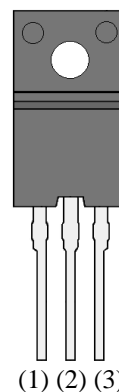
- $V_{RM}$ ----- 800 V
- $I_{F(AV)}$ ----- 6.0 A
- $V_F$ ----- 3.0 V
- $t_{rr1}$ ----- 70 ns
- Bare lead frame: Pb-free (RoHS compliant)

### Applications

- High Voltage Rectification Circuit  
(PFC Circuit, Bridge Circuit, etc.)
- Snubber Diode  
(Flyback Converter, etc.)

### Package

TO220F-3L



- (1) Anode  
(2) Anode, Cathode  
(3) Cathode

Not to scale

## FMC-28U

### Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage <sup>(1)</sup>	$V_{RSM}$	800	V	
Repetitive Reverse Voltage <sup>(1)</sup>	$V_{RM}$	800	V	
Average Forward Current	$I_{F(AV)}$	6.0	A	See Figure 1 and Figure 2
Surge Forward Current <sup>(1)</sup>	$I_{FSM}$	50	A	Half cycle sine wave, positive side, 10 ms, 1 shot
$I^2t$ Limiting Value <sup>(1)</sup>	$I^2t$	12.5	$A^2s$	$1\text{ ms} \leq t \leq 10\text{ ms}$
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 <sup>(1)</sup>	$V_F$	$T_J = 25\text{ }^{\circ}\text{C}$ , $I_F = 3.0\text{ A}$	—	—	3.0	V
		$T_J = 100\text{ }^{\circ}\text{C}$ , $I_F = 3.0\text{ A}$	—	1.8	—	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>	$H \cdot I_R$	$V_R = V_{RM}$ , $T_J = 150\text{ }^{\circ}\text{C}$	—	—	500	$\mu\text{A}$
Reverse Recovery Time <sup>(1)</sup>	$t_{rr1}$	$I_F = I_{RP} = 500\text{ mA}$ 90% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	70	ns
	$t_{rr2}$	$I_F = 500\text{ mA}$ , $I_{RP} = 1000\text{ mA}$ , 75% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	35	ns
Thermal Resistance <sup>(2)</sup>	$R_{th(J-C)}$		—	—	4.0	$^{\circ}\text{C/W}$

<sup>(1)</sup> Specifies a value per chip; the FMC-28U 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

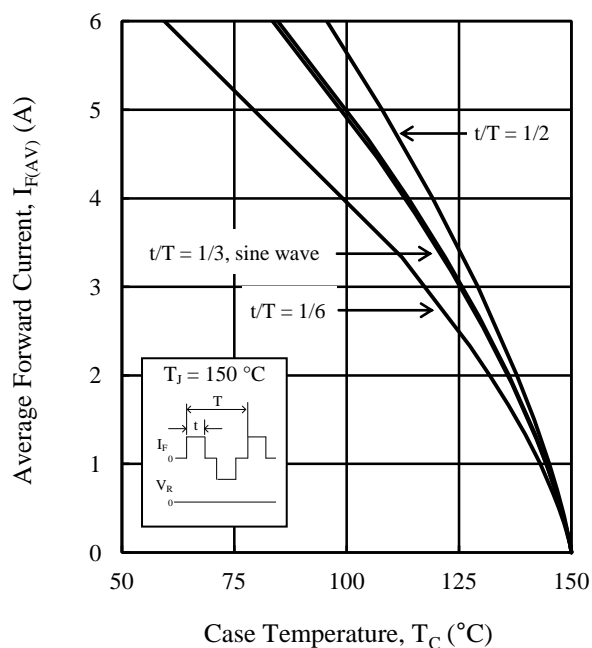


Figure 1.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 0$  V)

