

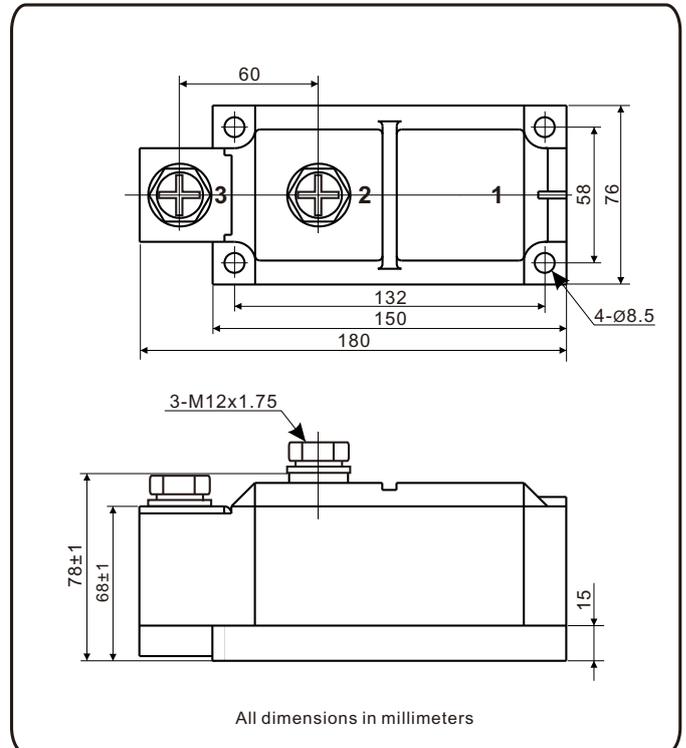
Standard Recovery Diodes, 1000 A (SUPER MAGN-A-PAK Power Modules)



SUPER MAGN-A-PAK (1)

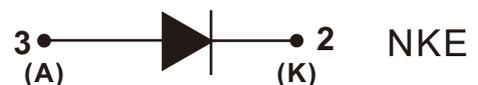
FEATURES

- UL approved file E320098
- High current capability
- High surge capability
- High voltage ratings up to 2000 V
- 3000 V_{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)}	1000A
Type	Single Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNIT
I _{F(AV)}		1000	A
	T _C	100	°C
I _{F(RMS)}		1570	A
		100	°C
I _{FSM}	50 HZ	40000	A
	60 HZ	41880	
I ² t	50 HZ	8000	kA ² s
	60 HZ	7280	
I ² √t		80000	kA ² √s
V _{RRM}	Range	800 to 2000	V
T _{Stg} , T _J		-40 to 150	°C

ELECTRICAL SPECIFICATIONS

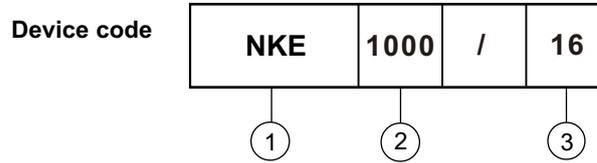
VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} MAXIMUM AT T_J MAXIMUM mA
NKE1000	08	800	900	50
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNIT
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		1000	A
				100	°C
Maximum RMS forward current	$I_{F(RMS)}$	180° conduction, half sine wave at $T_C = 100^\circ\text{C}$		1570	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	kA
		t = 8.3ms			
		t = 10ms	100% V_{RRM} reapplied		
		t = 8.3ms			
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied	8000	kA ² s
		t = 8.3ms			
		t = 10ms	100% V_{RRM} reapplied		
		t = 8.3ms			
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		80000	kA ² √s
Maximum forward voltage drop	V_{FM}	$I_{pk} = 3000\text{A}$, $T_J = 25^\circ\text{C}$		1.50	V

BLOCKING PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
RMS insulation Voltage	V_{INS}	t = 1s	3000	V
Maximum peak reverse 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	0.043	°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, NKE, Single Diode module
- ② - Current rating : $I_{F(AV)}$
- ③ - Voltage code x 100 = V_{RRM}

Fig.1 On-state current vs. voltage characteristics

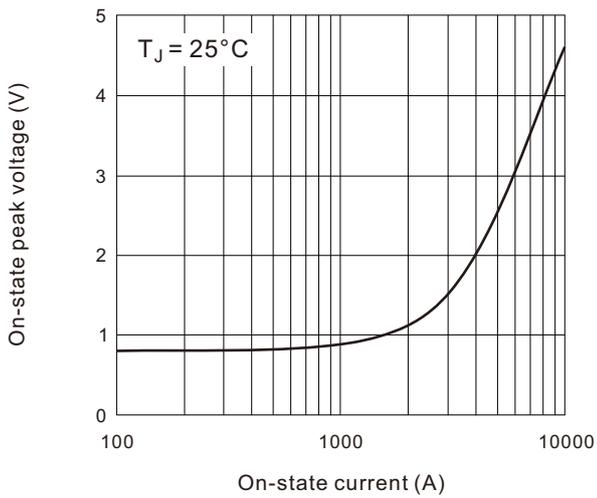


Fig.2 Transient thermal impedance (junction-case)

