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.

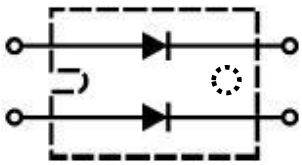
Features

- ☞ Repetitive Reverse Voltage : V_{RRM} = 600V
- ☞ Low Forward Voltage Drop : V_F(typ.) = 1.4V
- ☞ Average Forward Current : I_F(AV.) = 90A @ Tc = 100℃
- ☞ Ultra-Fast Reverse Recovery Time : t_{rr}(typ.) = 100 ns
- ☞ Extensive Characterization of Recovery Parameters
- ☞ Reduced EMI and RFI
- ☞ Isolation Type Package

Applications

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

Equivalent Circuit and Package



Package : SOT-227

Please see the package Out line information

Absolute Maximum Ratings @ T_j=25℃ (Per Leg)

Symbol	Parameter	Conditions	Ratings	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		600	V
$V_{R(DC)}$	Reverse DC Voltage		480	V
$I_{F(AV)}$	Average Forward Current @ Tc = 25℃ @ Tc = 100℃	Resistive Load	180 90	A A
I_{FSM}	Surge(non-repetitive) Forward Current	One Half Cycle at 60Hz, Peak Value	1300	A
I^2t	I^2t for Fusing	Value for One Cycle Current, t_w = 8.3ms, T_j = 25℃ Start	$7.1* 10^3$	A^2s
T_j	Junction Temperature		-40 ~ 150	℃
T_{stg}	Storage Temperature		-40 ~ 125	℃
V_{isol}	Isolation Voltage	@ AC 1 minutes	2500	V
P_d	Maximum Power Dissipation		250	W
-	Mounting Torque		1.45	N.m
-	Terminal Torque		1.45	N.m
-	Weight	Typical Including Screws	30	g

Thermal Characteristics

Symbol	Parameter	Conditions	Values			Unit
			Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance	Junction to Case	-	-	0.5	℃/W

Electrical Characteristics @ T_j=25℃ (unless otherwise specified)

Symbol	Parameter	Conditions		Values			Unit
				Min.	Typ.	Max.	
V_R	Cathode Anode Breakdown Voltage	I_R = 100uA		600	-	-	V
V_{FM}	Maximum Forward Voltage	I_F = 90A, T_c = 25℃		-	1. 4	1.6	V
		I_F = 90A, T_c =100℃		-	1.2	1.4	V
I_{RRM}	Repetitive Peak Reverse Current	T_C = 100℃, V_{RRM} applied		-	-	3.0	mA
t_{rr}	Reverse Recovery Time	I_F = 90A, V_R = 300V di/dt=-100A/us, Inductive load	T_c = 25℃	-	100	140	ns
			T_c = 100℃	-	130	-	ns
I_{rr}	Diode Peak Reverse Recovery Current		T_c =25℃	-	5.0	6	A
			T_c =100℃	-	12.0	-	A
Q_{rr}	Diode Reverse Recovery Charge		T_c =25℃	-	250	420	nC
			T_c =100℃	-	780	-	nC
tb/ta	Softness	I_F = 90A, V_R = 300V , di/dt=-100A/us		0.8	-		

Performance Curves

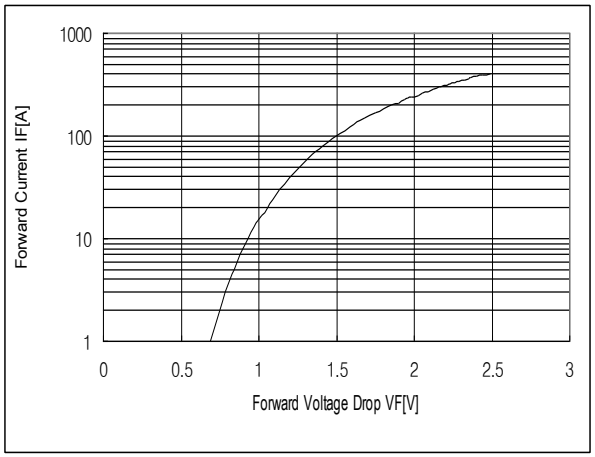


Fig. 1 : Typical Forward Voltage Drop vs. Instantaneous Forward Current

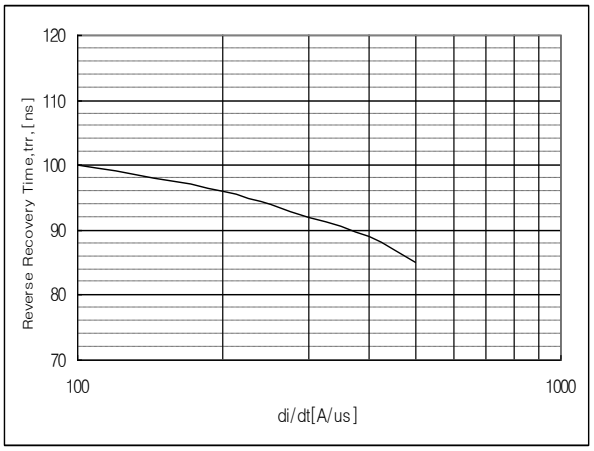


Fig. 2 : Typical Reverse Recovery Time vs. -di/dt

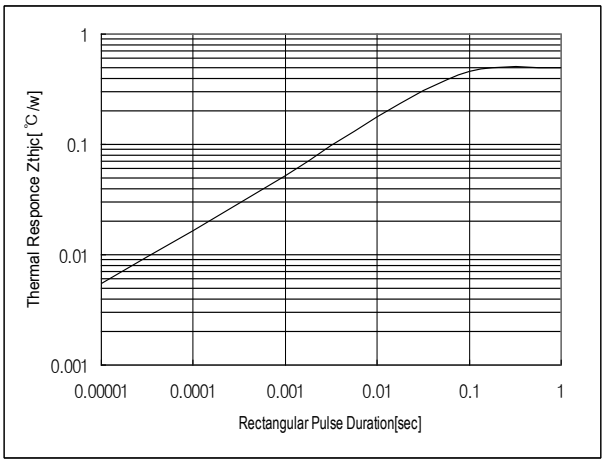


Fig. 3 : Transient Thermal Impedance(Z_{thjc}) Characteristics

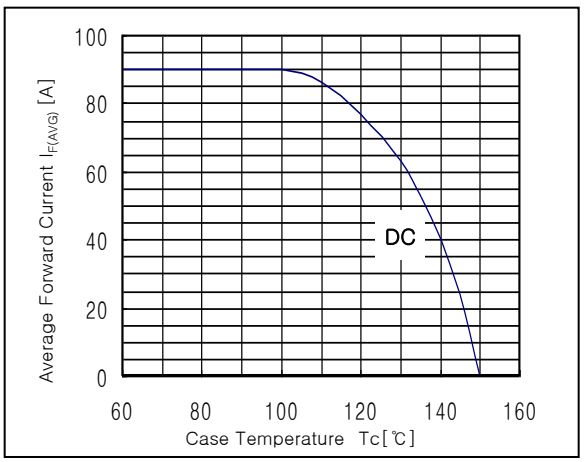


Fig. 4 : Forward Current Derating Curve

Package Out Line Information

SOT-227

Marking Spec.

Device Name	Marking code
DWM2F90N060	DWM90X2-06N

UNIT : mm