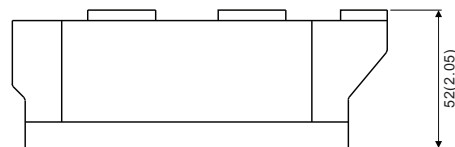
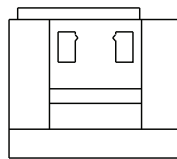
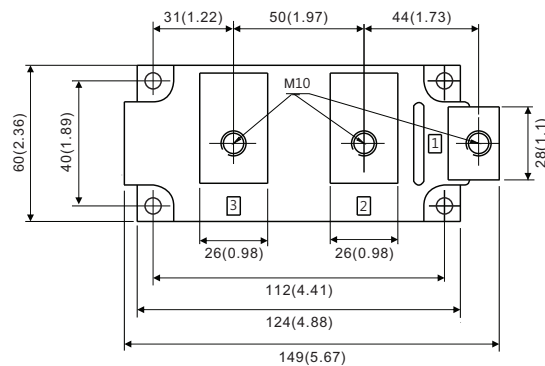
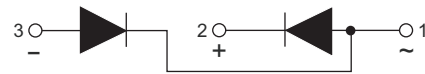


Standard Diodes, 600 A (MAGN-A-PAK Power Modules)



SUPER MAGN A-PAK



All dimensions in millimeters (inches)

FEATURES

- UL approved file E320098 
- 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

PRODUCT SUMMARY

$I_{F(AV)}$	600 A
Type	Modules - Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$		600	A
	T_C	100	°C
$I_{F(RMS)}$		942	A
	T_C	100	°C
I_{FSM}	50 Hz	19000	A
	60 Hz	20100	
I^2t	50 Hz	1805	kA ² s
	60 Hz	1683	
$I^2\sqrt{t}$		18050	kA ² /t
V_{RRM}	Range	800 to 2000	V
T_{Stg}, T_J	Range	- 40 to 150	°C

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
NKD600	08	800	900	50
	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			600	A		
					100	°C		
Maximum RMS forward current	I _{F(RMS)}	180° conduction, half sine wave at T _C = 100°C			942	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	19.0	kA		
		t = 8.3 ms			20.1			
Maximum I ² √t for fusing	I ² t	t = 10 ms	100 % V _{RRM} reapplied		1805	kA ² s		
		t = 8.3 ms			1683			
		t = 10 ms			1319			
		t = 8.3 ms			1230			
Maximum I ² √t for fusing	I ² √t	t = 0.1ms to 10 ms, no voltage reapplied			18050	kA ² √t		
Maximum forward voltage drop	V _{FM}	I _{pk} = 1000A, T _J = 25 °C, t _p = 10 ms sine pulse			1.45	V		

BLOCKING

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
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
		$T_J = 25^\circ\text{C}$	50	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 case per junction	R_{thJC}	DC operation	0.065	K/W
Maximum thermal resistance, case to heatsink	R_{thC-hs}		0.02	
Mounting torque $\pm 10\%$	SMAP to heatsink busbar to SMAP	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	Nm
			12 to 15	
Approximate weight			1500	g
Case style		See dimensions - link at the end of datasheet	SUPER MAGN-A-PAK	

' R_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.009	0.006	$T_J = T_J \text{ maximum}$	K/W
120°	0.011	0.011		
90°	0.014	0.015		
60°	0.021	0.022		
30°	0.037	0.038		

