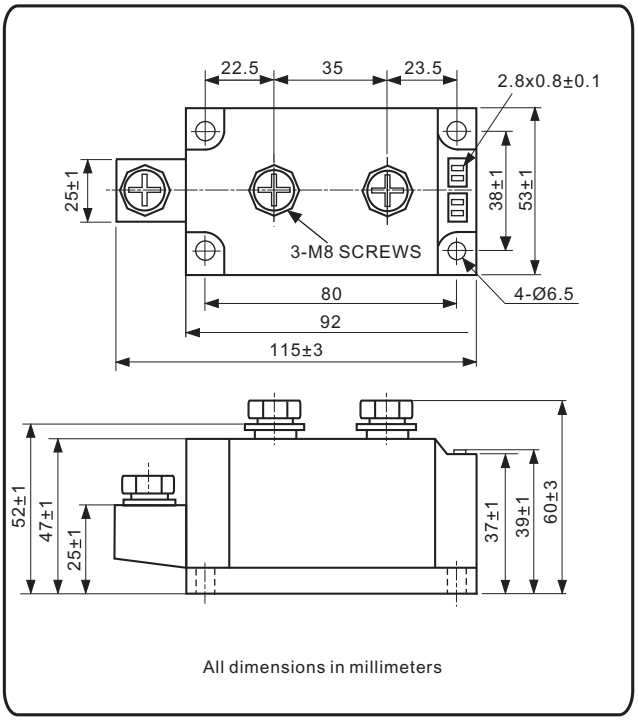
Standard Diodes, 250 A
(MAGN-A-PAK Power Modules)

MAGN A-PAK



All dimensions in millimeters

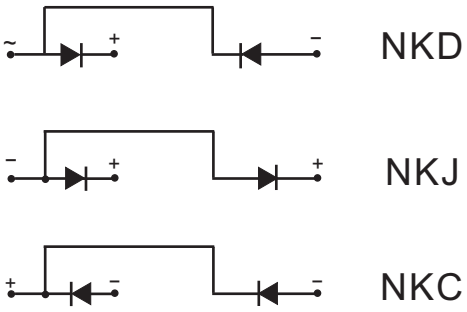
FEATURES

- 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

RoHS COMPLIANT

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^2t	50 Hz	605	kA^2S
	60 Hz	552	
$I^2\sqrt{t}$		6050	$kA^2\sqrt{t}$
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 NKJ250 NKC250	08	800	900	20
	12	1200	1300	
	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^2t for fusing	I^2t	t = 10 ms			605	kA^2s
		t = 8.3 ms			552	
		t = 10 ms	100 % V_{RRM} reapplied		424	
		t = 8.3 ms			390	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1ms to 10 ms, no voltage reapplied			6050	$kA^2\sqrt{t}$
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 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 ca se 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
Mounting torque ± 10 % — 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

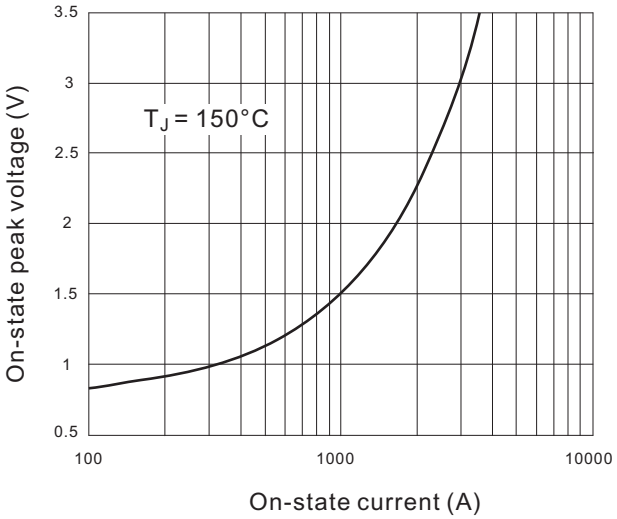


Fig.2 Transient thermal impedance(junction-case)

