

## Standard Recovery Diodes, 800 A ( SUPER MAGN-A-PAK Power Modules)



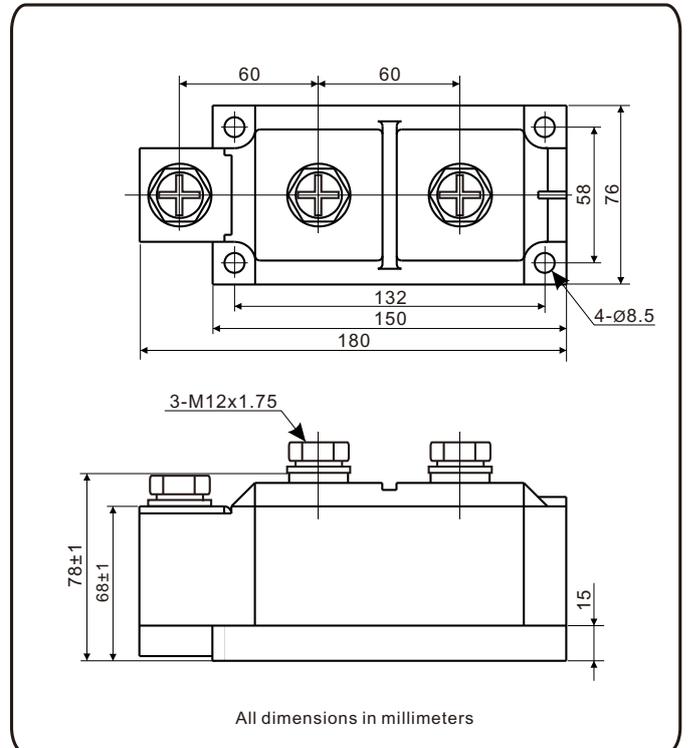
SUPER MAGN-A-PAK (1)

### FEATURES

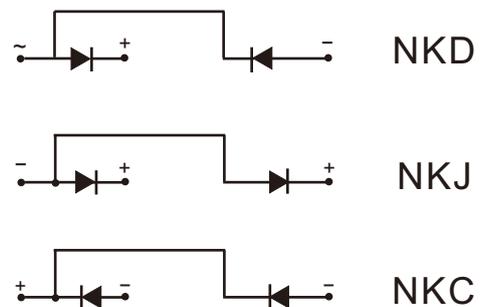
- UL approved file E320098
- High current capability
- High surge capability
- High voltage ratings up to 2000 V
- 3000 V<sub>RMS</sub> isolating voltage with non-toxic substrate
- Industrial standard package
- Compliant to RoHS

### 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 <sub>F(AV)</sub>	800A
Type	Modules-Diode, High Voltage



MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNIT
I <sub>F(AV)</sub>		800	A
	T <sub>C</sub>	100	°C
I <sub>F(RMS)</sub>		1256	A
		100	°C
I <sub>FSM</sub>	50 HZ	30000	A
	60 HZ	31410	
I <sup>2</sup> t	50 HZ	4500	kA <sup>2</sup> s
	60 HZ	4094	
I <sup>2</sup> √t		45000	kA <sup>2</sup> √s
V <sub>RRM</sub>	Range	800 to 2000	V
T <sub>Stg</sub> , T <sub>J</sub>		-40 to 150	°C

## ELECTRICAL SPECIFICATIONS

Nell Semiconductors

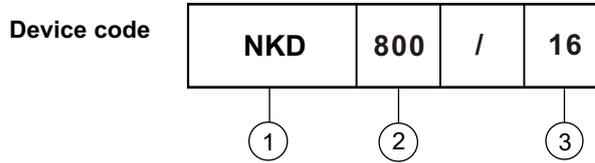
VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	$V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ MAXIMUM AT $T_J$ MAXIMUM mA
NKD800 NKJ800 NKC800	08	800	900	50
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNIT
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		800	A
				100	°C
Maximum RMS forward current	$I_{F(RMS)}$	180° conduction, half sine wave at $T_C = 100^\circ\text{C}$		1256	A
Maximum peak, one-cycle forward non-repetitive surge current	$I_{FSM}$	t = 10ms	No voltage reapplied	30	kA
		t = 8.3ms		100% $V_{RRM}$ reapplied	
		t = 10ms	Sine half wave, initial $T_J = T_J$ maximum		
		t = 8.3ms		26.4	
Maximum $I^2t$ for fusing	$I^2t$	t = 10ms	No voltage reapplied	4500	kA <sup>2</sup> s
		t = 8.3ms		100% $V_{RRM}$ reapplied	
		t = 10ms	3175		
		t = 8.3ms	2893		
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		45000	kA <sup>2</sup> √s
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 2400\text{A}$ , $T_J = 25^\circ\text{C}$		1.45	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	50	mA
		$T_J = 25^\circ\text{C}$	100	μA