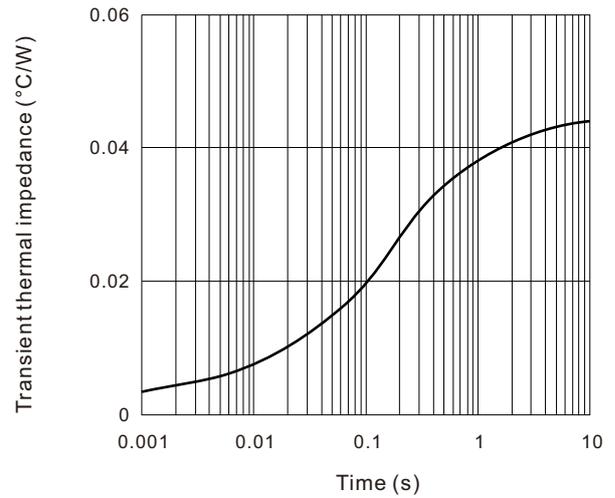


Fig.3 Power consumption vs. average current

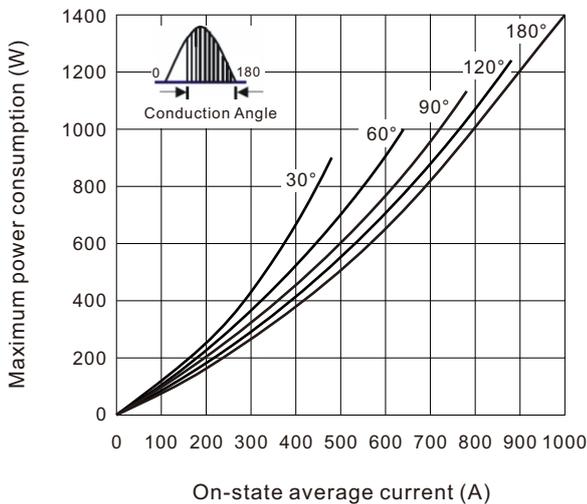


Fig.4 Case temperature vs. on-state average current

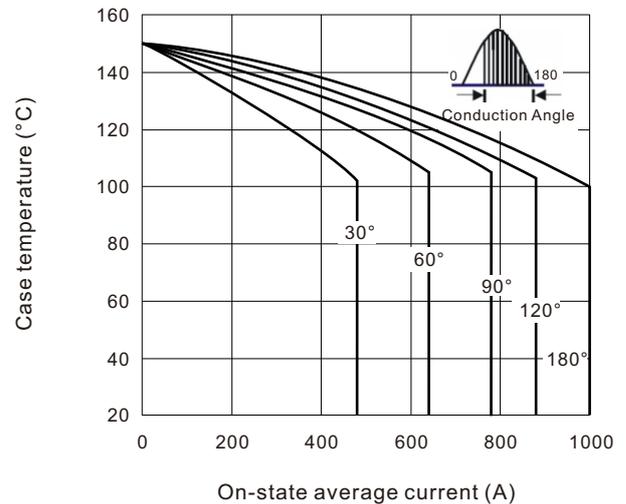


Fig.5 On-state surge current vs cycles

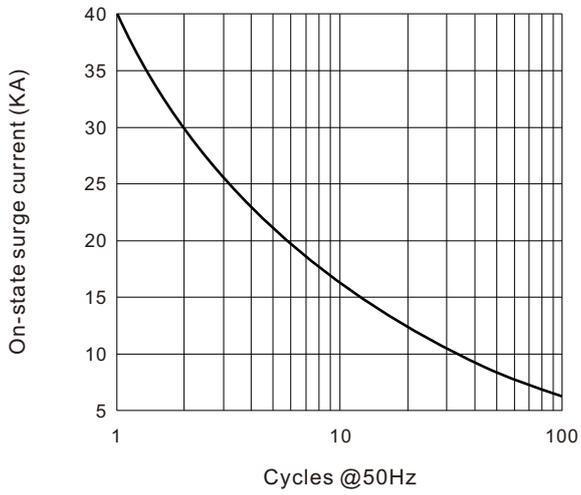


Fig.6 I²t characteristics

