V_{RM} = 200 V, $I_{F(AV)}$ = 20 A, t_{rr} = 40 ns
Fast Recovery Diode

FML-4202S

Data Sheet

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.

Features

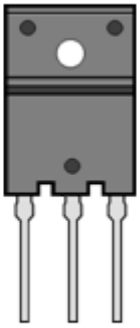
- V_{RM} ---------- 200 V
- $I_{F(AV)}$ ---------- 20 A
- V_F ---------- 0.98 V
- t_{rr1} ---------- 40 ns
- Bare lead frame: Pb-free (RoHS compliant)

Applications

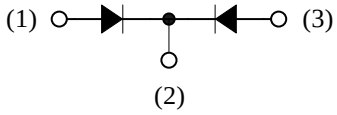
- Secondary Side Rectifier Diode
  (Flyback Converter, LLC Converter, etc.)
- Freewheel Diode
  (Offline Buck and Buck-boost Converter)

Package

TO3PF-3L



Not to scale



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

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Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C

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

[1] Specifies a value per chip; the FML-4202S consists of two chips.

[2] $R_{th\ (J-C)}$ is thermal resistance between junction and the case. The case temperature is measured at the back side near the screw hole.

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Rating and Characteristic Curves

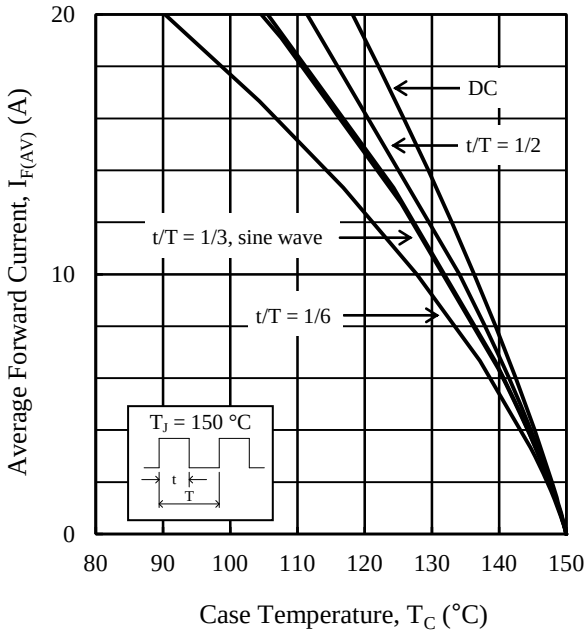

Figure 1. $I_{F(AV)}$ vs. T_C Typical Characteristics (V_R = 0 V)

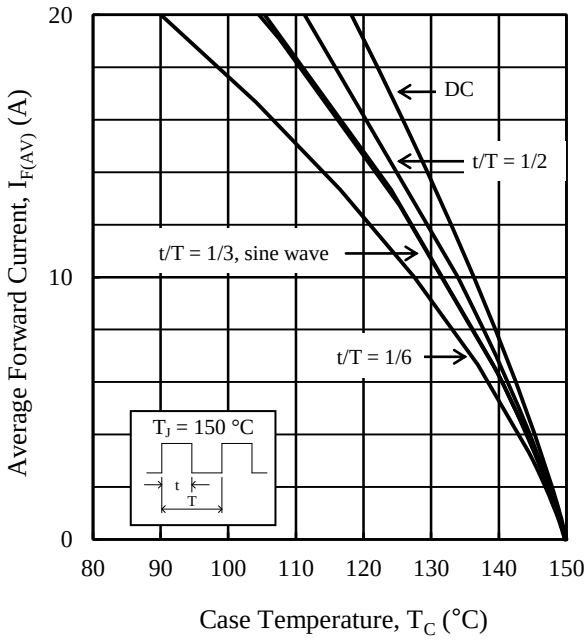

Figure 2. $I_{F(AV)}$ vs. T_C Typical Characteristics (V_R = 200 V)

