

$V_{RM} = 300\text{ V}$, $I_{F(AV)} = 5.0\text{ A}$, $t_{rr} = 50\text{ ns}$
Fast Recovery Diode
FML-G13S

Description

The FML-G13S is a fast recovery diode of 300 V / 5.0 A. The maximum t_{rr} of 50 ns is realized by optimizing a life-time control.

Features

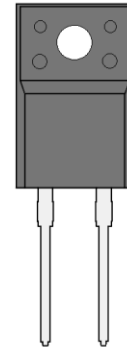
- V_{RM} ----- 300 V
- $I_{F(AV)}$ ----- 5.0 A
- V_F ----- 1.3 V
- t_{rr1} ----- 50 ns
- Bare Leads: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

Applications

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

Package

TO220F-2L



(1) (2)



(1) Cathode
(2) Anode

Not to scale

Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage	V_{RSM}		300	V
Repetitive Peak Reverse Voltage	V_{RM}		300	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 2	5.0	A
Surge Forward Current	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	70	A
I^2t Limiting Value	I^2t	$1\text{ ms} \leq t \leq 10\text{ ms}$	24.5	A^2s
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, $T_A = 25\text{ }^{\circ}\text{C}$.

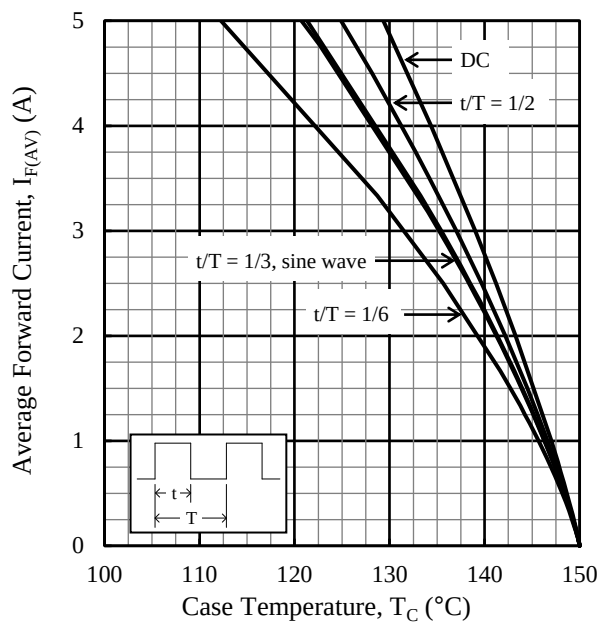
