

$V_{RM} = 200\text{ V}$ ,  $I_{F(AV)} = 20\text{ A}$ ,  $t_{rr} = 40\text{ ns}$   
**Fast Recovery Diode**  
**FML-4202S**

**Description**

The FML-4202S is a fast recovery diode of 200 V / 20 A. The maximum  $t_{rr}$  of 40 ns is realized by optimizing a life-time control.

**Package**

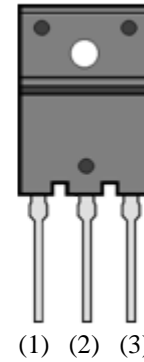
TO3PF-3L

**Features**

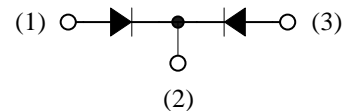
- $V_{RM}$ ----- 200 V
- $I_{F(AV)}$ ----- 20 A
- $V_F$ ----- 0.98 V
- $t_{rr1}$ ----- 40 ns
- Bare lead frame: Pb-free (RoHS compliant)

**Applications**

- Secondary Side Rectifier Diode  
(Flyback Converter, LLC Converter, etc.)
- Freewheel Diode  
(Offline Buck and Buck-boost Converter)



Not to scale



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

## FML-4202S

### 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>	$V_{RSM}$	200	V	
Repetitive Reverse Voltage <sup>(1)</sup>	$V_{RM}$	200	V	
Average Forward Current	$I_{F(AV)}$	20	A	See Figure 1 and Figure 2
Surge Forward Current <sup>(1)</sup>	$I_{FSM}$	150	A	Half cycle sine wave, positive side, 10 ms, 1 shot
$I^2t$ Limiting Value <sup>(1)</sup>	$I^2t$	112.5	$A^2s$	$1\text{ ms} \leq t \leq 10\text{ ms}$
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>	$V_F$	$T_J = 25\text{ }^\circ\text{C}$ , $I_F = 10\text{ A}$	—	—	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>	$t_{rr1}$	$I_F = I_{RP} = 500\text{ mA}$ 90% recovery point, $T_J = 25\text{ }^\circ\text{C}$	—	—	40	ns
	$t_{rr2}$	$I_F = 500\text{ mA}$ , $I_{RP} = 1\text{ A}$ , 75% recovery point, $T_J = 25\text{ }^\circ\text{C}$	—	—	30	ns
Thermal Resistance <sup>(2)</sup>	$R_{th(J-C)}$		—	—	2.0	$^\circ\text{C/W}$

<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

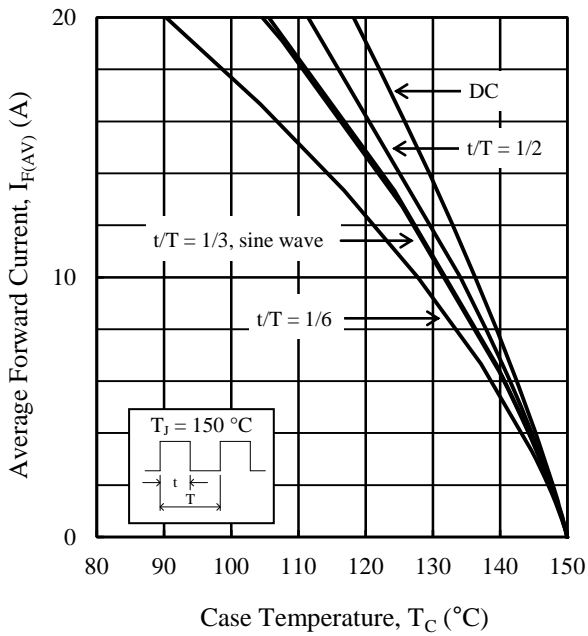


Figure 1.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 0$  V)

