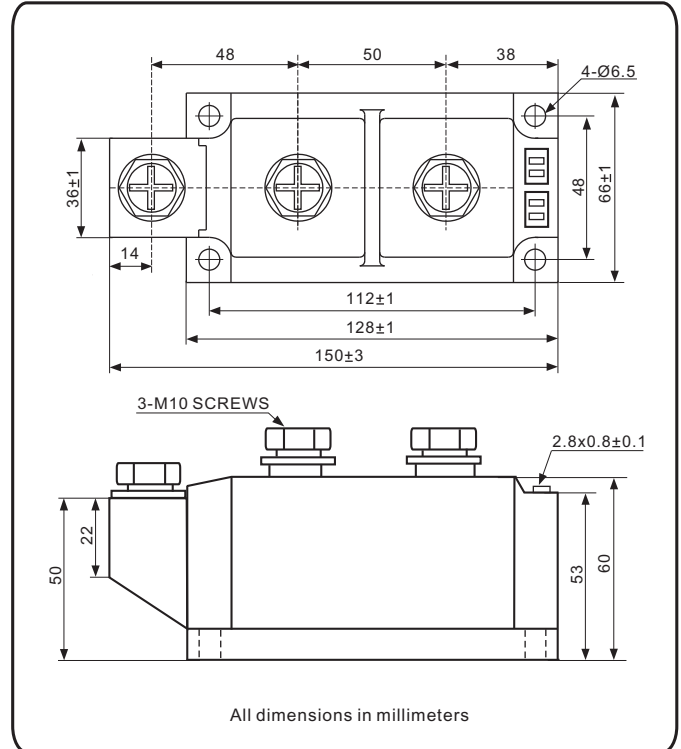


Standard Diodes, 500 A (SUPER MAGN-A-PAK Power Modules)



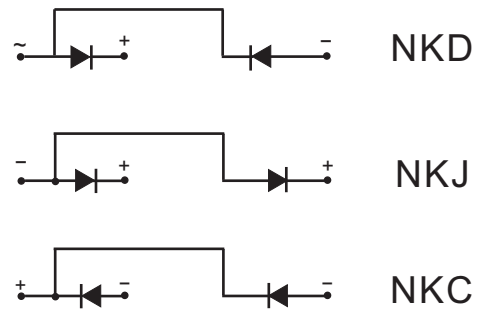
FEATURES

- 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
- Snubber for large GTO and IGBT

PRODUCT SUMMARY	
I _{F(AV)}	500A
Type	Modules-Diode, High Voltage



MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNIT
I _{F(AV)}		500	A
	T _C	100	°C
I _{F(RMS)}		785	A
		100	°C
I _{FSM}	50 HZ	21000	A
	60 HZ	21990	
I ² t	50 HZ	2205	kA ² s
	60 HZ	1830	
I ² √t		22050	kA ² √s
V _{RRM}	Range	800 to 2000	V
T _{Stg} , T _J		-40 to 150	°C

ELECTRICAL SPECIFICATIONS

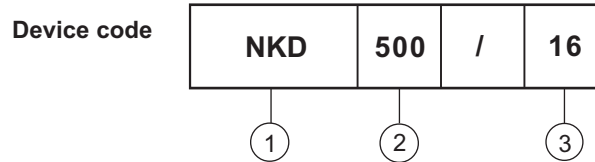
VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT T_J MAXIMUM mA
NKD500 NKJ500 NKC500	08	800	900	40
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNIT	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		500	A	
				100	°C	
Maximum RMS forward current	$I_{F(RMS)}$	180° conduction, half sine wave at $T_C = 100^\circ\text{C}$		785	A	
Maximum peak, one-cycle forward non-repetitive surge current	I_{FSM}	t = 10ms	No voltage reapplied	Sine half wave, initial $T_J = T_J$ maximum	21	kA
		t = 8.3ms				
Maximum I^2t for fusing	I^2t	t = 10ms	100% V_{RRM} reapplied	Sine half wave, initial $T_J = T_J$ maximum	2205	kA ² s
		t = 8.3ms				
		t = 10ms	100% V_{RRM} reapplied		1830	
		t = 8.3ms			1293	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		22050	kA ² \sqrt{s}	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 1500\text{A}$, $T_J = 25^\circ\text{C}$		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		40	mA
		$T_J = 25^\circ\text{C}$		50	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		0.09	°C/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased		0.02	
Mounting torque, $\pm 10\%$	SMAP to heatsink, M6 busbar to SMAP, M10	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
				12	
Approximate weight				1800	g
Case style		See dimensions - link at the end of datasheet		SUPER 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