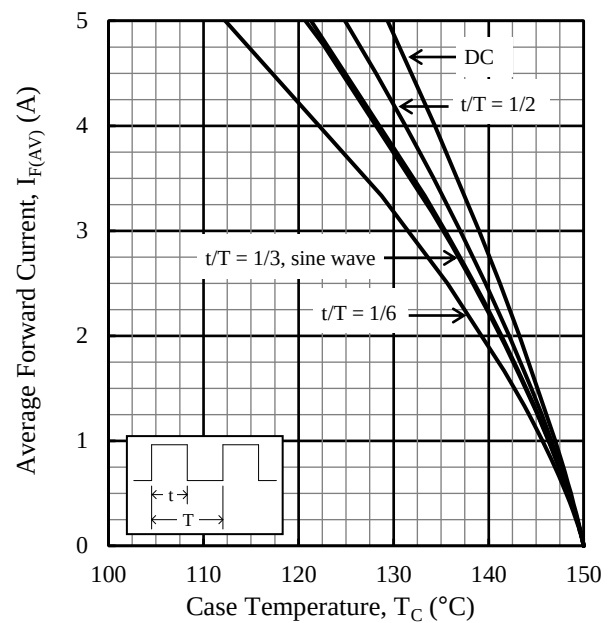
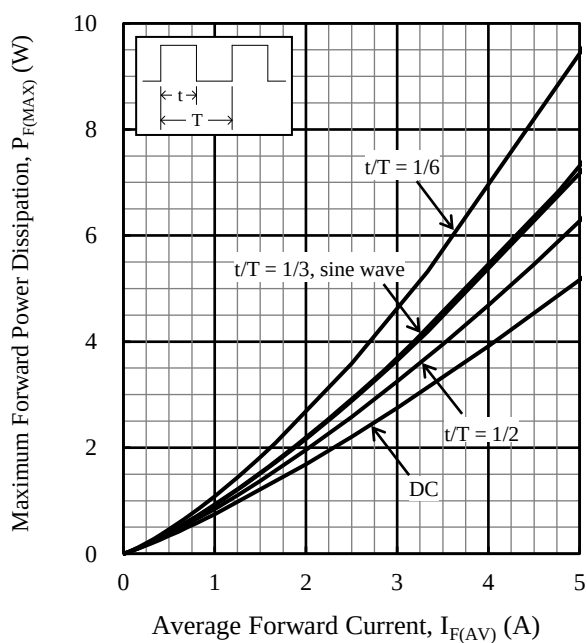
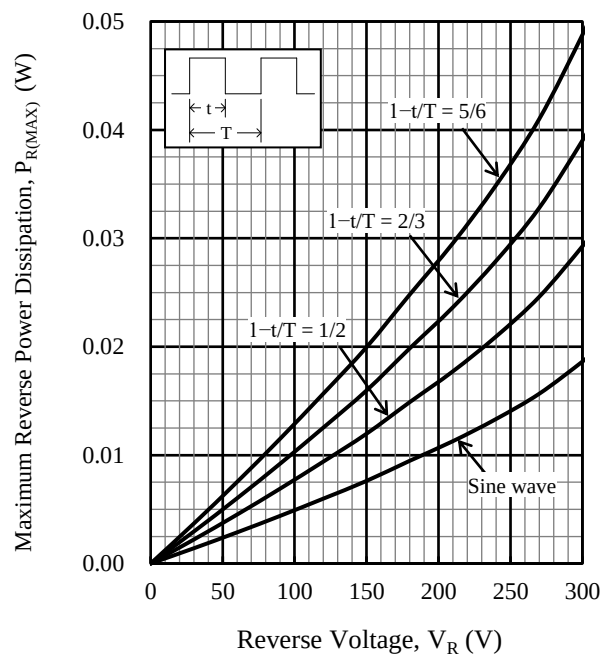
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	$T_J = 25\text{ }^{\circ}\text{C}$, $I_F = 5\text{ A}$	—	—	1.3	V
		$T_J = 100\text{ }^{\circ}\text{C}$, $I_F = 5\text{ A}$	—	0.95	—	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	—	100	μA
Reverse Leakage Current under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, $T_J = 150\text{ }^{\circ}\text{C}$	—	—	200	μA
Reverse Recovery Time	t_{rr1}	$I_F = I_{RP} = 100\text{ mA}$, 90% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	50	ns
	t_{rr2}	$I_F = 100\text{ mA}$, $I_{RP} = 200\text{ mA}$, 75% recovery point, $T_J = 25\text{ }^{\circ}\text{C}$	—	—	35	ns
Thermal Resistance ⁽¹⁾	$R_{th(J-C)}$		—	—	4.0	$^{\circ}\text{C/W}$

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Heatsink Mounting Screw Torque		0.490	—	0.686	$\text{N}\cdot\text{m}$
Package Weight		—	1.8	—	g

⁽¹⁾ Refers to thermal resistance between junction and the case. The case temperature is measured at the backside near the screw hole.