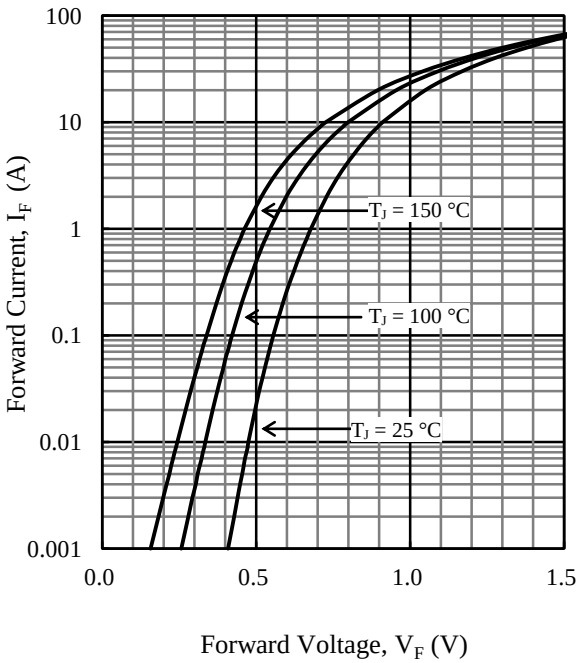

Figure 3. V_F vs. I_F Typical Characteristics

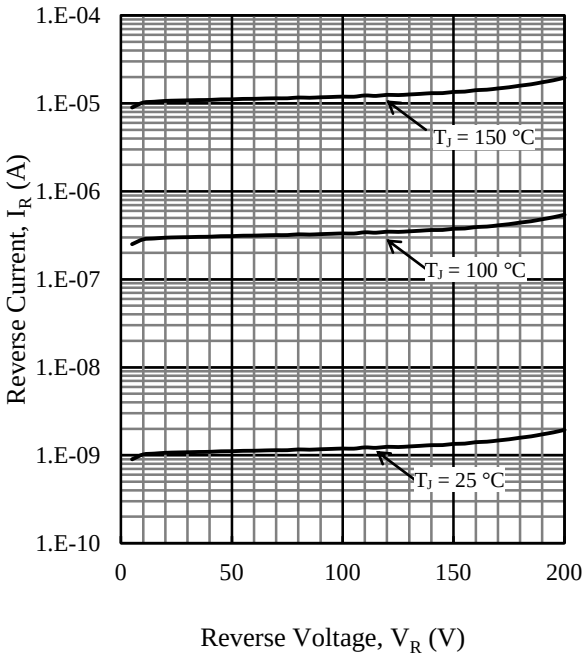

Figure 4. V_R vs. I_R Typical Characteristics

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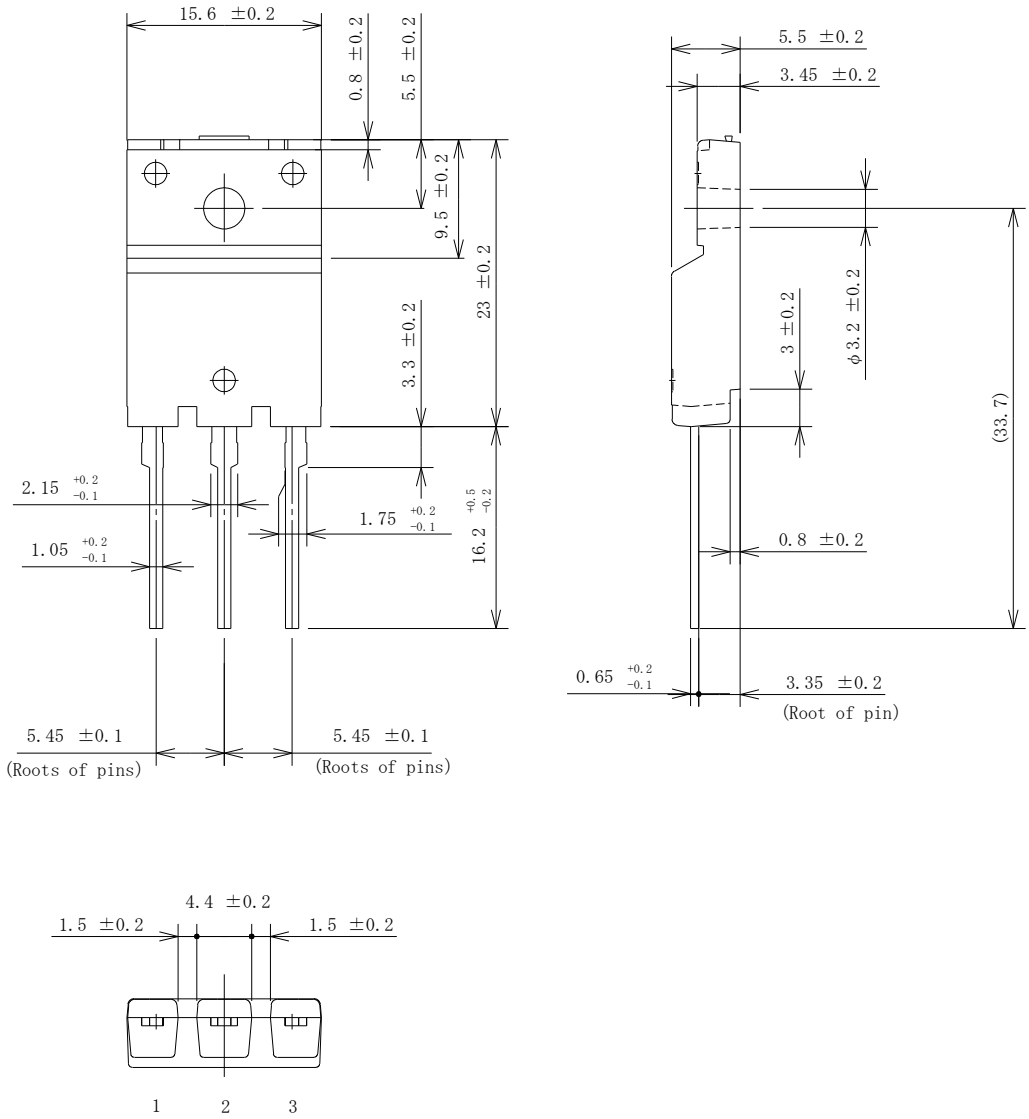
Physical Dimensions

● **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)

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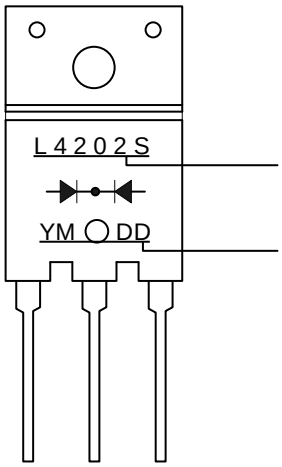
Marking Diagram



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)

Table 1. Specific Device Code

Specific Device Code	Part Number
L4202S	FML-4202S

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