

Standard Diodes, 250 A (MAGN-A-PAK Power Modules)



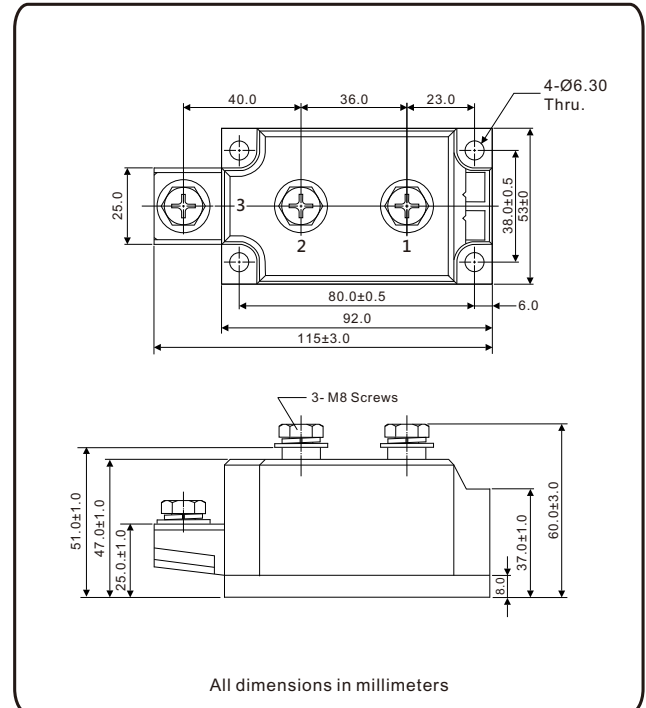
MAGN A-PAK

FEATURES

- UL approved file E320098 
- High current capability
- High surge capability
- High voltage ratings up to 2000 V
- 3000 V_{RMS} isolating voltage with non-toxic substrate
- Industrial standard package
- Compliant to RoHS 

APPLICATIONS

- Rectifying bridge for large motor drives
- Rectifying bridge for large UPS
- Rectifying power supplier
- Frequency converters



PRODUCT SUMMARY

I _{F(AV)}	250 A
Type	Modules - Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}		250	A
	T _C	100	°C
I _{F(RMS)}		392	A
	T _C	100	°C
I _{FSM}	50 Hz	11000	A
	60 Hz	11600	
I ² t	50 Hz	605	kA ² S
	60 Hz	552	
I ² √t		6050	kA ² √t
V _{RRM}	Range	800 to 2000	V
T _{Stg} , T _J	Range	- 40 to 150	°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} MAXIMUM AT T _J MAXIMUM mA
NKD250	08	800	900	20
NKJ250	12	1200	1300	
NKC250	16	1600	1700	
	20	2000	2100	

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave			250	A	
					100	°C	
Maximum RMS forward current	I _{F(RMS)}	180° conduction, half sine wave at T _C = 100 °C			392	A	
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	11.0	kA	
		t = 8.3 ms			11.6		
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	605	kA ² s	
		t = 8.3 ms			552		
		t = 10 ms	100 % V _{RRM} reapplied		424		390
		t = 8.3 ms					
Maximum I ² √t for fusing	I ² √t	t = 0.1ms to 10 ms, no voltage reapplied			6050	kA ² √t	
Maximum forward voltage drop	V _{FM}	I _{pk} = 1000 A, T _J = 25 °C			1.40	V	

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
RMS insulation voltage	V _{INS}	t = 1 s	3000	V
Maximum peak reverse and off-state leakage current	I _{RRM} J	T _J = T _{max} maximum, rated V _{RRM} applied	20	mA
		T _J = 25 °C	20	μA

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	T _J , T _{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to case per junction	R _{thJC}	DC operation	0.14	K/W
Maximum thermal resistance, case to heatsink	R _{thC-hs}		0.044	
Mounting torque ± 10 %	MAP to heatsink, M6	A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound.	4	Nm
	busbar to MAP, M8		12	
Approximate weight			900	g
Case style		See dimensions - link at the end of datasheet	MAGN-A-PAK	

ORDERING INFORMATION TABLE

Device code	NKD	250	/	16
	①	②		③
①	- Module type: NKD.NKJ and NKC for (Diode + Diode) module			
②	- Current rating: $I_{F(AV)}$			
③	- Voltage code x 100 = V_{RRM}			

Fig.1 On-state current vs. voltage characteristic

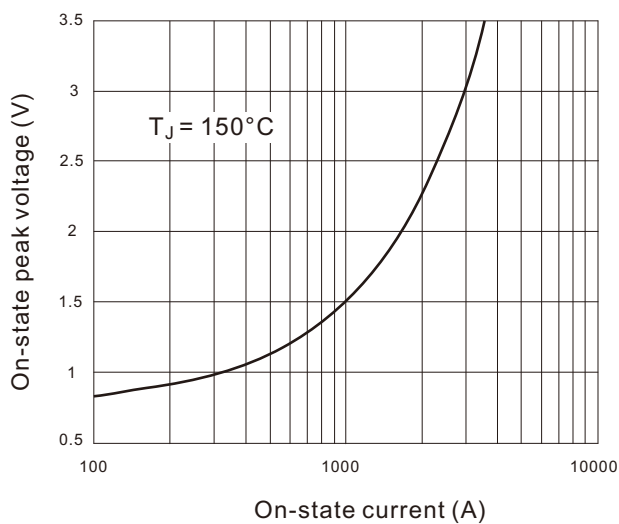


Fig.2 Transient thermal impedance(junction-case)

