

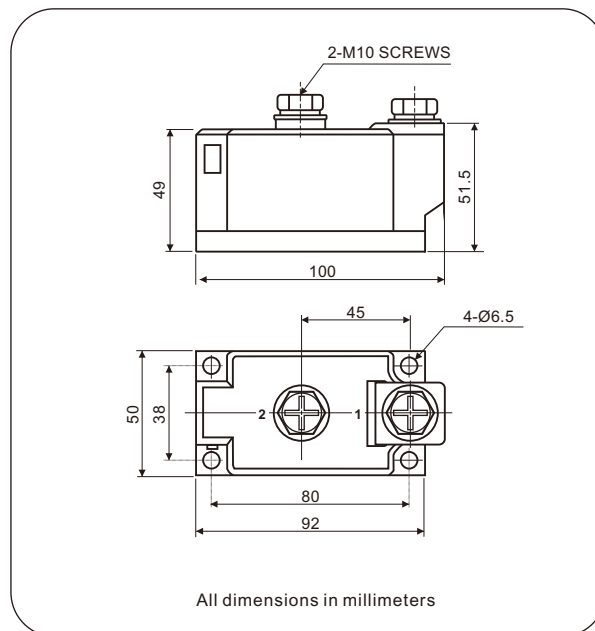
Standard Recovery Diodes, 250 A (MAGN-A-PAK Power Modules)



MAP Module

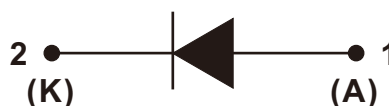
FEATURES

- High voltage
- Electrically isolated by DBC ceramic (Al_2O_3)
- 3000 V_{RMS} isolating voltage
- Industrial standard package
- High surge capability
- Modules uses high voltage power diodes in basic configuration
- Simple mounting
- UL approved file E320098 
- Compliant to RoHS
- Designed and qualified for multiple level



APPLICATIONS

- DC motor control and drives
- Battery charges
- Welders
- Power converters



PRODUCT SUMMARY

$I_{F(AV)}$	250A
Type	Modules-Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNIT
$I_{F(AV)}$		250	A
	T_C	100	$^{\circ}\text{C}$
$I_{F(RMS)}$		392	A
I_{FSM}	50 HZ	11000	
	60 HZ	11520	
I^2t	50 HZ	605	kA^2s
	60 HZ	550	
$I^2\sqrt{t}$		6050	$\text{kA}^2\sqrt{\text{s}}$
V_{RRM}		800 to 2000	V
t_J	Range	-40 to 150	$^{\circ}\text{C}$

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} AT $T_J = 150^\circ\text{C}$ mA
NKE250	08	800	900	20
	12	1200	1300	
	16	1600	1700	
	20	2000	2100	

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNIT	
Maximum average on-state current at case temperature	I _{F(AV)}	180° conduction, half sine wave			250	A	
					100	°C	
Maximum RMS on-state current	I _{F(RMS)}	180° conduction, half sine wave, 50HZ, T _C = 100°C			392	A	
Maximum peak, one-cycle, on-state non-reptitive surge current	I _{FSM}	t = 10ms	No voltage reapplied	Sine half wave, initial T _J = T _J maximum	11000		
		t = 8.3ms			11520		
		t = 10ms	100%V _{RRM} reapplied		9240		
		t = 8.3ms			9680		
Maximum I ² t for fusing	I ² t	t = 10ms	No voltage reapplied		605		kA ² s
		t = 8.3ms			550		
		t = 10ms	100%V _{RRM} reapplied		427		
		t = 8.3ms			389		
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			6050	kA ² √s	
Maximum forward voltage drop	V _{FM}	I _{FM} = 750A, T _J = 25°C, 180° conduction			1.40	V	

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak reverse and off-state leakage current	I_{RRM}	$T_J = 150^\circ\text{C}$	20	mA
RMS insulation Voltage	V_{ISO}	50 Hz, circuit to base, all terminals shorted, t = 1s	3000	V
		t = 60s	2500	