Derating Curves

Figure 1. $I_{F(AV)}$ vs. T_C ($T_J = 150$ °C, $V_R = 0$ V)Figure 2. $I_{F(AV)}$ vs. T_C ($T_J = 150$ °C, $V_R = 300$ V)Figure 3. $P_{F(MAX)}$ vs. $I_{F(AV)}$ ($T_J = 150$ °C)Figure 4. $P_{R(MAX)}$ vs. V_R ($T_J = 150$ °C)

Characteristic Curves

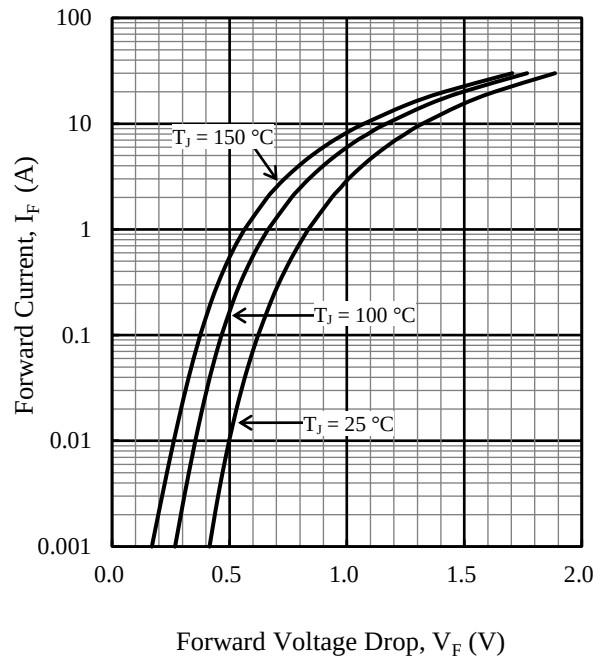


Figure 5. Typical Characteristics: I_F vs. V_F

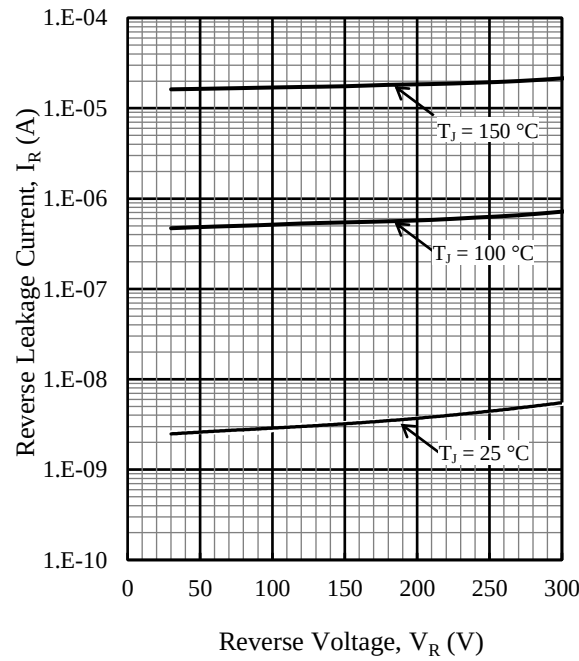


Figure 6. Typical Characteristics: I_R vs. V_R

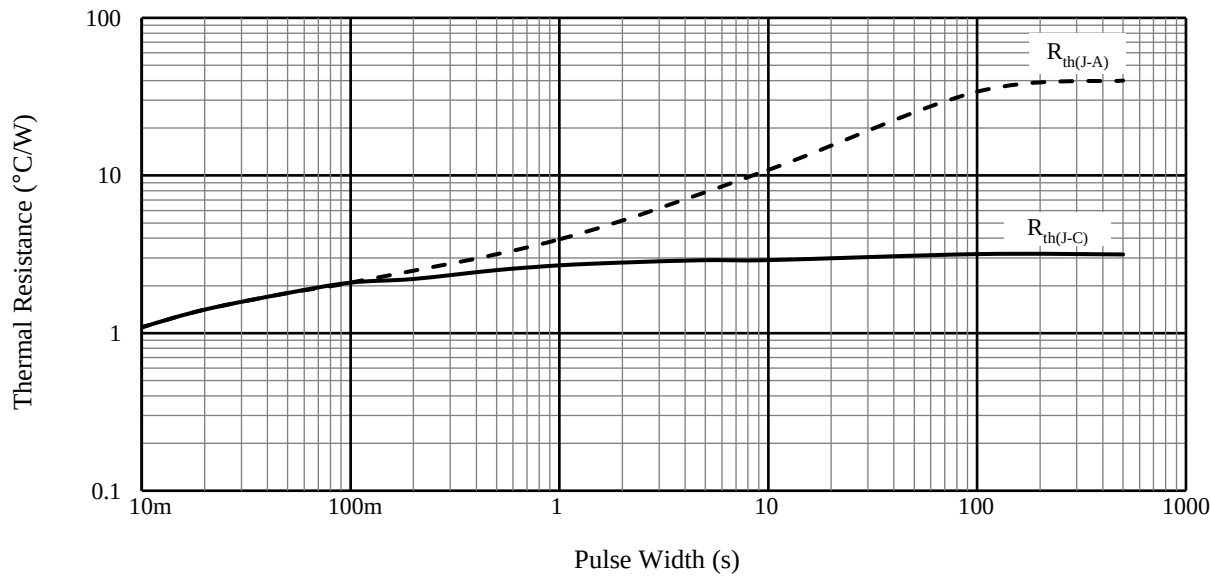


Figure 7. Typical Transient Thermal Resistance Characteristics

Technical drawing of a 1000V 100A molded case circuit breaker (MCCB) showing front, side, and top views with dimensions in mm.

Front View Dimensions:

- Overall width: 10.1 ± 0.2
- Overall height: 15.8 ± 0.3
- Top flange height: 3.3 ± 0.2
- Terminal spacing (center-to-center): $2 \times P 2.54 \pm 0.1$