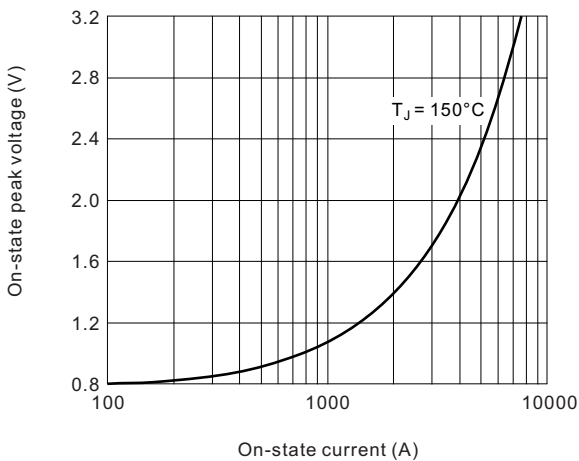


Fig.2 Transient thermal impedance (junction-case)

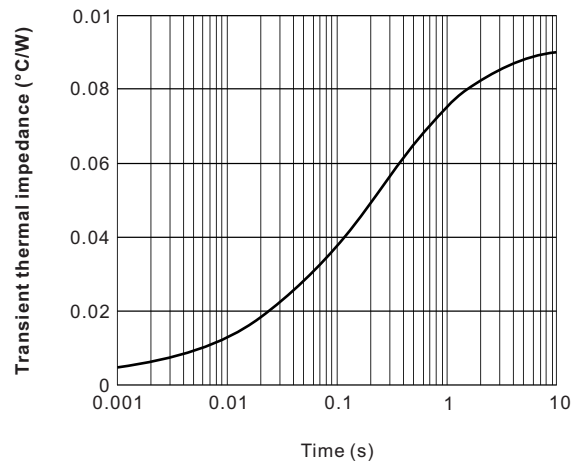


Fig.3 Power consumption vs. average current

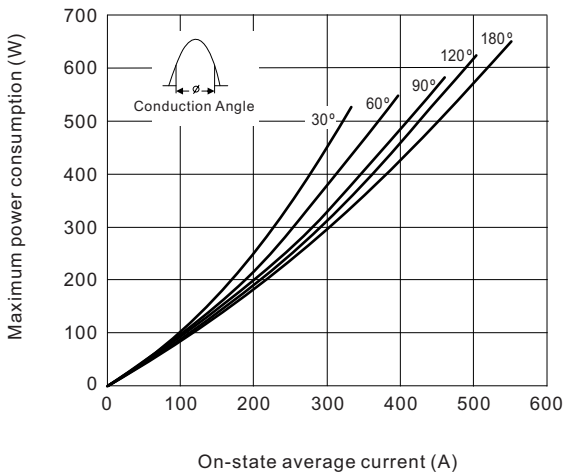


Fig.4 Case temperature vs. on-state average current

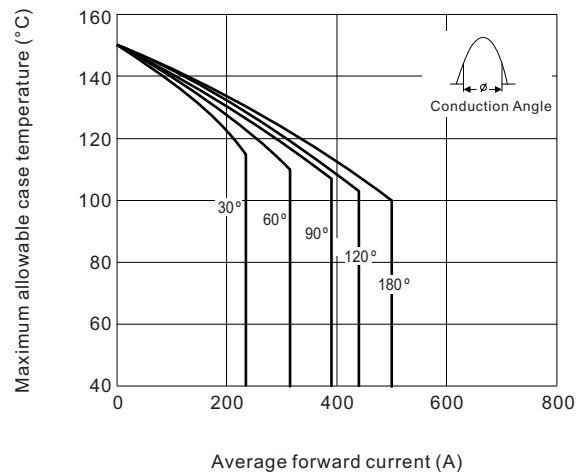


Fig.5 On-state surge current vs cycles

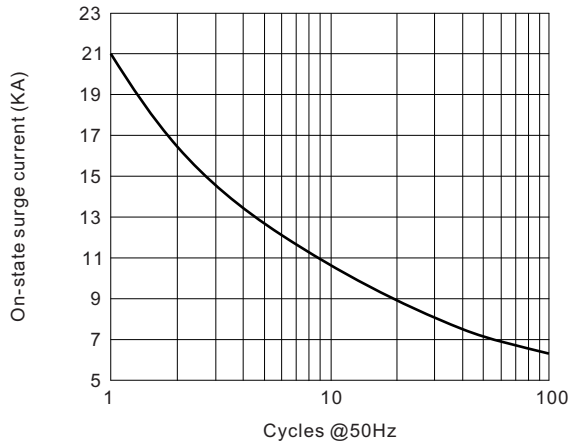


Fig.6 I²t Characteristic

