

产品规格书

Specification of products

产品名称: 快恢复二极管

产品型号: MFK300U4

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

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UltraFast Soft Recovery Diode Module

MFK300U4

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, motor drives and other applications where switching losses are significant portion of the total losses.

Features

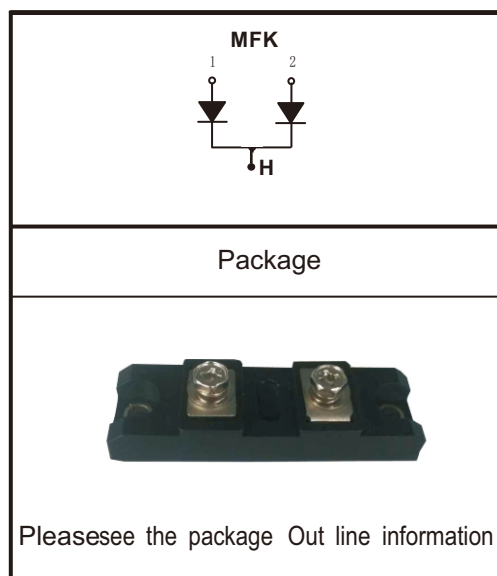
- ☞ Repetitive Reverse Voltage : $V_{RRM} = 400V$
- ☞ Low Forward Voltage Drop : $V_F (typ.) = 1.2V$
- ☞ Average Forward Current : $I_F (AV.) = 300A @ T_c = 100^\circ C$
- ☞ Ultra-Fast Reverse Recovery Time : $t_{rr} (typ.) = 70ns$
- ☞ Extensive Characterization of Recovery Parameters
- ☞ Reduced EMI 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



Absolute Maximum Ratings @T_j=25°C (Per Leg)

Symbol	Parameter	Conditions	Ratings	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		400	V
$V_{R(DC)}$	Reverse DC Voltage		320	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
$I^2 t$	$I^2 t$ for Fusing	Value for One Cycle Current, $t_w = 8.3ms, T_j = 25^\circ C$ Start	$66.7 * 10^3$	$A^2 s$
T_j	Junction Temperature		-40 ~ 125	$^\circ C$
T_{stg}	Storage Temperature		-40 ~ 125	$^\circ C$
P_d	Maximum Power Dissipation		870	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	-	-	0.12	°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	$I_R = 100\mu\text{A}$	400	-	-	V	
V_{FM}	Maximum Forward Voltage	$I_{FM} = 280\text{A}, T_C = 25^{\circ}\text{C}$	-	1.0	1.2	V	
		$I_{FM} = 280\text{A}, T_C = 100^{\circ}\text{C}$	-	0.8	1.0	V	
I_{RRM}	Repetitive Peak Reverse Current	$T_C = 100^{\circ}\text{C}, V_{RRM}$ applied	-	-	10.0	mA	
t_{rr}	Reverse Recovery Time	$I_{FM} = 280\text{A}, V_R = 300\text{V}, di/dt = -100\text{A}/\mu\text{s}$	$T_C = 25^{\circ}\text{C}$	-	70	80	ns
			$T_C = 100^{\circ}\text{C}$	-	100	-	ns

Performance Curves

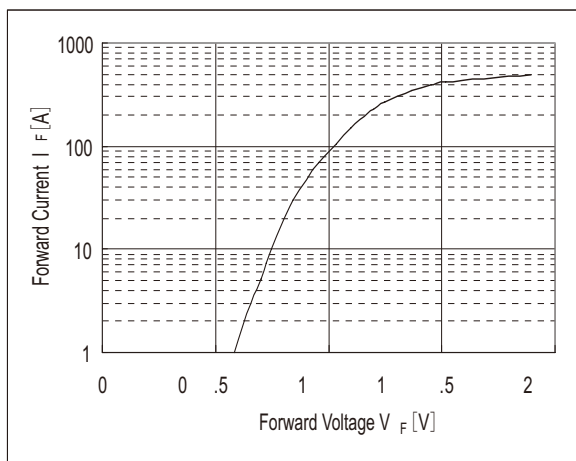


Fig. 1 : Typical Forward Voltage Drop vs. Instantaneous Forward Current

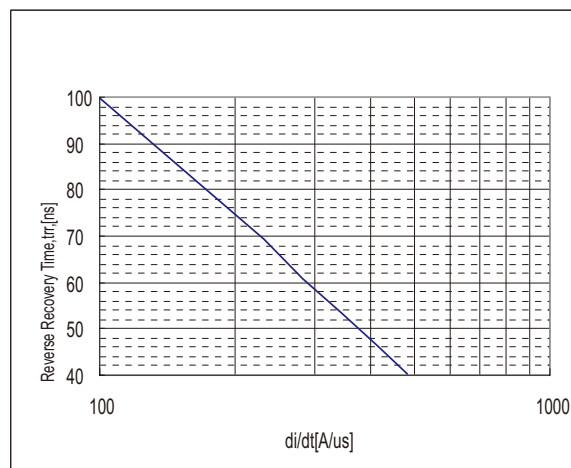


Fig. 2 : Typical Reverse Recovery Time vs. $-di/dt$

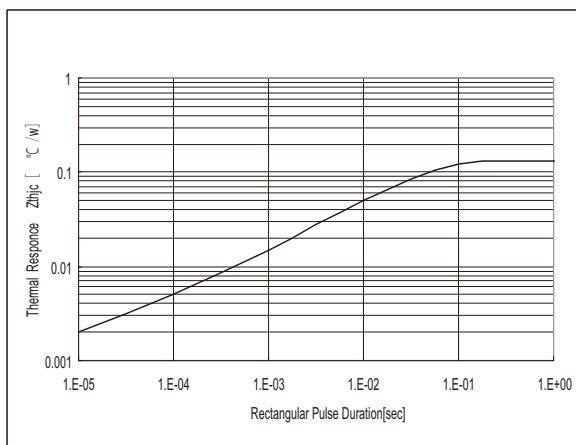


Fig. 3 : Transient Thermal Impedance (Z_{thjc}) Characteristics

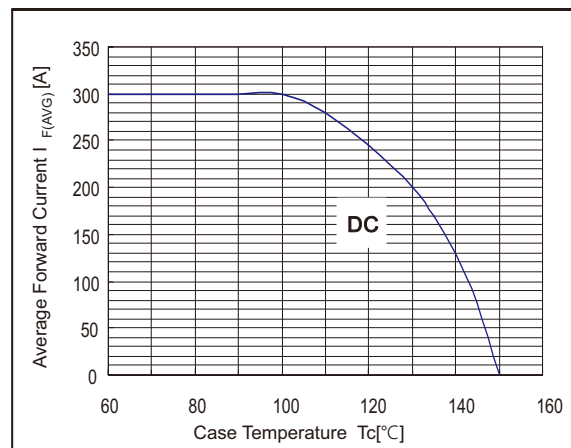


Fig. 4 : Forward Current Derating Curve

Outside Dimension