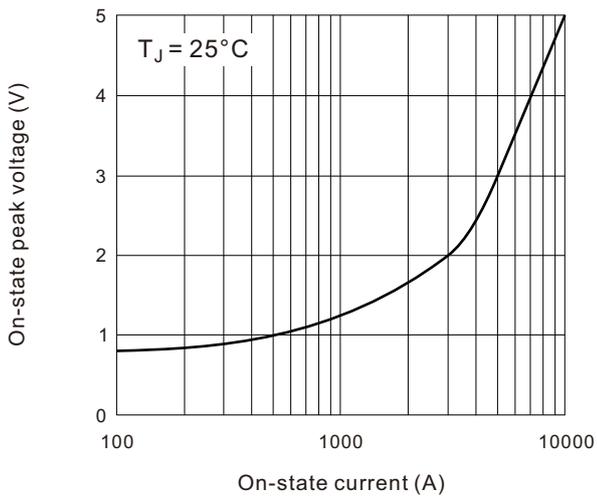
THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
Maximum junction operating and storage temperature range	$T_J, T_{stg}$		-40 to 150	°C
Maximum thermal resistance, junction to case per junction	$R_{thJC}$	DC operation	0.054	°C/W
Maximum thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth, flat and greased	0.008	
Mounting torque, ±10%	SMAP to heatsink, M8 busbar to SMAP, M12	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.	6 to 8	N·m
			13 to 16	
Approximate weight			3500	g
Case style		See dimensions - link at the end of datasheet	SUPER MAGN-A-PAK (1)	

## Ordering Information Tabel

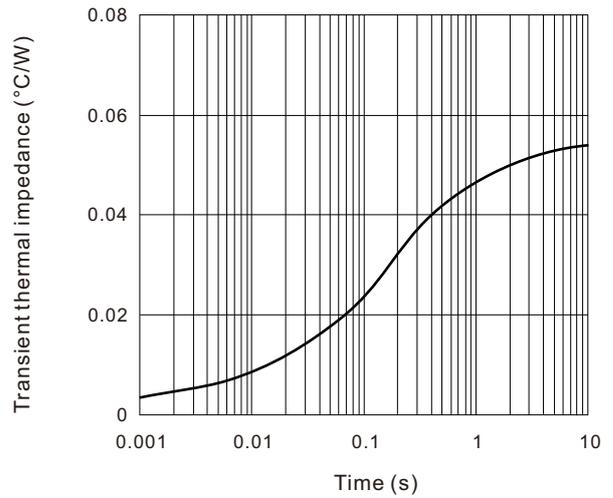


- ① - Module type, NKD, NKJ and NKC for ( Diode + Diode ) module
- ② - Current rating :  $I_{F(AV)}$
- ③ - Voltage code x 100 =  $V_{RRM}$

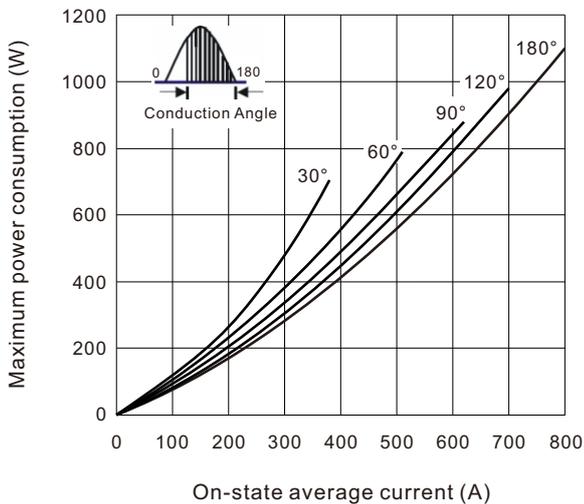
**Fig.1 On-state current vs. voltage characteristics**



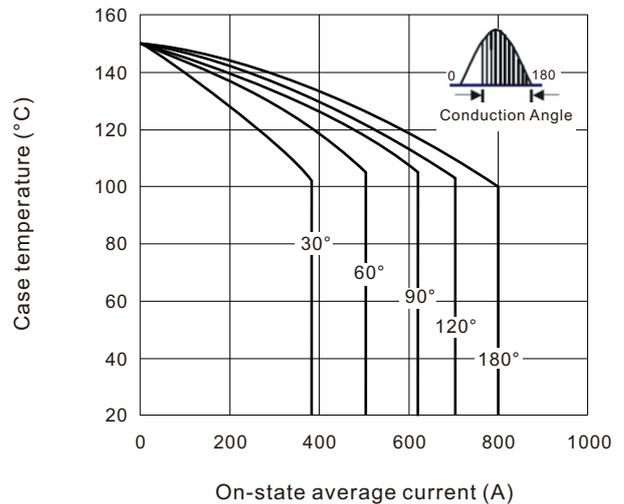
**Fig.2 Transient thermal impedance (junction-case)**



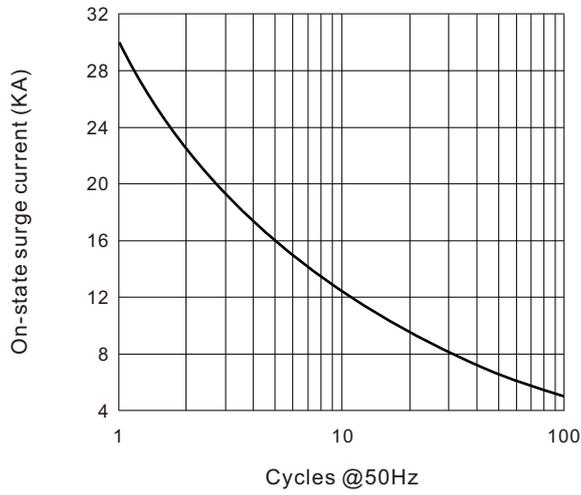
**Fig.3 Power consumption vs. average current**



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



**Fig.5 On-state surge current vs cycles**



**Fig.6 I<sup>2</sup>t characteristics**