- Terminal width: 1.35 ± 0.2
- Terminal thickness: 0.8 ± 0.1
- Mounting hole diameter: $\phi 5.08$

Side View Dimensions:

- Overall depth: 4.7 ± 0.1
- Top flange depth: 2.54 ± 0.1
- Mounting hole diameter: $\phi 3.2 \pm 0.2$
- Mounting hole offset: 3.0 min.
- Terminal depth: 9.2 ± 0.2
- Terminal thickness: 2.45 ± 0.2
- Terminal width: 0.6 ± 0.1

Top View Dimensions:

- Mounting hole diameter: $\phi 3.2 \pm 0.2$
- Mounting hole offset: 3.0 min.

- 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: 270 °C / 7 s, 1 time
 - Soldering Iron: 350 °C / 3.5 s, 1 time
 - Soldering should be at a distance of at least 1.5 mm from the body of the product.

Marking Diagram

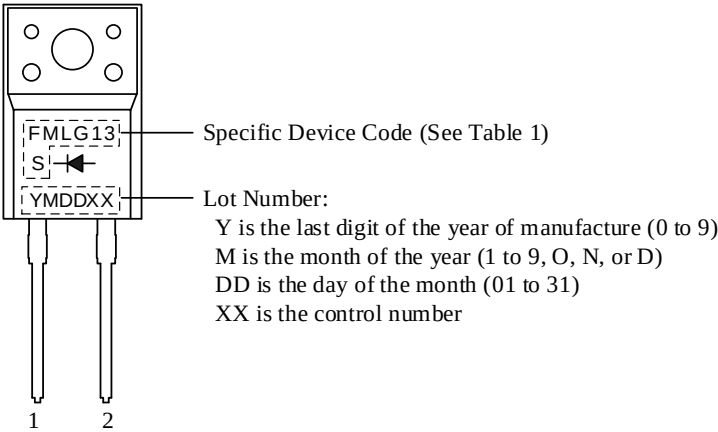


Table 1. Specific Device Code

Specific Device Code	Part Number
FMLG13S	FML-G13S

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