

Standard Diodes, 400 A (MAGN-A-PAK Power Modules)



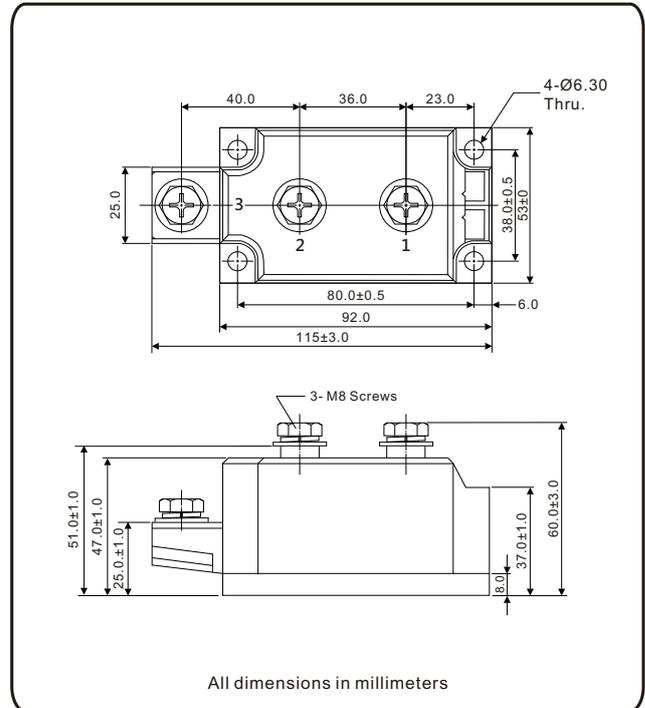
MAGN A-PAK

FEATURES

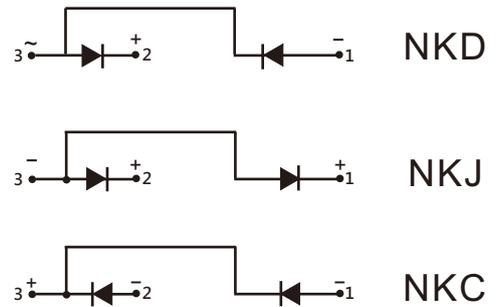
- UL approved file E320098
- High current capability
- High surge capability
- High voltage ratings up to 2000 V
- 3000 V_{RMS} isolating voltage with non-toxic substrate
- Industrial standard package
- Compliant to RoHS

APPLICATIONS

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



PRODUCT SUMMARY	
I _{F(AV)}	400A
Type	Modules-Diode, High Voltage



MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNIT
I _{F(AV)}		400	A
	T _C	100	°C
I _{F(RMS)}		628	A
		100	°C
I _{FSM}	50 HZ	17000	A
	60 HZ	17800	
I ² t	50 HZ	1445	kA ² s
	60 HZ	1315	
I ² √t		14450	kA ² √s
V _{RRM}	Range	800 to 2000	V
T _{Stg} , T _J		-40 to 150	°C

ELECTRICAL SPECIFICATIONS

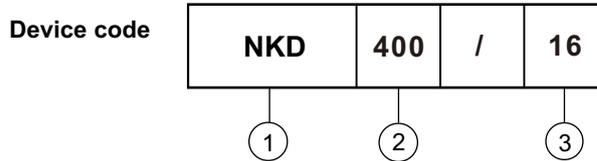
VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} MAXIMUM AT T _J MAXIMUM mA
NKD400 NKJ400 NKC400	08	800	900	20
	12	1200	1300	
	16	1600	1700	
	18	1800	1900	
	20	2000	2100	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNIT
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave		400	A
				100	°C
Maximum RMS forward current	I _{F(RMS)}	180° conduction, half sine wave at T _C = 100°C		628	A
Maximum peak, one-cycle forward non-repetitive surge current	I _{FSM}	t = 10ms	No voltage reapplied	17000	A
		t = 8.3ms			
		t = 10ms	100% V _{RRM} reapplied	14280	
		t = 8.3ms		14950	
Maximum I ² t for fusing	I ² t	t = 10ms	No voltage reapplied	1445	kA ² s
		t = 8.3ms			
		t = 10ms	100% V _{RRM} reapplied	1020	
		t = 8.3ms		928	
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied		14450	kA ² √s
Maximum forward voltage drop	V _{FM}	I _{pk} = 1200A, T _J = 25°C		1.4	V

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

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNIT
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		0.105	°C/W
Maximum thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth, flat and greased		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	N·m
	busbar to MAP, M8			12	
Approximate weight				920	g
Case style		See dimensions - link at the end of datasheet		MAGN-A-PAK	