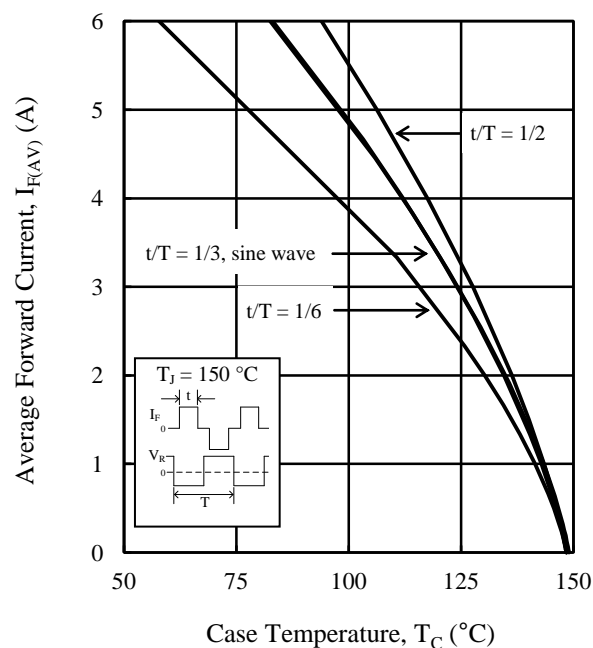


Figure 2.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 800$  V)

