RoHS Compliant
HALOGEN-FREE

MagnaChip

MPSC2N100U40
400V FRD Module

General 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}= 400V
- Low Forward Voltage : V_F(typ.) = 1.0V
- Average Forward Current : I_F(Av.)=100A @T_C=100℃
- Ultra-Fast Reverse Recovery Time : t_{rr}(typ.) = 35ns
- Extensive Characterization of Recovery Parameters
- Reduced EMI and RFI
- Isolation Type Package

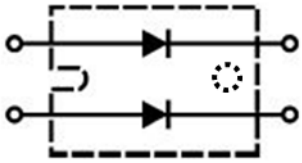
Applications

- High Speed & High Power converters, Welders
- Various Switching and Telecommunication Power Supply



SOT-227

E301932



Equivalent Circuit

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

Characteristics	Conditions	Symbol	Rating	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	400	V
Average Forward Current (T_C=25°C)	Resistive Load	$I_{F(AV)}$	200	A
Average Forward Current (T_C=100°C)	Resistive Load	$I_{F(AV)}$	100	A
Surge(non-repetitive) Forward Current	One Half Cycle at 60Hz, Peak Value	I_{FSM}	2000	A
I^2t for Fusing	Value for One Cycle Current, t_w = 8.3ms, T_j= 25℃ Start	I^2t	16.7* 10^3	A^2s
Junction Temperature		T_J	-40 ~ 150	℃
Storage Temperature		T_{stg}	-40 ~ 125	℃
Mounting Torque		-	1.45	N.m
Terminal Torque	Typical Including Screws	-	1.45	N.m
Isolation Voltage(Terminal to Case)	@AC 1 minutes, Tc = 125°C	V_{isol}	2,500	V
Isolation Voltage(Diode to Diode)	@DC1 minutes, Tc = 125°C	V_{isol}	1,500	V
Weight		-	30	g

Electrical Characteristics @Tc = 25°C(unless otherwise specified)

Characteristics	Conditions		Symbol	Min.	Typ.	Max.	Unit
Cathode Anode Breakdown Voltage	I_R=100uA		V_R	400	-	-	V
Diode Maximum Forward Voltage	I_F=100A	T_C=25℃	V_{FM}	-	1.0	1.3	V
		T_C=125℃		-	0.9	-	
Maximum Reverse Leakage Current	T_c=100℃, V_{RRM} applied	T_C=125℃	I_{RRM}	-	-	1.0	mA
Maximum Reverse Recovery Current	I_F =100A,V_R=50V di/dt = -200A/uS	T_C=25℃	I_{RM}	-	8	-	A
		T_C=125℃			18		
Diode Reverse Recovery Time	I_F =100A,V_R=50V di/dt = -200A/uS	T_C=25℃	t_{rr}	-	45	-	ns
		T_C=125℃		-	90	-	

Thermal Characteristics

Characteristics	Conditions	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance(Isolation Type)	Junction to Case(Per Diode)	$R_{th(j-c)}$	-	-	0.34	℃/W
	Junction to Case(Module)		-	-	0.20	

