## Absolute Maximum Ratings

Unless otherwise specified, $T_A$ = 25 °C.

| Parameter | Symbol | Conditions | Rating | Unit |
|---|---|---|---|---|
| Nonrepetitive Peak Reverse Voltage | $V_{RSM}$ | | 400 | V |
| Repetitive Peak Reverse Voltage | $V_{RM}$ | | 400 | V |
| Average Forward Current | $I_{F(AV)}$ | See Figure 1 and Figure 2 | 10 | A |
| Surge Forward Current | $I_{FSM}$ | Half cycle sine wave, positive side, 10 ms, 1 shot | 100 | A |
| $I^2t$ Limiting Value | $I^2t$ | 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 | $V_F$ | $T_J$ = 25 °C, $I_F$ = 10 A | — | — | 1.50 | V |
| | | $T_J$ = 100 °C, $I_F$ = 10 A | — | 1.16 | — | 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 | — | — | 30 | mA |
| Reverse Recovery Time | $t_{rr}$ | $I_F = I_{RP}$ = 500 mA, 90% recovery point, $T_J$ = 25 °C | — | — | 25 | ns |
| Thermal Resistance[(1)] | $R_{th(J-C)}$ | | — | — | 4.0 | °C/W |

## Mechanical Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Heatsink Mounting Screw Torque | | 0.490 | — | 0.686 | N·m |

(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

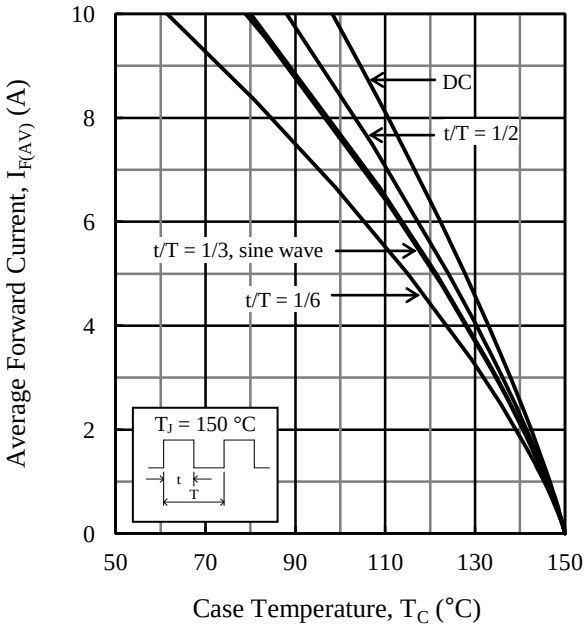



Figure 1. Typical Characteristics: $I_{F(AV)}$ vs. $T_C$ ($V_R$ = 0 V)

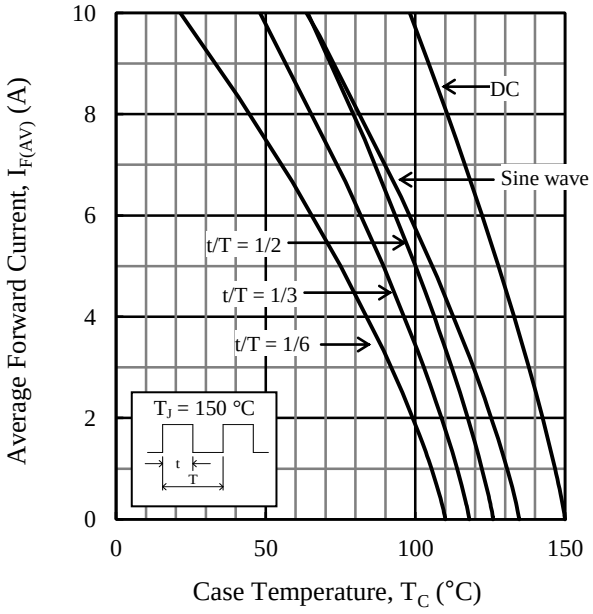



Figure 2. Typical Characteristics: $I_{F(AV)}$ vs. $T_C$ ($V_R$ = 400 V)