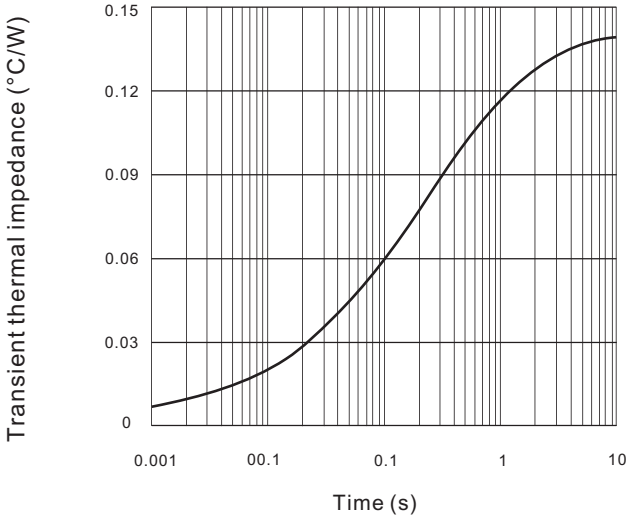


Fig.3 Power consumption vs. average current

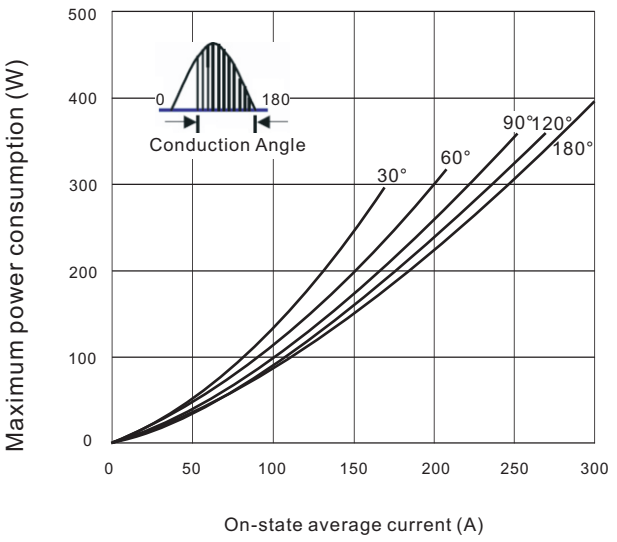


Fig.4 Case temperature vs. on-state average current

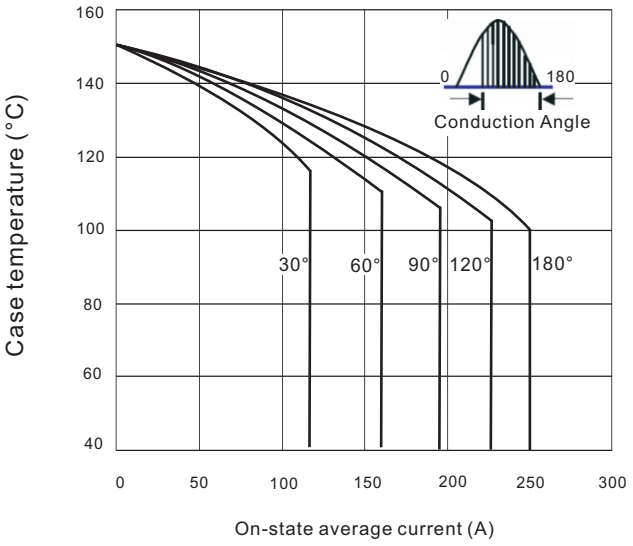


Fig.5 On-state surge current vs. cycles

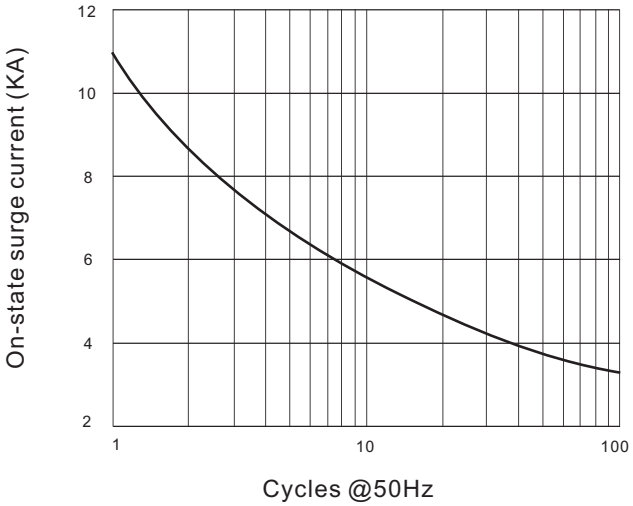


Fig.6 I^2t Characteristic