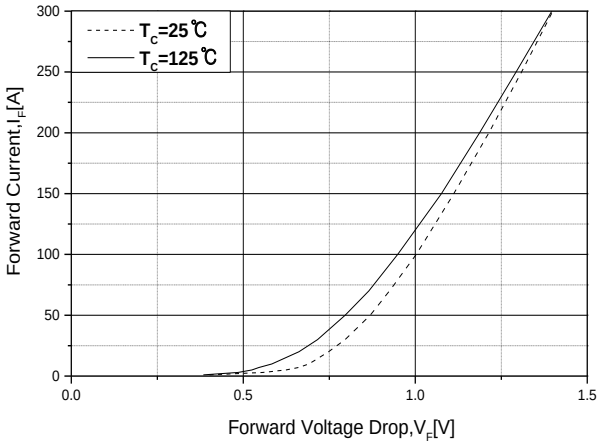


Fig.1 Typical Forward Voltage Drop vs. Instantaneous Forward Current

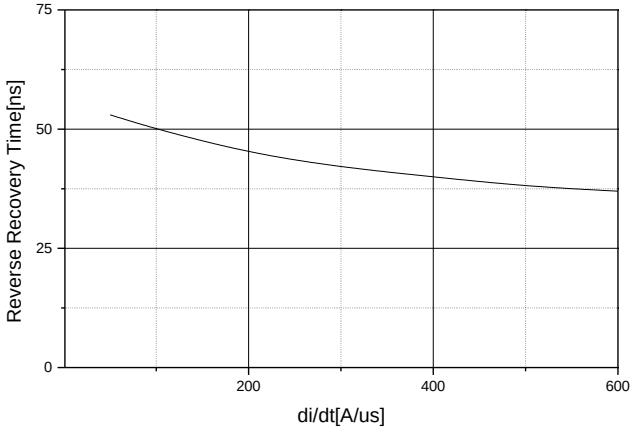


Fig.2 Typical Reverse Recovery Time Vs. –di/dt

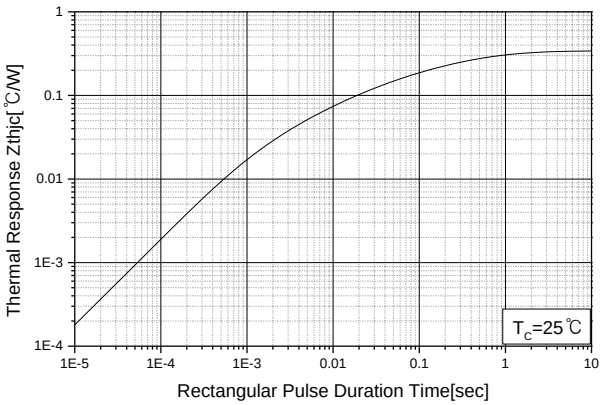


Fig.3 Transient Thermal Impedance(Zthjc) Characteristics

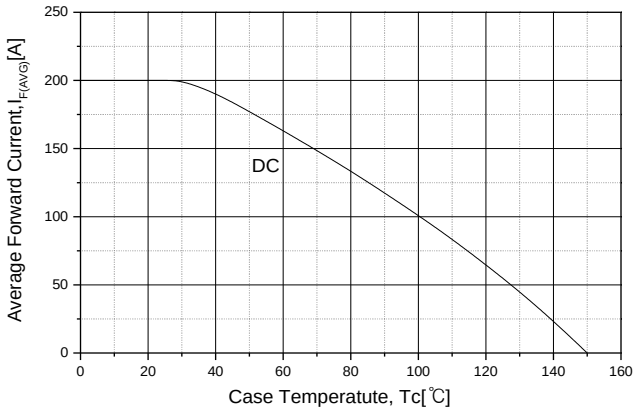


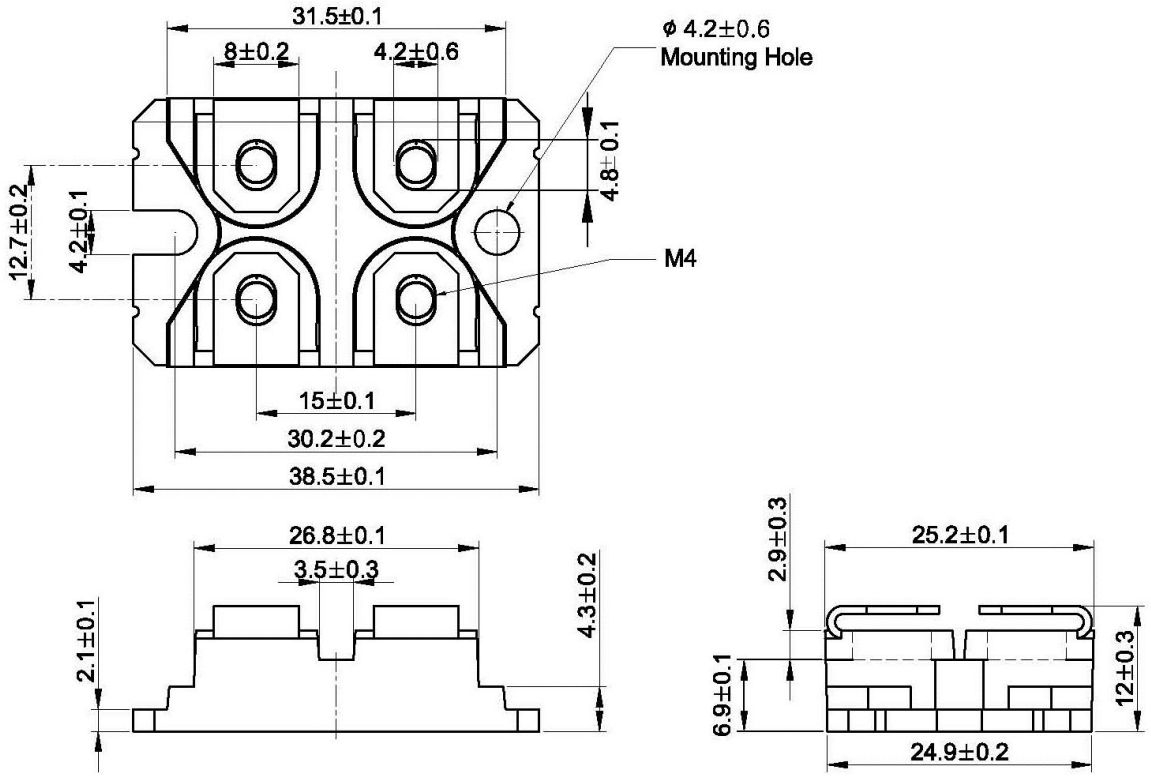
Fig.4 Forward Current Derating Curve

Package Dimension

SOT-227

Dimensions are in millimeters, unless otherwise specified





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