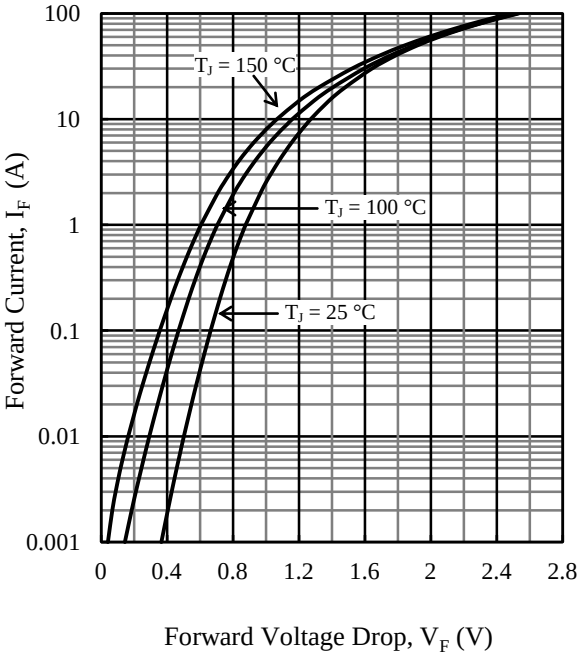



Figure 3. Typical Characteristics: $V_F$ vs. $I_F$

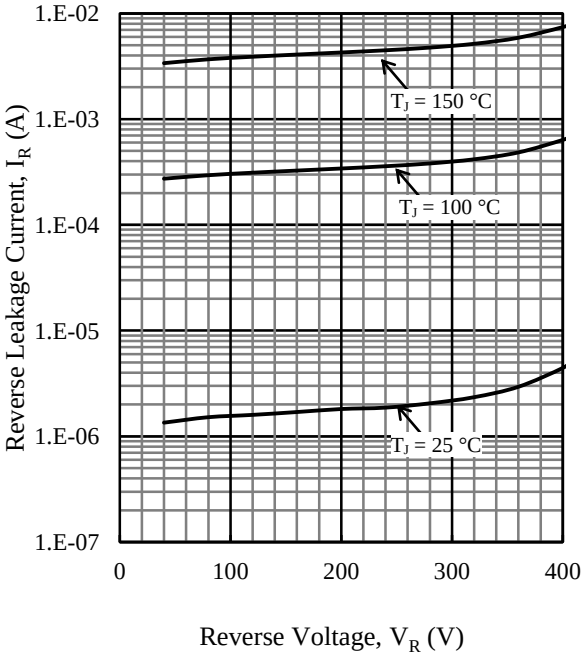
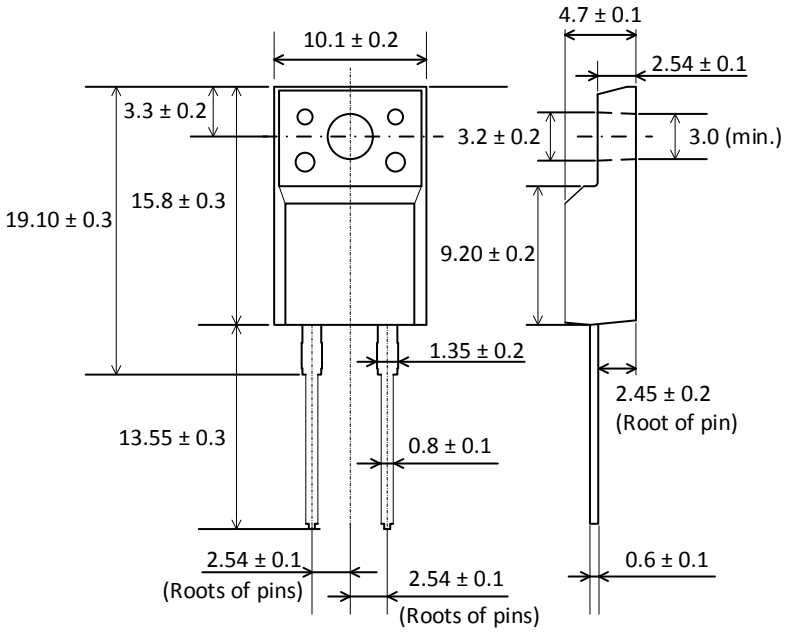



Figure 4. Typical Characteristics: $V_R$ vs. $I_R$

## Physical Dimensions

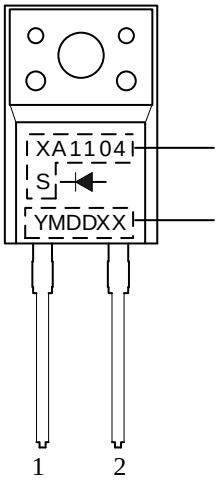
● **TO220F-2L**




**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: 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.

## 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 |
|---|---|
| XA1104S | FMXA-1104S |

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