

$V_{RM} = 1600\text{ V}$, $I_{F(AV)} = 3.0\text{ A}$, $t_{rr} = 70\text{ ns}$
Fast Recovery Diode
FMC-28UA

Description

The FMC-28UA is a high voltage fast recovery diode of 1600 V / 3.0 A. The maximum t_{rr} of 70 ns is realized by optimizing a life-time control.

Features

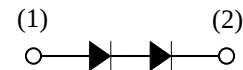
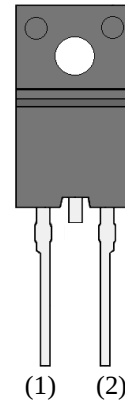
- V_{RM} -----1600 V
- $I_{F(AV)}$ -----3.0 A
- V_F -----6.0 V
- t_{rr1} -----70 ns
- Bare lead frame: Pb-free (RoHS compliant)

Applications

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

Package

TO220F-2L



(1) Anode
(2) Cathode

Not to scale

Absolute Maximum Ratings

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

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage	V_{RSM}	1600	V	
Repetitive Reverse Voltage	V_{RM}	1600	V	
Average Forward Current	$I_{\text{F(AV)}}$	3.0	A	See Figure 1 and Figure 2
Surge Forward Current	I_{FSM}	50	A	Half cycle sine wave, positive side, 10 ms, 1 shot
I^2t Limiting Value	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	V_F	$T_J = 25\text{ }^{\circ}\text{C}$, $I_F = 3.0\text{ A}$	—	—	6.0	V
		$T_J = 100\text{ }^{\circ}\text{C}$, $I_F = 3.0\text{ A}$	—	3.6	—	V
Reverse Leakage Current	I_R	$V_R = V_{\text{RM}}$	—	—	100	μA
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{\text{RM}}$, $T_J = 150\text{ }^{\circ}\text{C}$	—	—	500	μA
Reverse Recovery Time	t_{rr1}	$I_F = I_{\text{RP}} = 500\text{ mA}$ 90% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	70	ns
	t_{rr2}	$I_F = 500\text{ mA}$, $I_{\text{RP}} = 1000\text{ mA}$, 75% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	35	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

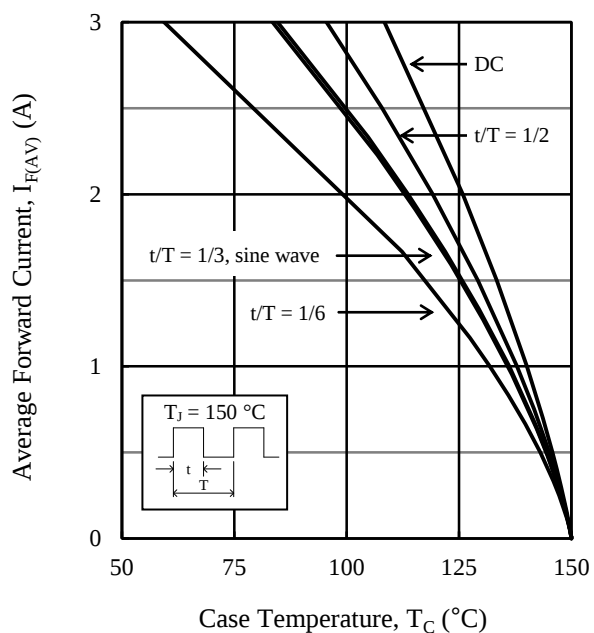


Figure 1. $I_{F(AV)}$ vs. T_C Typical Characteristics
($V_R = 0$ V)

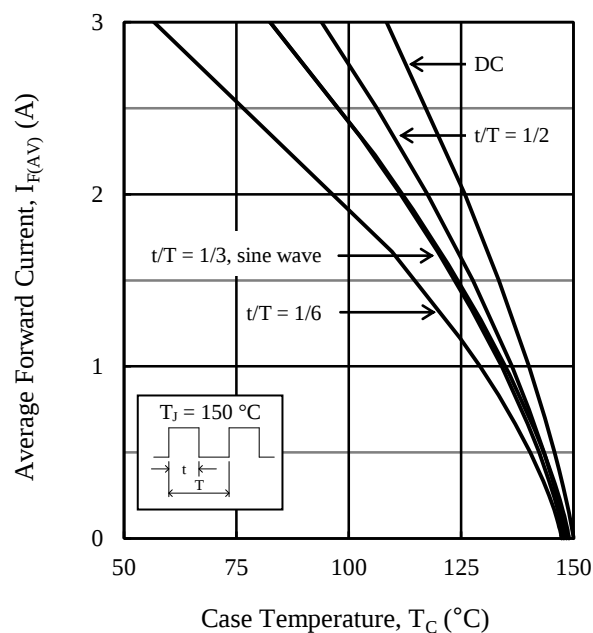


Figure 2. $I_{F(AV)}$ vs. T_C Typical Characteristics
($V_R = 1600$ V)

