

## 产品规格书

### Specification of products

产品名称: 快恢复二极管

产品型号: MBRP300100CT

浙江世菱半导体有限公司  
ZHEJIANG SHILING SEMICONDUCTOR CO., LTD.

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### Ultra –Fast Soft Recovery Diode Module

#### Description

Ultra-FRD module devices are optimized to reduce losses and EMI/RFI in high frequency power conditioning electrical systems . These diode modules are ideally suited for power converters , motors drives and other applications where switching losses are significant portion of the total losses

#### Features

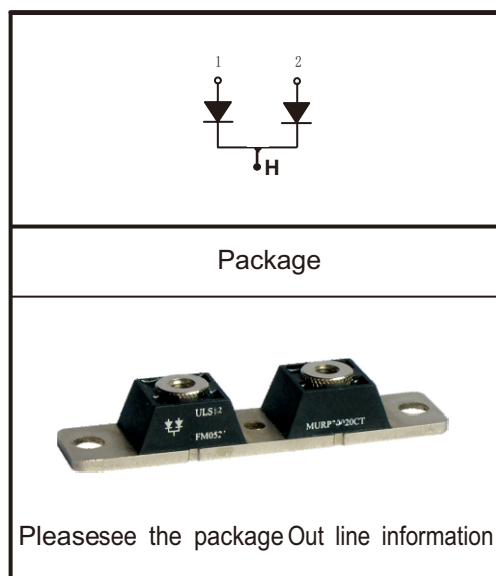
- ☞ Repetitive Reverse Voltage :  $V_{RRM}=100V$
- ☞ Low Forward Voltage Drop :  $V_F(\text{typ.}) = 0.4V$
- ☞ Average Forward Current :  $I_{F(AV.)} = 300A @ T_c= 100^\circ C$
- ☞ Ultra-Fast Reverse Recovery Time :  $t_{rr}(\text{typ.}) = 80 \text{ ns}$
- ☞ Extensive Characterization of Recovery Parameters
- ☞ Reduced EMI and RFI
- ☞ Non Isolation Type Package

#### Applications

Motor Drives, Free wheel use, High Power Converters, Welders , Various Switching and Telecommunication Power Supply.

#### Equivalent Circuit and Package

Equivalent Circuit



Please see the package Out line information

#### Absolute Maximum Ratings @ $T_j=25^\circ C$ (Per Leg)

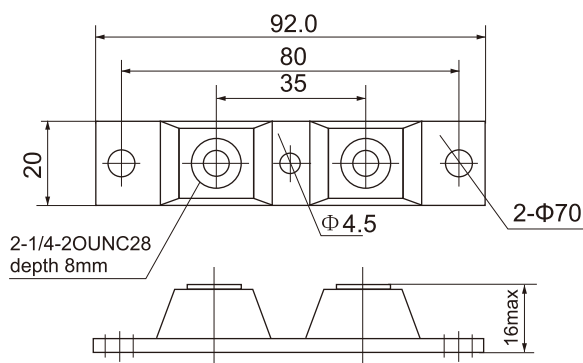
Symbol	Parameter	Conditions	Ratings	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage		100	V
$V_{R(DC)}$	Reverse DC Voltage		160	V
$I_{F(AV)}$	Average Forward Current @ $T_c=25^\circ C$ @ $T_c= 100^\circ C$	Resistive Load	600 300	A A
$I_{FSM}$	Surge (non-repetitive ) Forward Current	One Half Cycle at 60Hz, Peak Value	6000	A
$I^2t$	$I^2t$ for Fusing	Value for One Cycle Current, $t_w=8.3ms, T_j= 25^\circ C$ Start	$119 \times 10^3$	$A^2 s$
$T_j$	Junction Temperature		-40 ~ 125	$^\circ C$
$T_{stg}$	Storage Temperature		-40 ~ 125	$^\circ C$
$P_d$	Maximum Power Dissipation		1160	W
-	Mounting Torque		4.0	N. m
-	Terminal Torque		3.0	N. m

### Thermal Characteristics

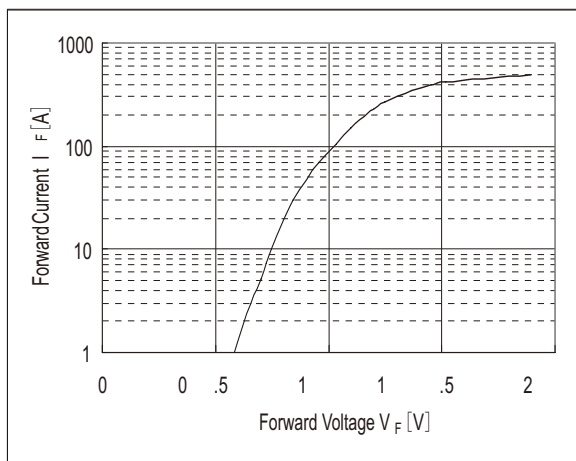
Symbol	Parameter	Conditions	Values			Unit
			Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance	Junction to Case	-	-	0.10	°C/W

### Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise specified)

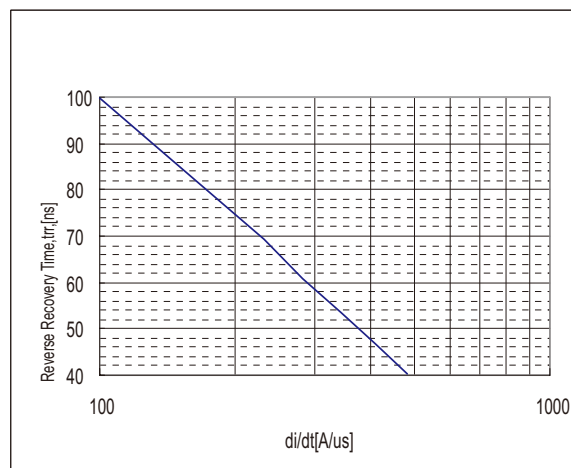
Symbol	Parameter	Conditions	Values			Unit	
			Min.	Typ.	Max.		
$V_R$	Cathode Anode Breakdown Voltage	$I_R=100\mu\text{A}$	100	-	-	V	
$V_{FM}$	Maximum Forward Voltage	$I_{FM}=300\text{A}, T_c=25^{\circ}\text{C}$	-	0.4	0.45	V	
		$I_{FM}=300\text{A}, T_c=100^{\circ}\text{C}$	-	0.3	0.37	V	
$I_{RRM}$	Repetitive Peak Reverse Current	$T_c=100^{\circ}\text{C}, V_{RRM}$ applied	-	-	10.0	mA	
$t_{rr}$	Reverse Recovery Time	$I_{FM}=300\text{A}, V_R=150\text{V}, di/dt=-100\text{A}/\mu\text{s}$	$T_c=25^{\circ}\text{C}$	-	80	100	ns
			$T_c=100^{\circ}\text{C}$	-	160	-	ns



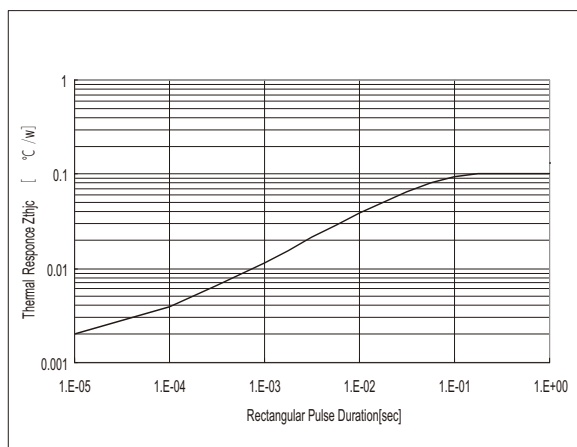
## Performance Curves



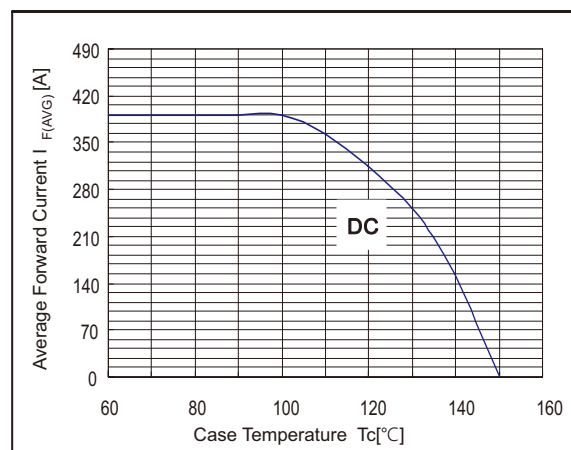
**Fig. 1 : Typical Forward Voltage Drop vs. Instantaneous Forward Current**



**Fig. 2 : Typical Reverse Recovery Time vs.  $-di/dt$**



**Fig. 3 : Transient Thermal Impedance ( $Z_{thjc}$ ) Characteristics**



**Fig. 4 : Forward Current Derating Curve**