

$V_{RSM} = 200\text{ V}$, $I_{F(AV)} = 20\text{ A}$, $t_{rr} = 50\text{ ns}$
Fast Recovery Diode
MP2-202S

Description

The MP2-202S is a fast recovery diode of 200 V / 20 A. The maximum t_{rr} of 50 ns is realized by optimizing a life-time control.

Features

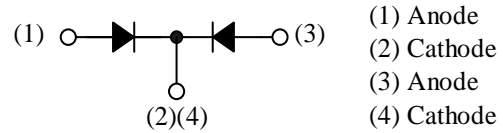
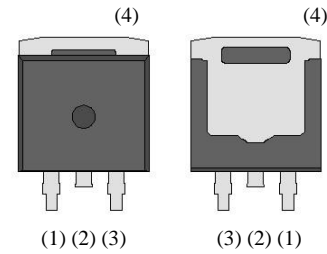
- V_{RSM} ----- 200 V
- $I_{F(AV)}$ ----- 20 A
- V_F ----- 0.98 V
- t_{rr1} ----- 50 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0
- Suitable for High Reliability and Automotive Requirement

Applications

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

Package

TO220S



Not to scale

MP2-202S

Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage ⁽¹⁾	V_{RSM}		200	V
Repetitive Peak Reverse Voltage ⁽¹⁾	V_{RM}		200	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 2	20	A
Surge Forward Current ⁽¹⁾	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	110	A
I^2t Limiting Value ⁽¹⁾	I^2t	$1\text{ ms} \leq t \leq 10\text{ ms}$	60.5	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 ⁽¹⁾	V_F	$T_J = 25\text{ }^\circ\text{C}$, $I_F = 10\text{ A}$	—	—	0.98	V
		$T_J = 100\text{ }^\circ\text{C}$, $I_F = 10\text{ A}$	—	0.90	—	V
Reverse Leakage Current ⁽¹⁾	I_R	$V_R = V_{RM}$	—	—	200	μA
Reverse Leakage Current under High Temperature ⁽¹⁾	$H \cdot I_R$	$V_R = V_{RM}$, $T_J = 150\text{ }^\circ\text{C}$	—	—	400	μA
Reverse Recovery Time ⁽¹⁾	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 ⁽²⁾	$R_{th(J-C)}$		—	—	2.5	$^\circ\text{C/W}$

⁽¹⁾ Specifies a value per chip; the MP2-202S consists of two chips.

⁽²⁾ $R_{th(J-C)}$ is thermal resistance between junction and the case.

Rating and Characteristic Curves

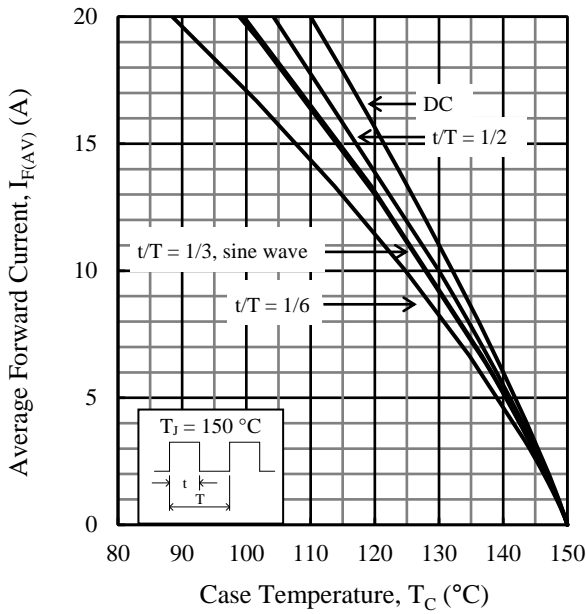


Figure 1. Typical Characteristics: $I_{F(AV)}$ vs. T_C ($V_R = 0\text{ V}$)