ORDERING INFORMATION TABLE

Device code

NKD	600	/	16
①	②		③

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

Note

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

Fig. 1 Current Ratings Characteristics

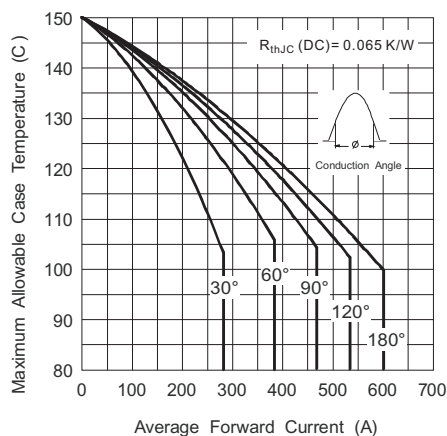


Fig. 2 Current Ratings Characteristics

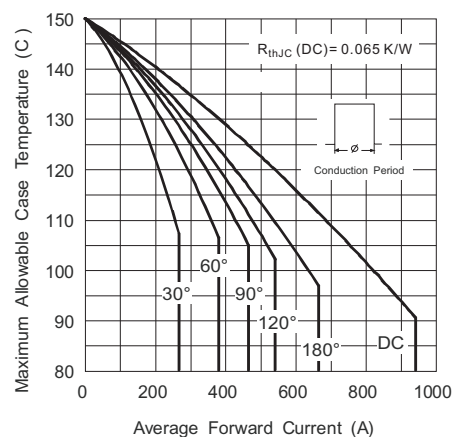


Fig. 3 Forward Power Loss Characteristics

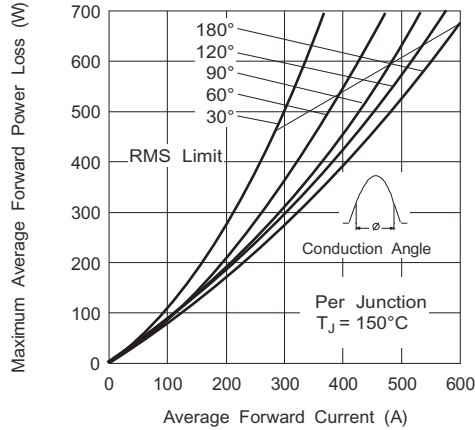


Fig. 4 Forward Power Loss Characteristics

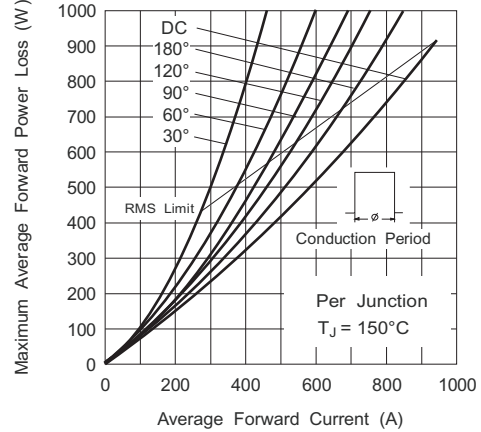