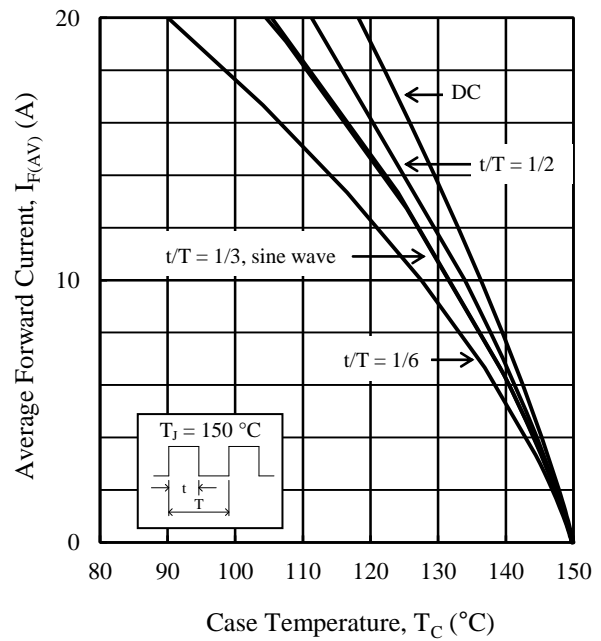


Figure 2.  $I_{F(AV)}$  vs.  $T_C$  Typical Characteristics ( $V_R = 200$  V)

