

## Absolute Maximum Ratings

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

| Parameter                                         | Symbol      | Conditions                                            | Rating     | Unit                 |
|---------------------------------------------------|-------------|-------------------------------------------------------|------------|----------------------|
| Nonrepetitive Peak Reverse Voltage <sup>(1)</sup> | $V_{RSM}$   |                                                       | 200        | V                    |
| Repetitive Peak Reverse Voltage <sup>(1)</sup>    | $V_{RM}$    |                                                       | 200        | V                    |
| Average Forward Current                           | $I_{F(AV)}$ | See Figure 1 and Figure 2                             | 20         | A                    |
| Surge Forward Current <sup>(1)</sup>              | $I_{FSM}$   | Half cycle sine wave,<br>positive side, 10 ms, 1 shot | 150        | A                    |
| $I^2t$ Limiting Value <sup>(1)</sup>              | $I^2t$      | $1\text{ ms} \leq t \leq 10\text{ ms}$                | 112.5      | $\text{A}^2\text{s}$ |
| 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>                           | $V_F$         | $T_J = 25\text{ }^{\circ}\text{C}$ , $I_F = 10\text{ A}$                                                     | —    | —    | 0.98 | V                    |
|                                                               |               | $T_J = 100\text{ }^{\circ}\text{C}$ , $I_F = 10\text{ A}$                                                    | —    | 0.80 | —    | V                    |
| Reverse Leakage Current <sup>(1)</sup>                        | $I_R$         | $V_R = V_{RM}$                                                                                               | —    | —    | 10   | $\mu\text{A}$        |
| Reverse Leakage Current under High Temperature <sup>(1)</sup> | $H \cdot I_R$ | $V_R = V_{RM}$ , $T_J = 150\text{ }^{\circ}\text{C}$                                                         | —    | —    | 400  | $\mu\text{A}$        |
| Reverse Recovery Time <sup>(1)</sup>                          | $t_{rr1}$     | $I_F = I_{RP} = 500\text{ mA}$ ,<br>90% recovery point,<br>$T_J = 25\text{ }^{\circ}\text{C}$                | —    | —    | 40   | ns                   |
|                                                               | $t_{rr2}$     | $I_F = 500\text{ mA}$ , $I_{RP} = 1\text{ A}$ ,<br>75% recovery point,<br>$T_J = 25\text{ }^{\circ}\text{C}$ | —    | —    | 30   | ns                   |
| Thermal Resistance <sup>(2)</sup>                             | $R_{th(J-C)}$ |                                                                                                              | —    | —    | 2.0  | $^{\circ}\text{C/W}$ |

## Mechanical Characteristics

| Parameter                      | Conditions | Min.  | Typ. | Max.  | Unit                    |
|--------------------------------|------------|-------|------|-------|-------------------------|
| Heatsink Mounting Screw Torque |            | 0.686 | —    | 0.882 | $\text{N}\cdot\text{m}$ |

<sup>(1)</sup> Specifies a value per chip; the FML-4202S 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

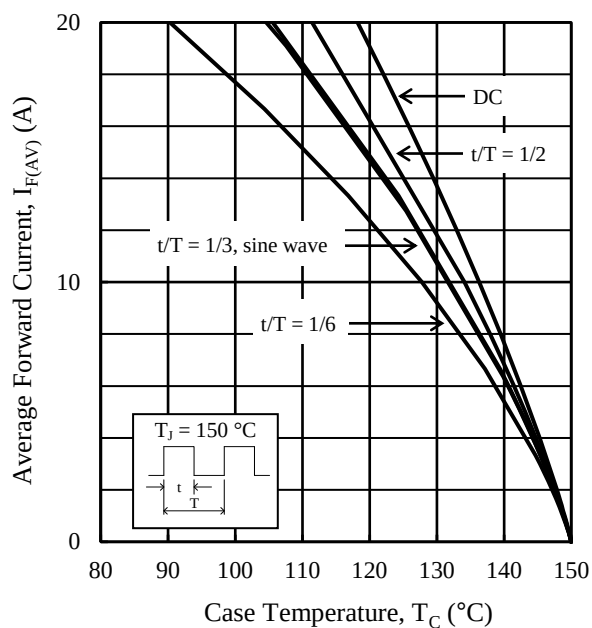


Figure 1. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_C$   
( $V_R = 0$  V)

