RoHS Compliant
HALOGEN-FREE

MagnaChip

MPKB2SA/CA100U40
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

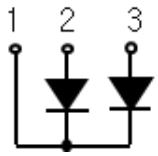
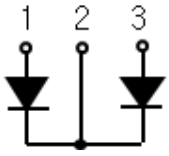
- High Speed & High Power converters, Welders
- Various Switching and Telecommunication Power Supply



E301932

5DM-1

Ordering Information

Product Name	MPKB2SA100U40	MPKB2CA100U40
Optional Information	Side Common 	Center Common 

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

Characteristics	Conditions	Symbol	Rating	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	400	V
Reverse DC Voltage		$V_{R(DC)}$	320	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	℃
Maximum Power Dissipation		P_D	390	W
Isolation Voltage	@AC 1 minutes	V_{isol}	2500	V
Storage Temperature		T_{stg}	-40 ~ 125	℃
Mounting Torque(M6)		-	4.0	N.m
Terminal Torque(M5)	Typical Including Screws	-	2.0	N.m
Weight		-	120	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=100℃		-	0.9	-	
Diode Peak Reverse Recovery Current	T_c=100℃, V_{RRM} applied	T_C=100℃	I_{RRM}	-	-	1.0	mA
Diode Reverse Recovery Time	I_F =1A,V_R=30V di/dt = -200A/uS	T_C=25℃	t_{rr}	-	35	50	ns
Diode Reverse Recovery Time	I_F =100A,V_R=200V di/dt = -200A/uS	T_C=25℃	t_{rr}	-	60	-	ns
		T_C=100℃		-	90	-	

Thermal Characteristics

Characteristics	Conditions	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance(Isolation Type)	Junction to Case	$R_{th(j-c)}$	-	-	0.32	℃/W