Ordering Information Tabel



- 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

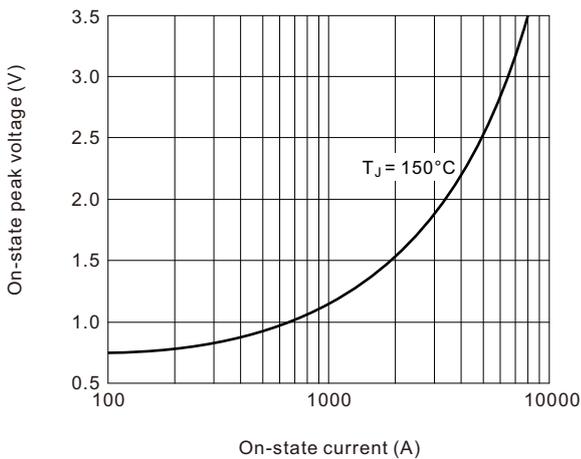


Fig.2 Transient thermal impedance (junction-case)

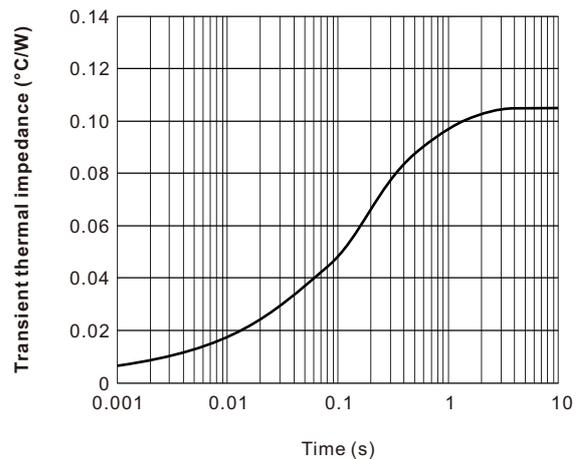


Fig.3 Power consumption vs. average current

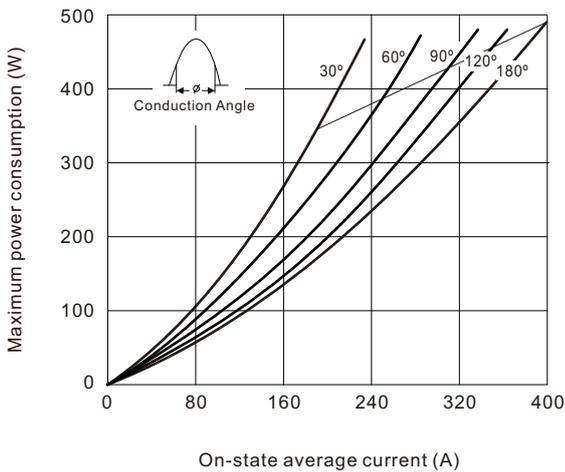


Fig.4 Case temperature vs. on-state average current

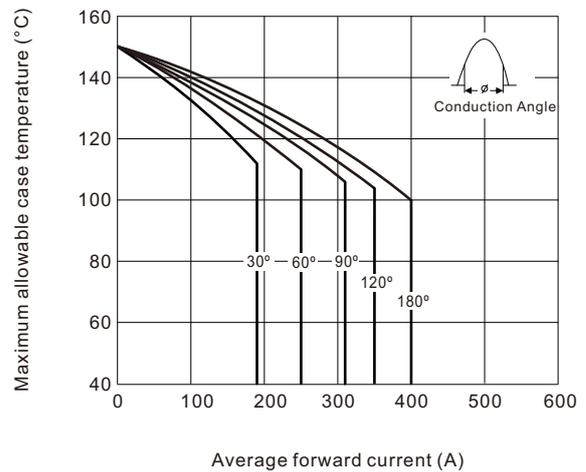


Fig.5 On-state surge current vs cycles

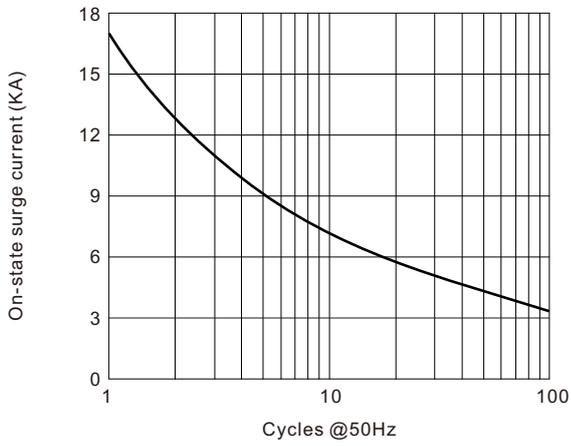


Fig.6 I²t Characteristic