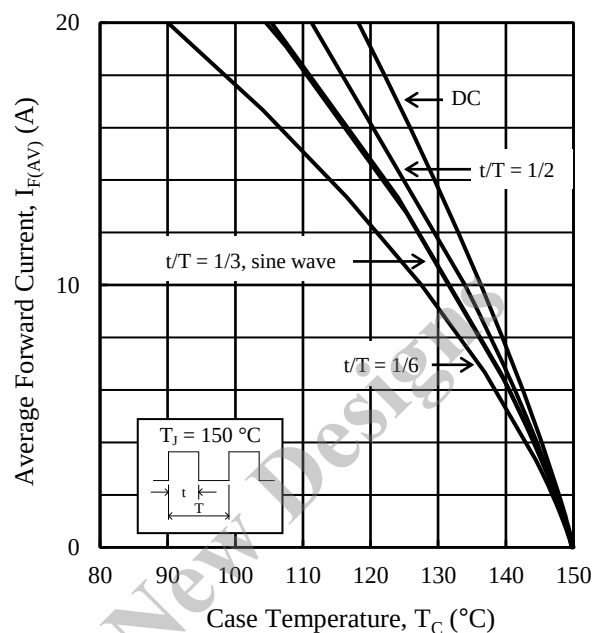


Figure 2. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_C$   
( $V_R = 200$  V)