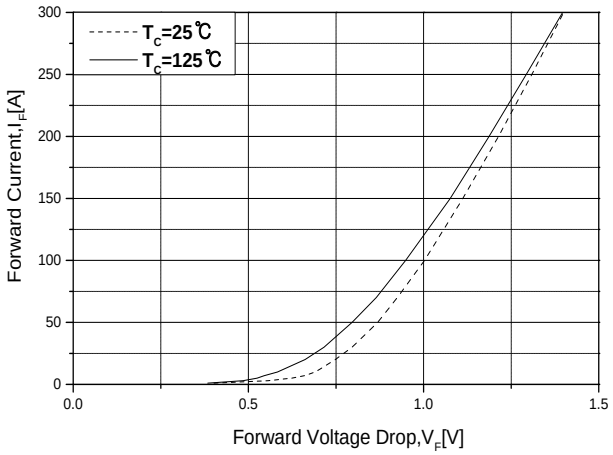


Fig.1 Typical Forward Voltage Drop vs. Instantaneous Forward Current

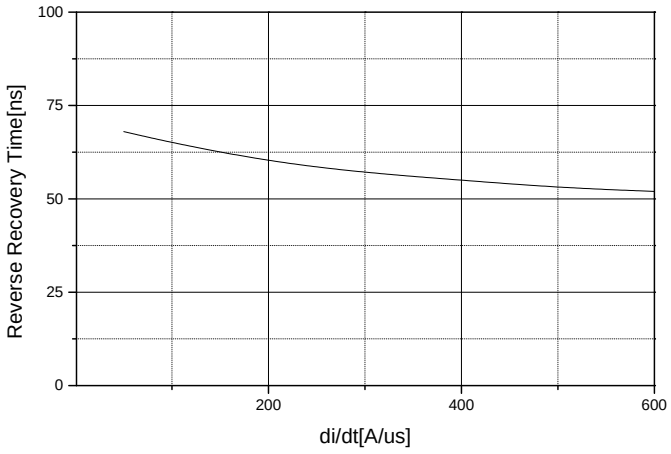


Fig.2 Typical Reverse Recovery Time Vs. –di/dt

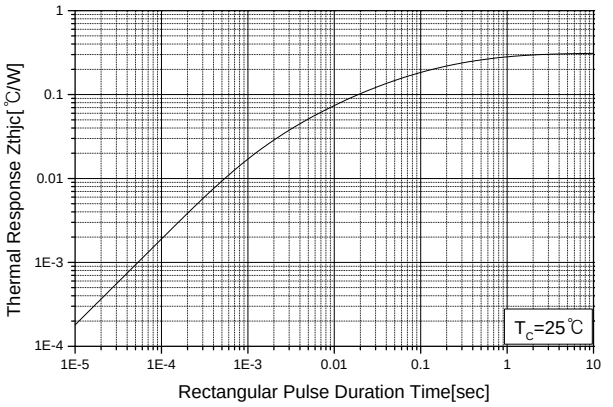


Fig.3Transient Thermal Impedance(Zthjc) Characteristics

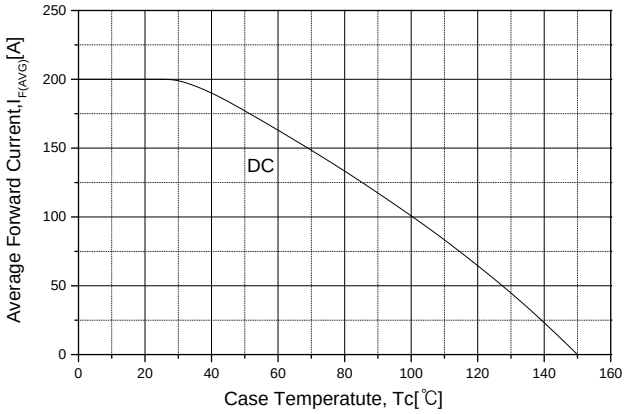


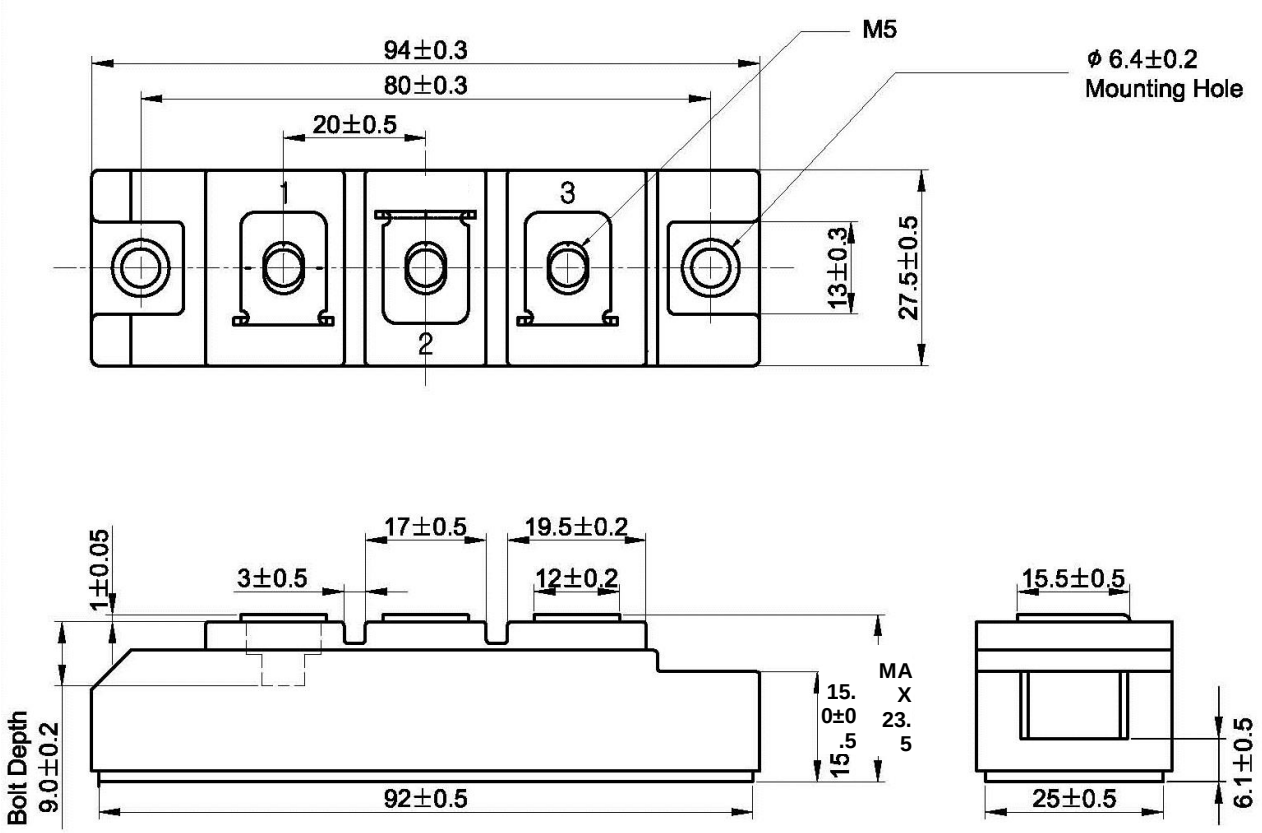
Fig.4Forward Current Derating Curve

Package Dimension

5DM-1

Dimensions are in millimeters, unless otherwise specified





DISCLAIMER:

The Products are not designed for use in hostile environments, including, without limitation, aircraft, nuclear power generation, medical appliances, and devices or systems in which malfunction of any Product can reasonably be expected to result in a personal injury. Seller's customers using or selling Seller's products for use in such applications do so at their own risk and agree to fully defend and indemnify Seller.

MagnaChip reserves the right to change the specifications and circuitry without notice at any time. MagnaChip does not consider responsibility for use of any circuitry other than circuitry entirely included in a MagnaChip product. MagnaChip is a registered trademark of MagnaChip Semiconductor Ltd.