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNIT
Maximum junction operating temperature range	T _J , T _{stg}		-40 to 150	°C
Maximum thermal resistance, junction to case per junction	R _{thJC}	DC operation	0.150	°C/W
Maximum thermal resistance, case to heatsink per module	R _{thCS}	Mounting surface, smooth, flat and greased	0.035	
Mounting torque, ±10% MAP to heatsink, M6 busbar to MAP, M8		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. Lubricated threads.	4 to 6	N·m
			8 to 10	
Approximate weight			900	g
			31.7	oz.
Case style				MAGN-A-PAK (MAP)

ΔR_{thJC} CONDUCTION											
DEVICES	SINE HALF WAVE CONDUCTION AT T_J MAXIMUM					RECTANGULAR WAVE CONDUCTION AT T_J MAXIMUM					UNITS
	180°	120°	90°	60°	30°	180°	120°	90°	60°	30°	°C/W
NKE250	0.009	0.010	0.014	0.020	0.032	0.007	0.011	0.015	0.021	0.033	

Note

- Table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

Ordering Information Tabel

Device code

NKE	250	/	08
①	②		③

- ① - Module type, NKE for single diode module
- ② - Current rating : $I_{F(AV)}$
- ③ - Voltage code x 100 = V_{RRM}

Fig.1 Current ratings characteristics

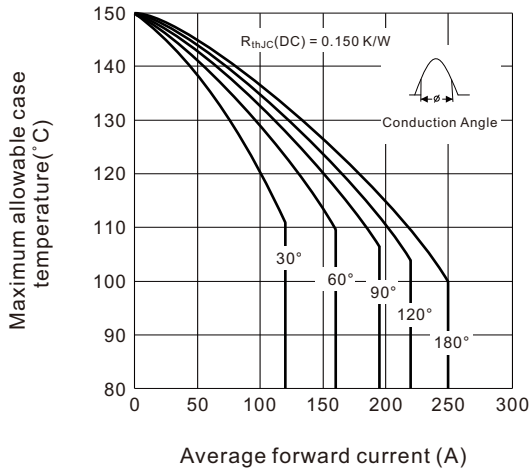


Fig.2 Current ratings characteristics

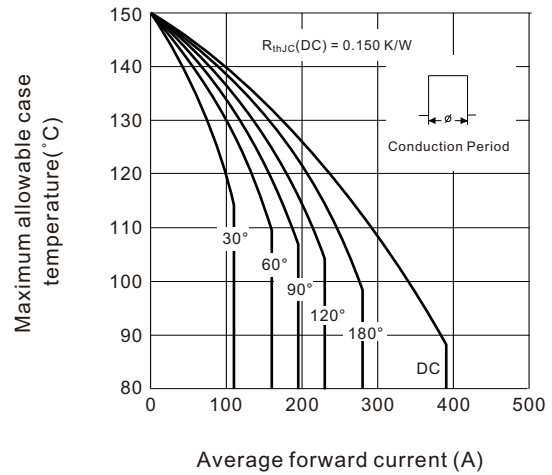


Fig.3 Forward Power Loss characteristics

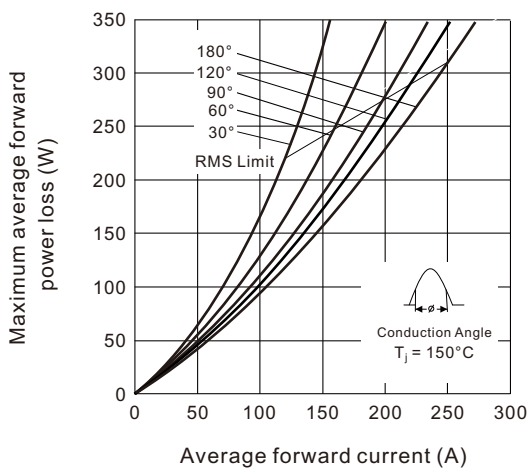


Fig.4 Forward Power Loss characteristics

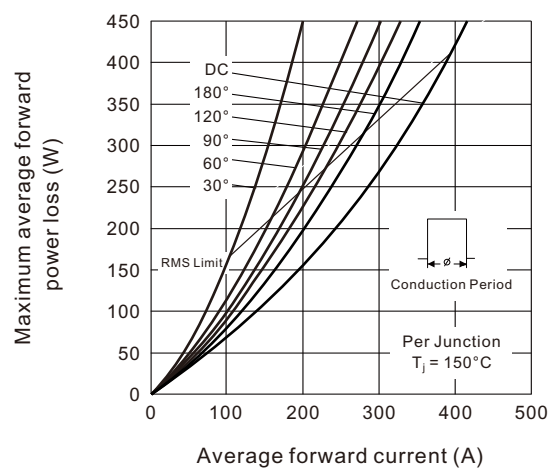


Fig.5 Forward power loss characteristics

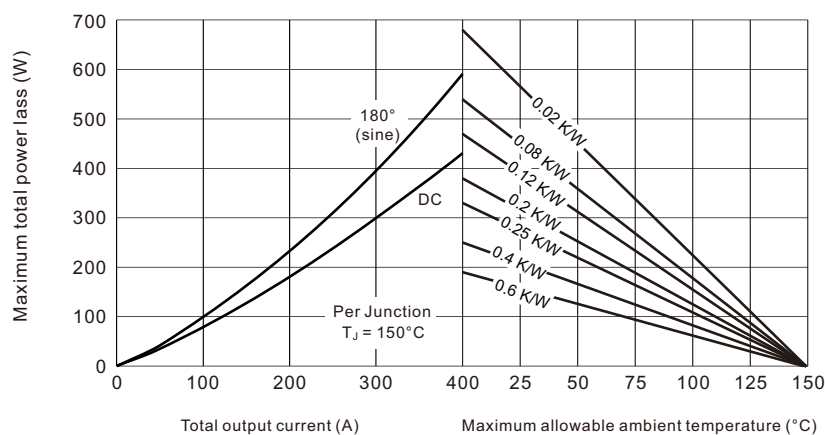


Fig.6 Maximum non-repetitive surge current

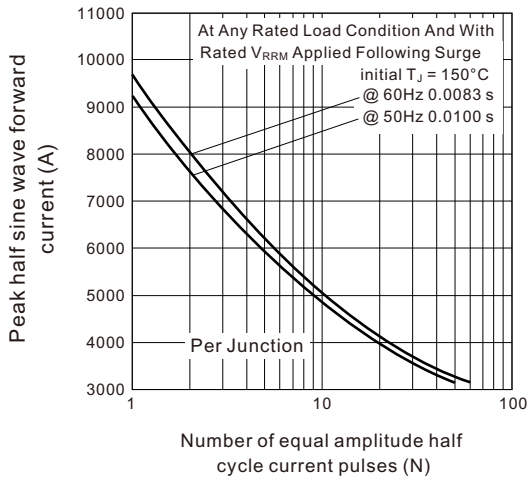


Fig.7 Maximum non-repetitive surge current

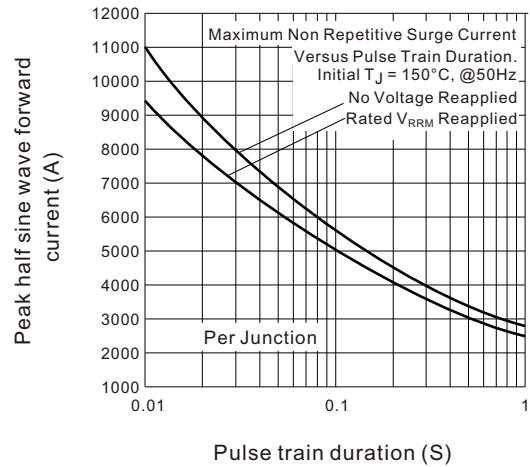


Fig.8 Forward voltage drop characteristics

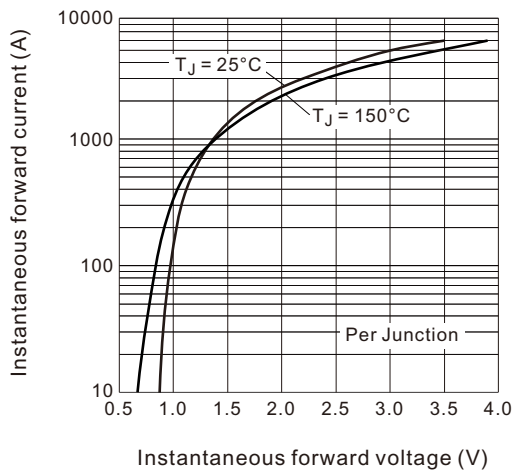


Fig.9 Thermal Impedance Z_{thJ-hs} characteristics

