

**$V_{RSM} = 600\text{ V}$ ,  $I_{F(AV)} = 3.0\text{ A}$ ,  $t_{rr} = 50\text{ ns}$**   
**Fast Recovery Diode**  
**MPL-1036S**

**Description**

The MPL-1036S is a fast recovery diode of 600 V / 3.0 A. The maximum  $t_{rr}$  of 50 ns is realized by optimizing a life-time control.

**Features**

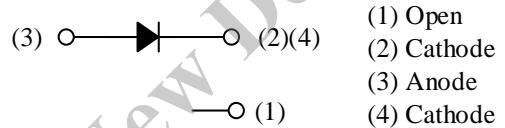
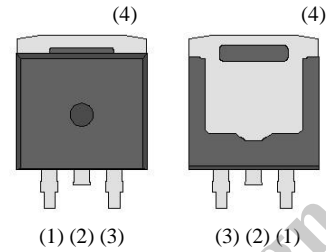
- $V_{RSM}$  ----- 600 V
- $I_{F(AV)}$  ----- 3.0 A
- $V_F$  ----- 1.75 V
- $t_{rr1}$  ----- 50 ns
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

**Applications**

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

**Package**

TO220S



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

Not to scale

Not Recommended for New Designs

**Absolute Maximum Ratings**

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

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage	$V_{RSM}$		600	V
Repetitive Peak Reverse Voltage	$V_{RM}$		600	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 2	3.0	A
Surge Forward Current	$I_{FSM}$	Half cycle sine wave, positive side, 10 ms, 1 shot	50	A
$I^2t$ Limiting Value	$I^2t$	$1\text{ ms} \leq t \leq 10\text{ ms}$	12.5	$\text{A}^2\text{s}$
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	$V_F$	$T_J = 25\text{ }^\circ\text{C}$ , $I_F = 3.0\text{ A}$	—	—	1.75	V
		$T_J = 100\text{ }^\circ\text{C}$ , $I_F = 3.0\text{ A}$	—	1.25	—	V
Reverse Leakage Current	$I_R$	$V_R = V_{RM}$	—	—	50	$\mu\text{A}$
Reverse Leakage Current under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$ , $T_J = 150\text{ }^\circ\text{C}$	—	—	100	$\mu\text{A}$
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, $T_J = 25\text{ }^\circ\text{C}$	—	—	30	ns
Thermal Resistance <sup>(1)</sup>	$R_{th(J-C)}$		—	—	2.5	$^\circ\text{C/W}$

<sup>(1)</sup>  $R_{th(J-C)}$  is thermal resistance between junction and the case.

Rating and Characteristic Curves

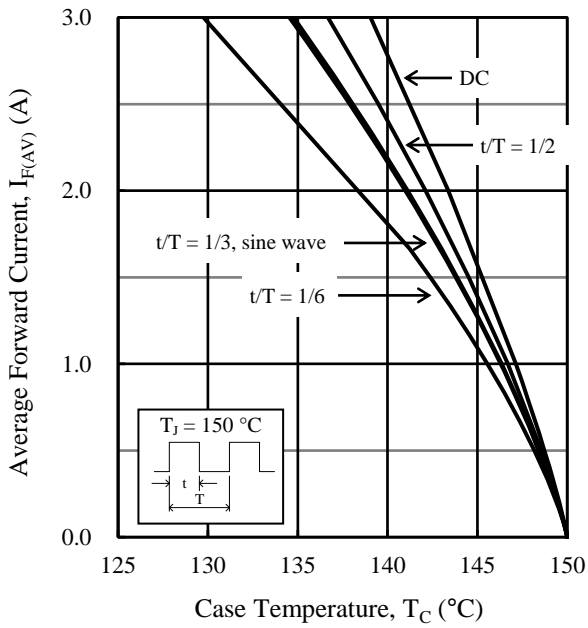


Figure 1. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_C$  ( $V_R = 0$  V)