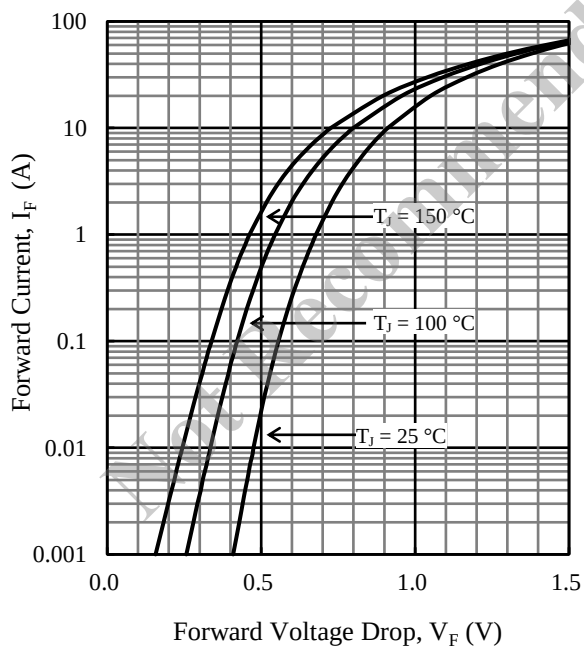


Figure 3. Typical Characteristics:  $I_F$  vs.  $V_F$

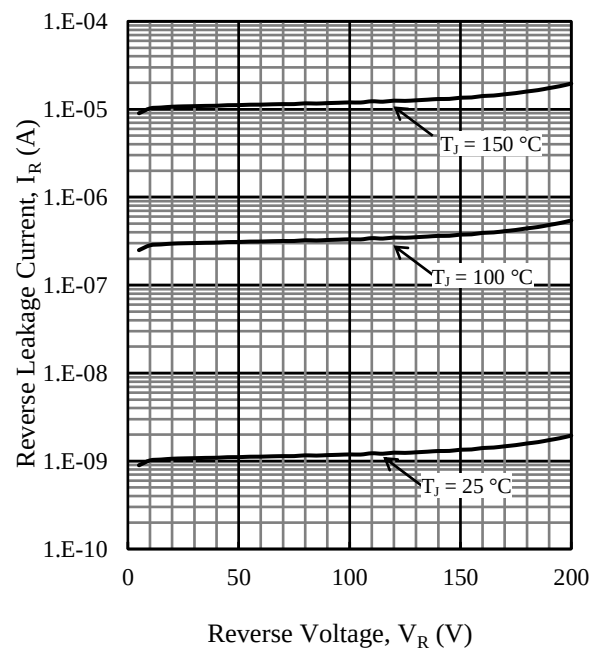
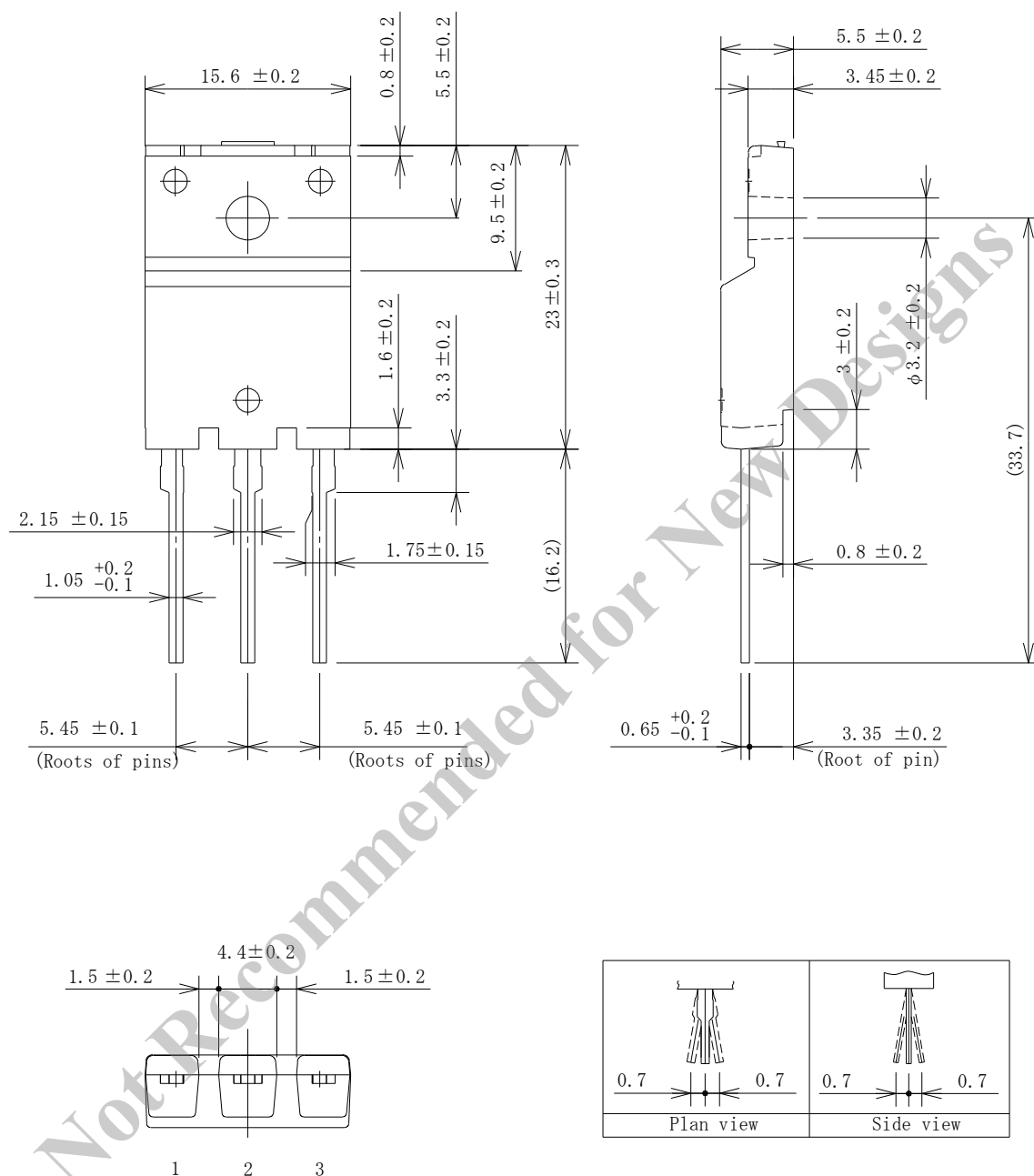


Figure 4. Typical Characteristics:  $I_R$  vs.  $V_R$

## Physical Dimensions

## • TO3PF-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:  $260 \pm 5$  °C /  $10 \pm 1$  s, 2 times  
 Soldering Iron:  $380 \pm 10$  °C /  $3.5 \pm 0.5$  s, 1 time  
 Soldering should be at a distance of at least 1.5 mm from the body of the product.

Marking Diagram

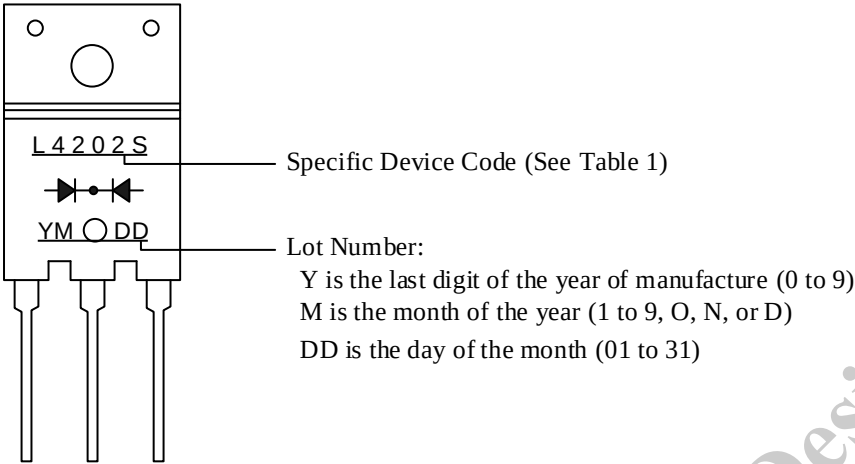


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| L4202S               | FML-4202S   |

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