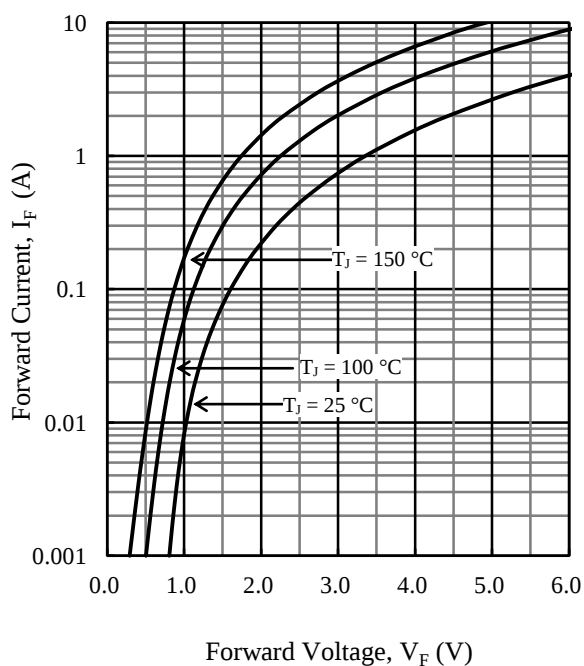


Figure 3. V_F vs. I_F Typical Characteristics

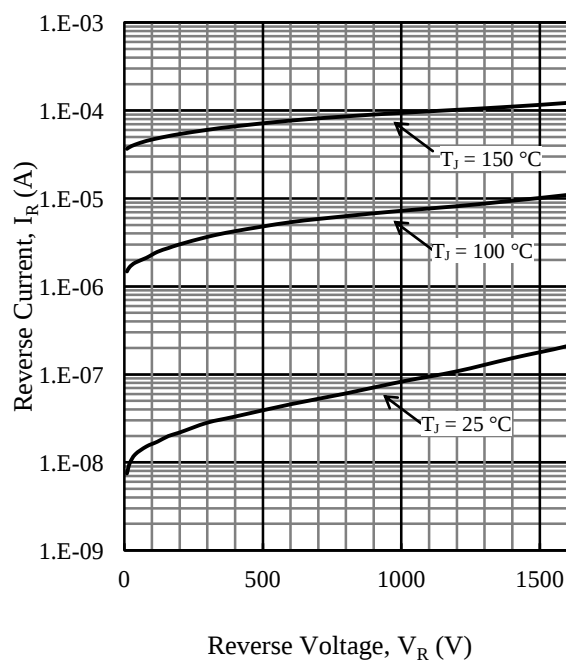


Figure 4. V_R vs. I_R Typical Characteristics

Technical drawing of a mechanical part, showing front, side, and plan views with dimensions.

Front View:

- Overall height: 16.9 ± 0.3
- Distance from top to first step: 8.4 ± 0.2
- Distance from first step to second step: 4 ± 0.2
- Distance from second step to third step: 0.8 ± 0.2
- Distance from third step to bottom: 3.9 ± 0.2
- Distance from left pin root to right pin root: 5.08 ± 0.1 (Roots of pins)
- Distance from left pin root to centerline: $1.35^{+0.2}_{-0.1}$
- Distance from centerline to right pin root: $0.85^{+0.2}_{-0.1}$
- Overall width: 10 ± 0.2
- Distance from centerline to pin root: 2.2 ± 0.2

Side View:

- Overall height: 4.2 ± 0.2
- Distance from top to first step: 2.8 ± 0.2
- Distance from first step to second step: $\phi 3.2 \pm 0.2$
- Distance from second step to bottom: 2.6 ± 0.1 (Root of pin)
- Distance from left pin root to right pin root: $0.45^{+0.2}_{-0.1}$

Plan View:

- Overall width: 10 ± 0.2
- Distance from centerline to pin root: 2.2 ± 0.2
- Distance from pin root to edge: 0.7

Sectional Views:

- Plan view:** Shows the top view with dimensions 0.7 and 0.7 from the centerline to the pin roots.
- Side view:** Shows the side view with dimensions 0.7 and 0.7 from the centerline to the pin roots.

- 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

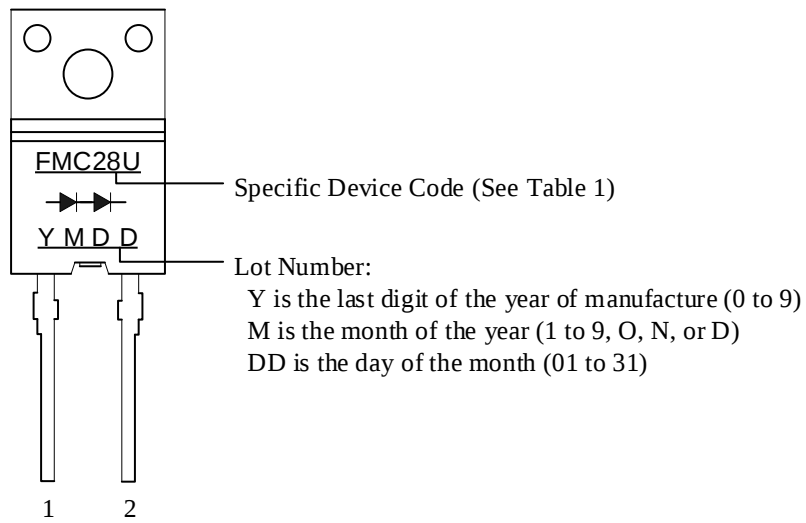


Table 1. Specific Device Code

Specific Device Code	Part Number
FMC28U	FMC-28UA

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DSGN-AEZ-16003