Fig.5 Maximum Non-Repetitive Surge Current

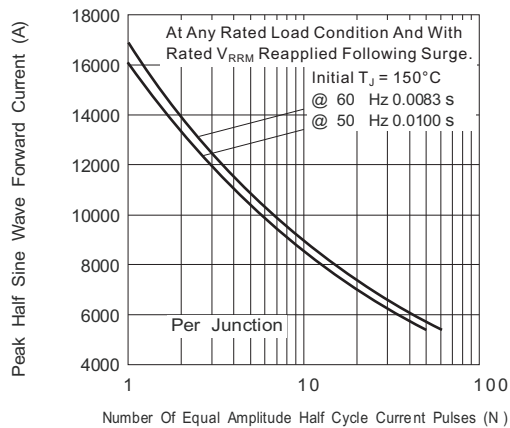


Fig.6 Maximum Non-Repetitive Surge Current

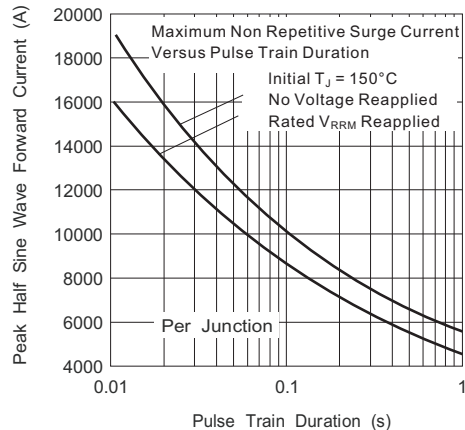


Fig. 7 Forward Power Loss Characteristics

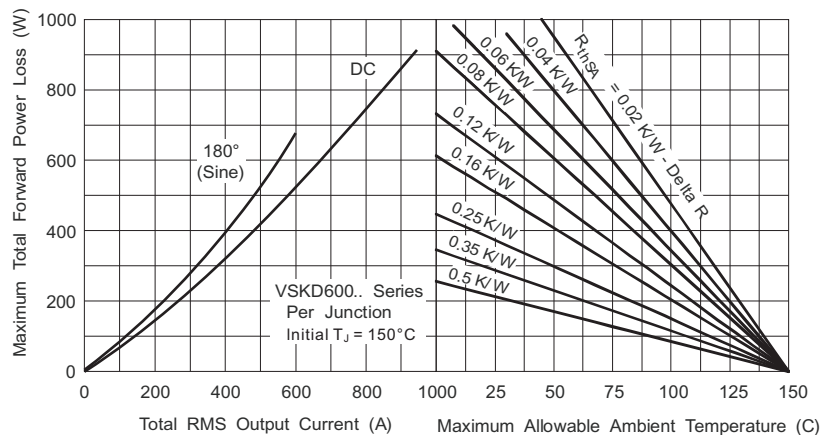


Fig.8 Forward Power Loss Characteristics

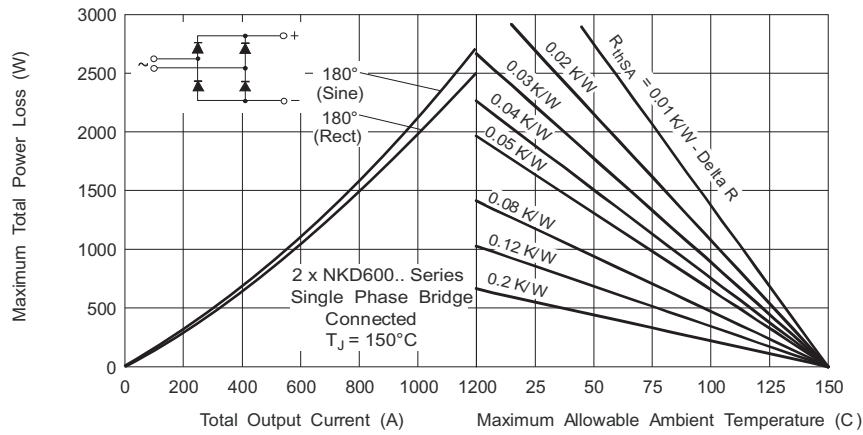


Fig. 9 Forward Power Loss Characteristics

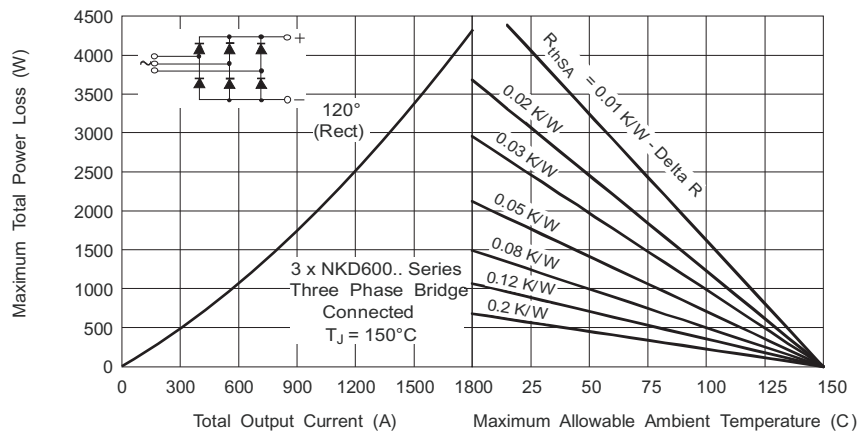


Fig.10 Thermal Impedance Z_{thJC} Characteristic