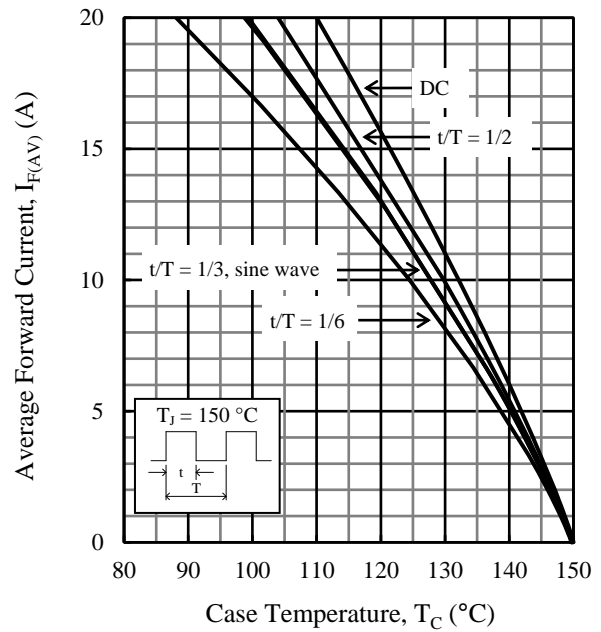


Figure 2. Typical Characteristics: $I_{F(AV)}$ vs. T_C ($V_R = 200\text{ V}$)