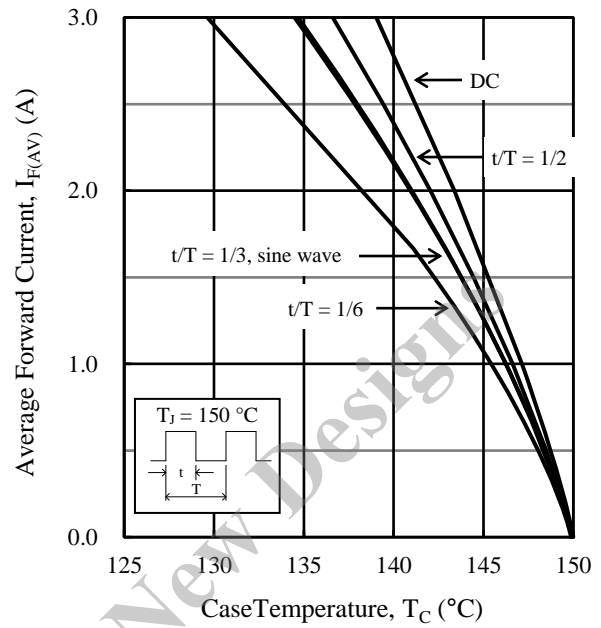


Figure 2. Typical Characteristics:  $I_{F(AV)}$  vs.  $T_C$  ( $V_R = 600$  V)