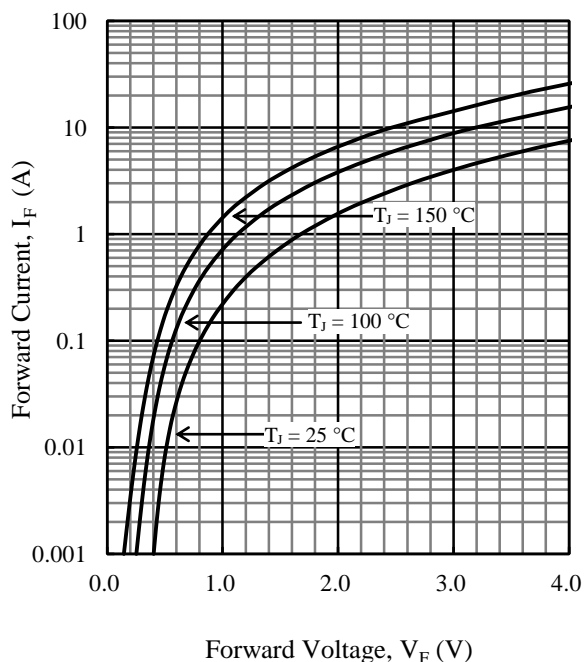


Figure 3.  $V_F$  vs.  $I_F$  Typical Characteristics

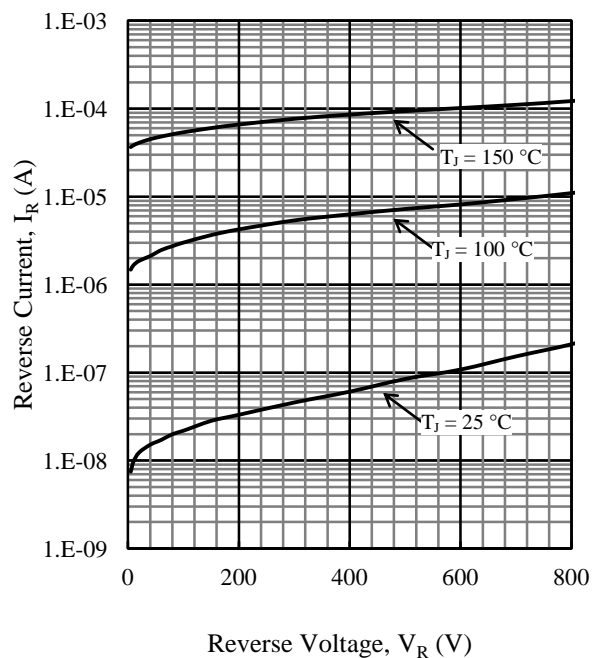
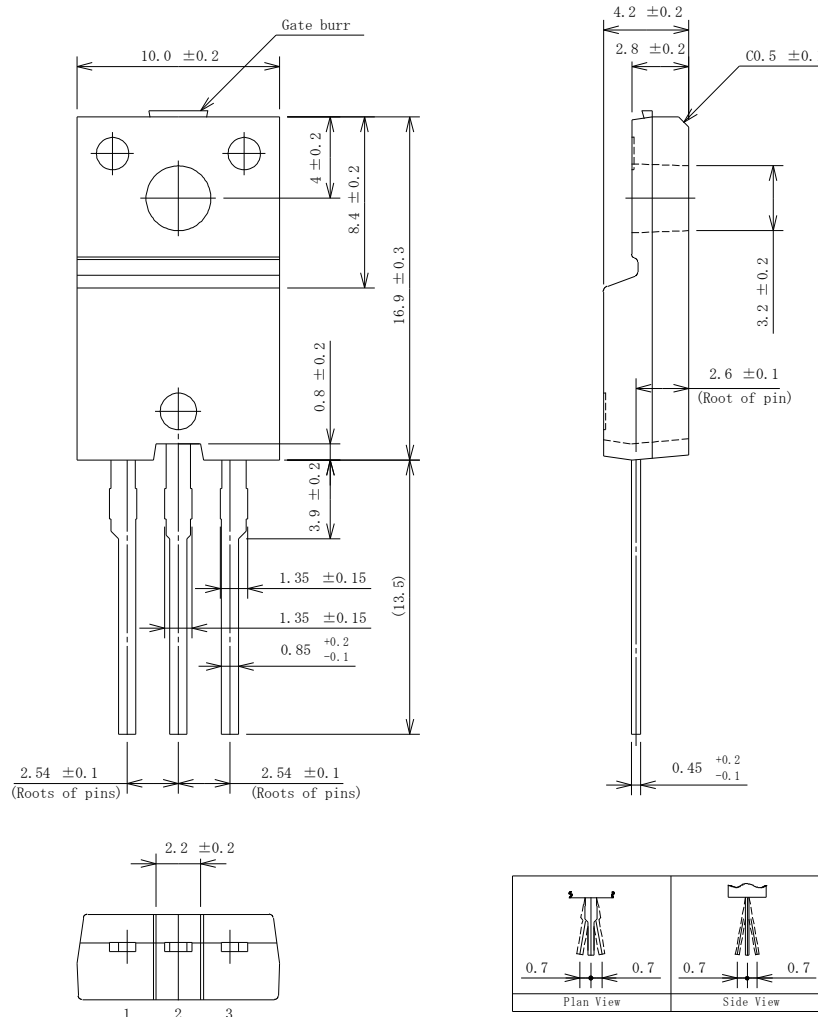


Figure 4.  $V_R$  vs.  $I_R$  Typical Characteristics

# 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:  $260 \pm 5 \text{ }^{\circ}\text{C} / 10 \pm 1 \text{ s}, 2 \text{ times}$   
 Soldering Iron:  $380 \pm 10 \text{ }^{\circ}\text{C} / 3.5 \pm 0.5 \text{ s}, 1 \text{ time}$  (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

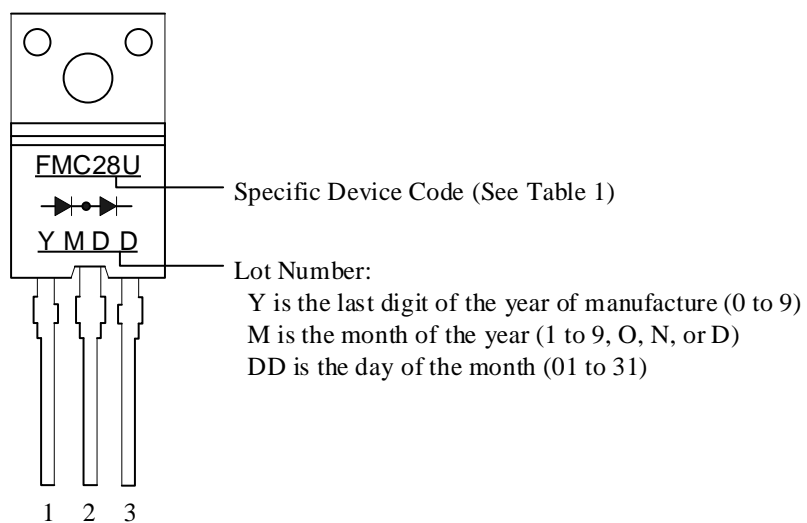


Table 1. Specific Device Code

Specific Device Code	Part Number
FMC28U	FMC-28U

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