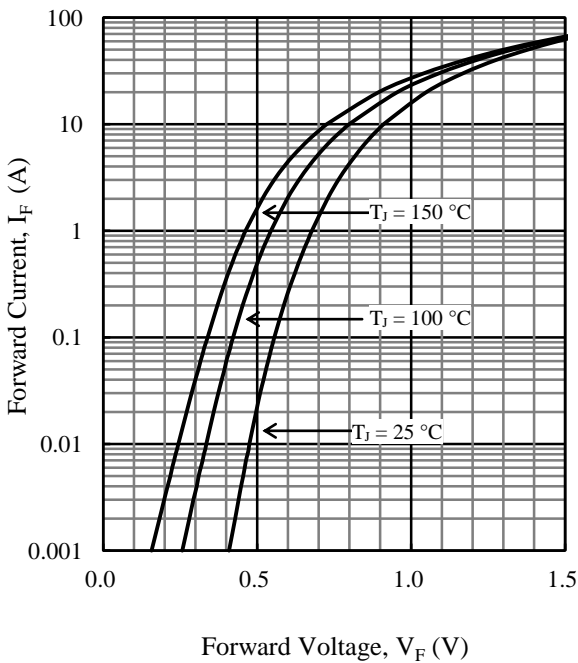


Figure 3.  $V_F$  vs.  $I_F$  Typical Characteristics

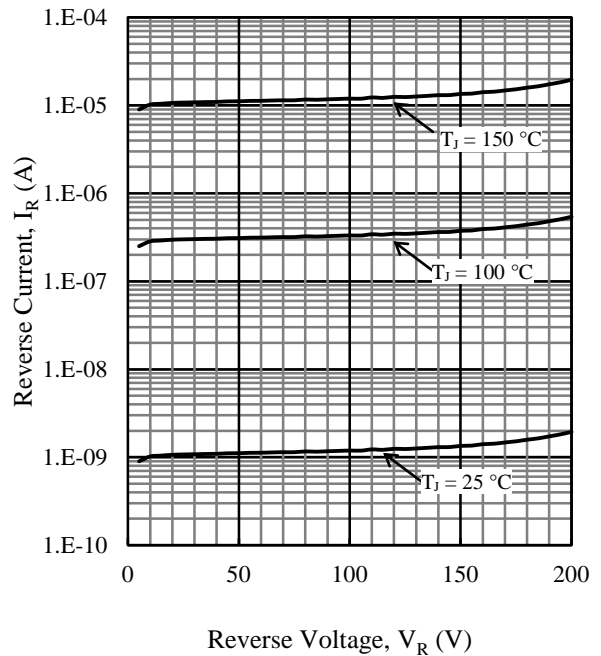
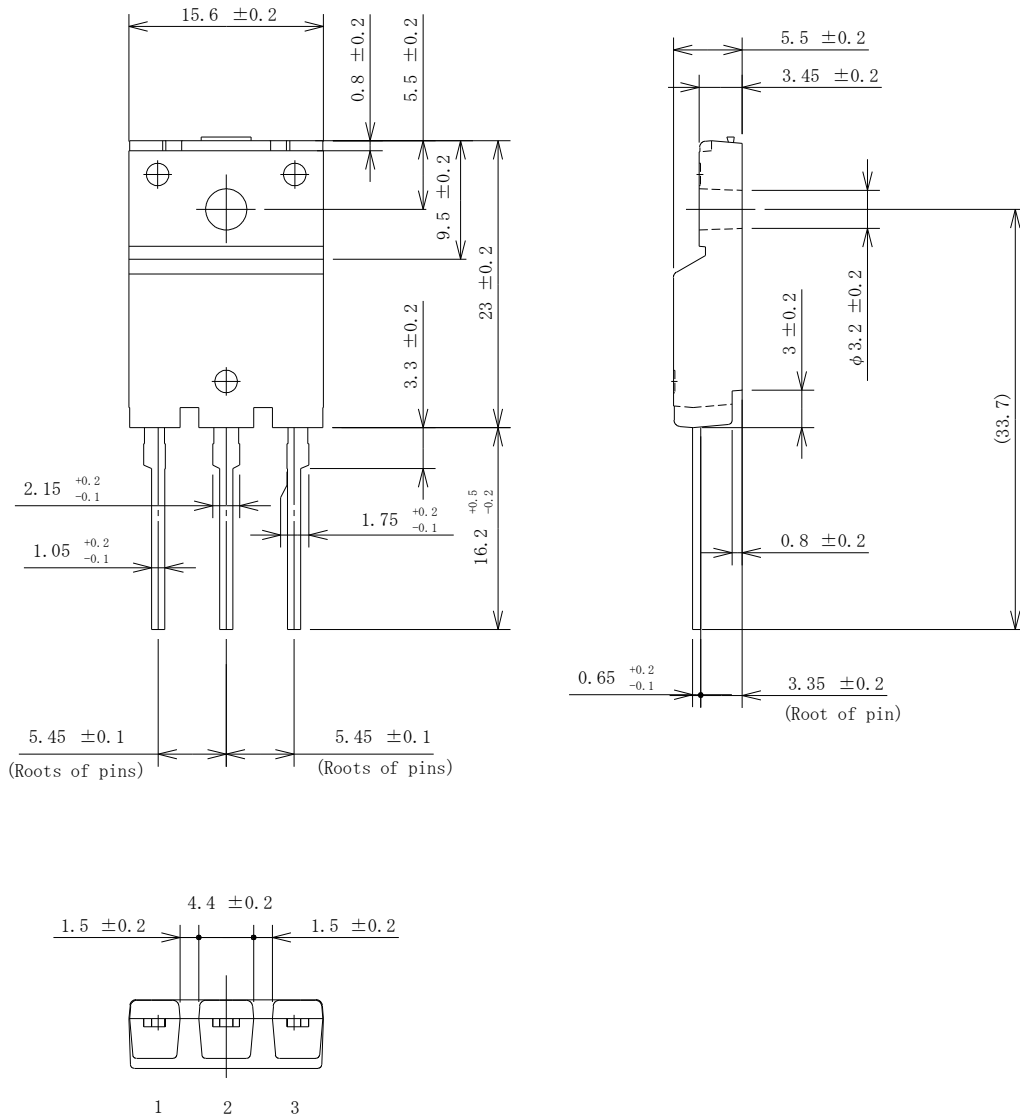


Figure 4.  $V_R$  vs.  $I_R$  Typical Characteristics

Physical Dimensions

• TO3PF-3L



NOTES:

- Dimensions in millimeters
- 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 TO3PFF: 0.686 N·m to 0.882 N·m (7 kgf·cm to 9 kgf·cm)

Marking Diagram

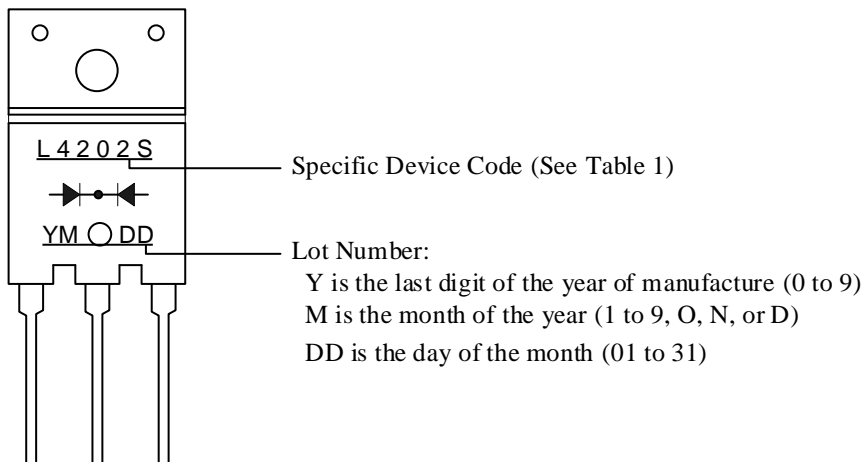


Table 1. Specific Device Code

Specific Device Code	Part Number
L4202S	FML-4202S

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DSGN-AEZ-16003