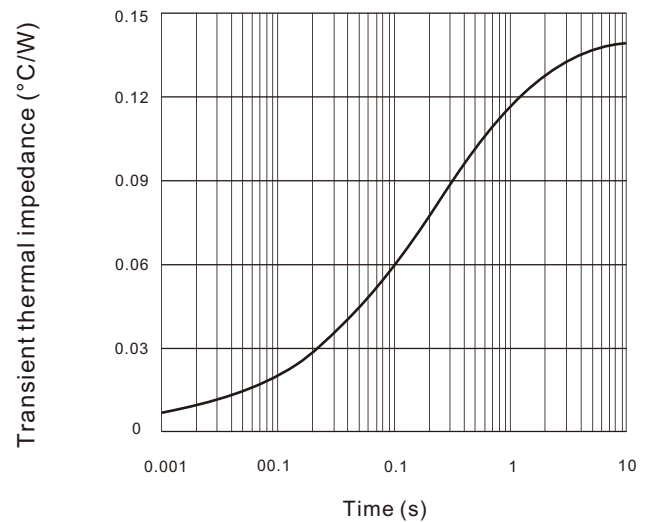


Fig.3 Power consumption vs. average current

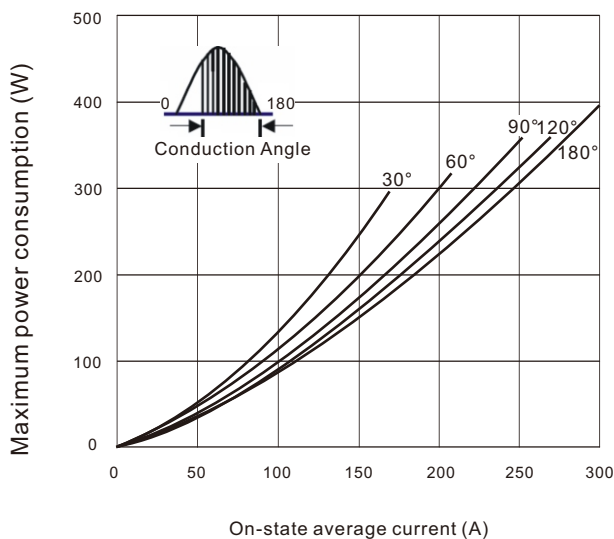


Fig.4 Case temperature vs. on-state average current

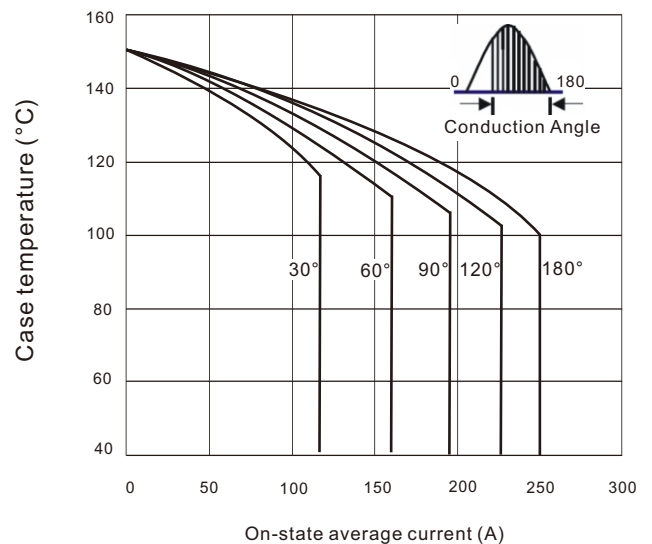


Fig.5 On-state surge current vs. cycles

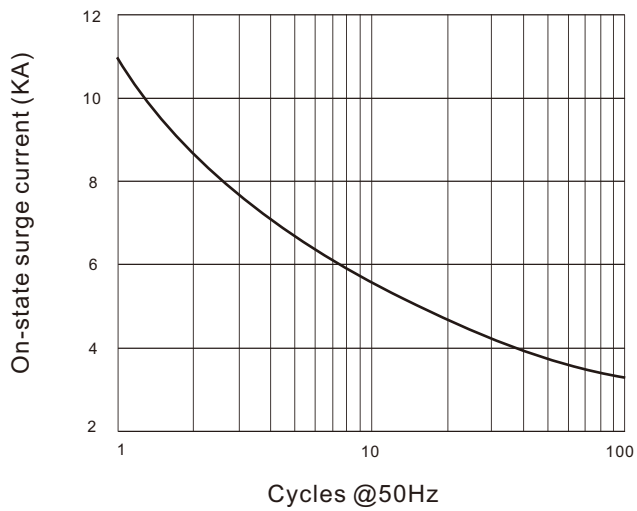


Fig.6 I^2t Characteristic