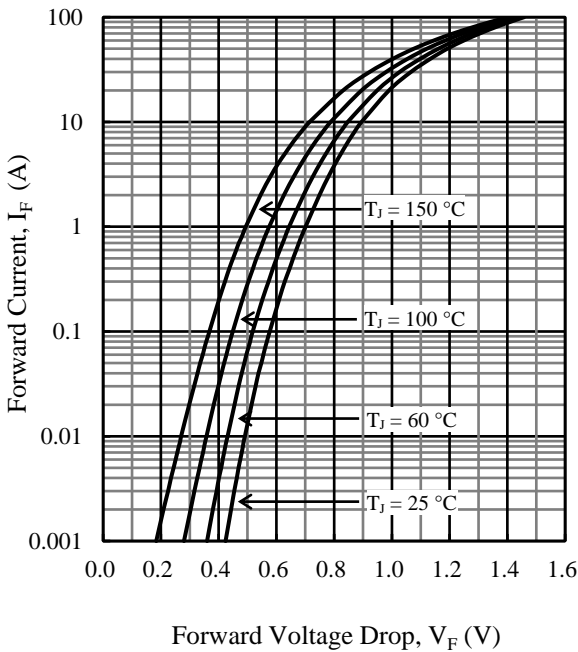


Figure 3. Typical Characteristics: I_F vs. V_F

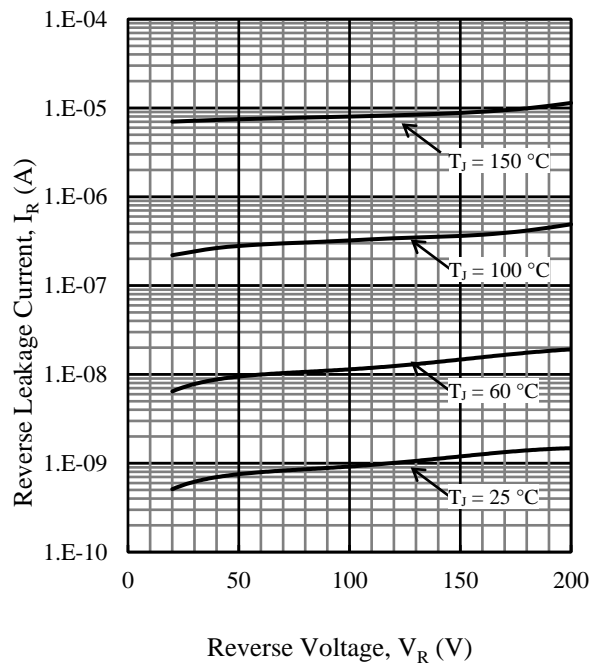
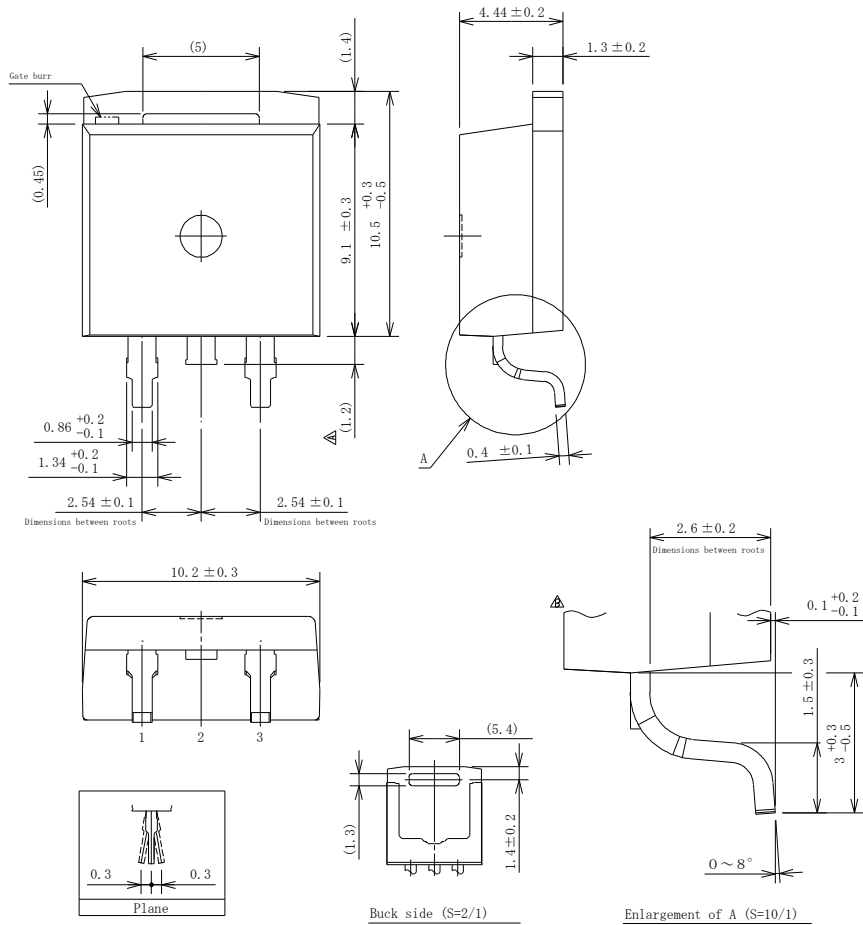


Figure 4. Typical Characteristics: I_R vs. V_R

MP2-202S

Physical Dimensions

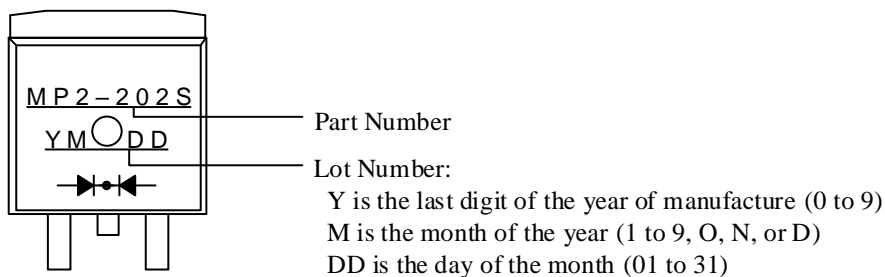
• TO220S Package



NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- Maximum gate burr height is 0.3 mm.
- When soldering the products, it is required to minimize the working time within the following limits:
 - Reflow
 - Preheat: $180^\circ\text{C} / 90 \pm 30$ s
 - Solder heating: $250^\circ\text{C} / 10 \pm 1$ s, 2 times (260°C peak)
 - Soldering iron: $380 \pm 10^\circ\text{C} / 3.5 \pm 0.5$ s, 1 time

Marking Diagram



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DSGN-AEZ-16003