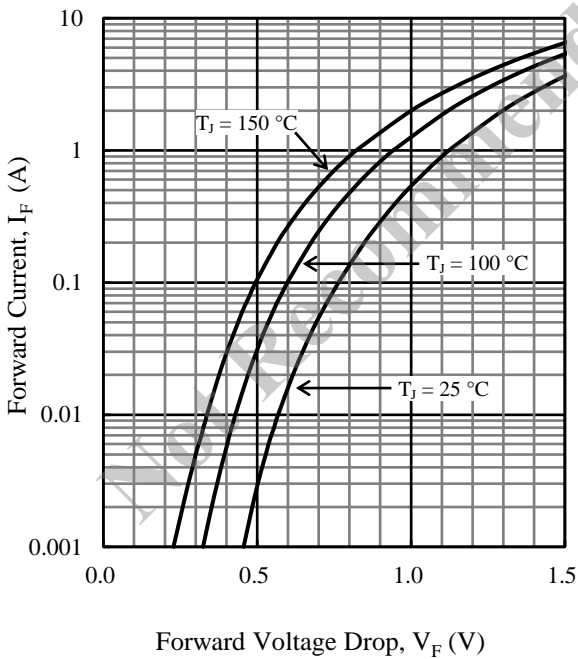


Figure 3. Typical Characteristics:  $I_F$  vs.  $V_F$

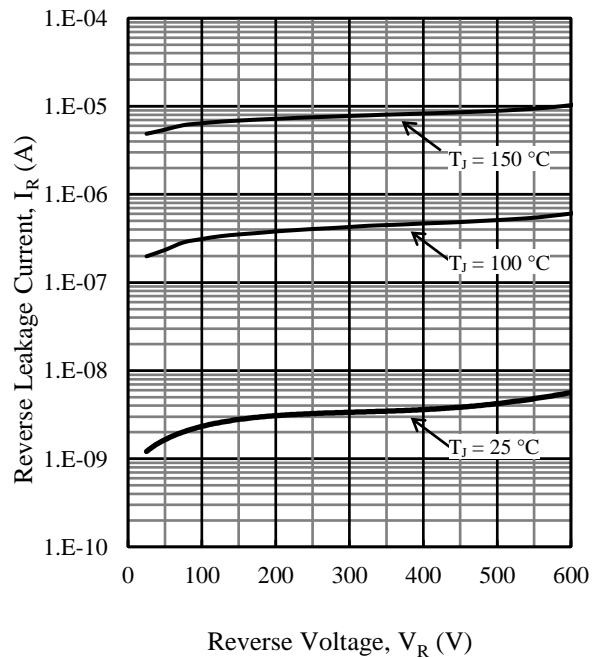
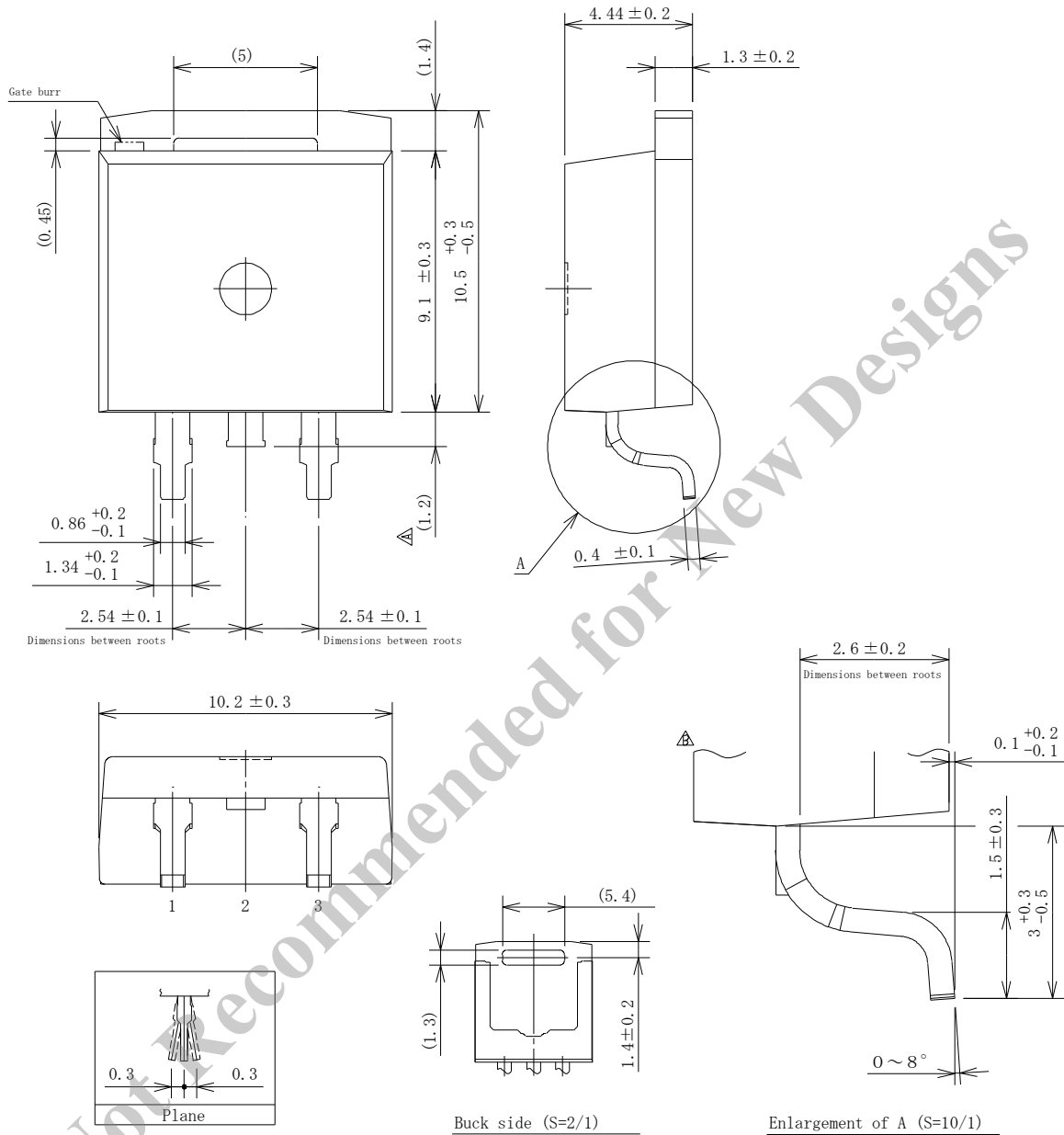


Figure 4. Typical Characteristics:  $I_R$  vs.  $V_R$

# MPL-1036S

## Physical Dimensions

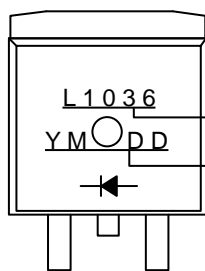
### • TO220S Package



### 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 ( $260^\circ\text{C}$  peak)
  - Soldering iron:  $380 \pm 10^\circ\text{C} / 3.5 \pm 0.5$  s, 1 time

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
L1036	MPL-1036S

*Not Recommended for New Designs*

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