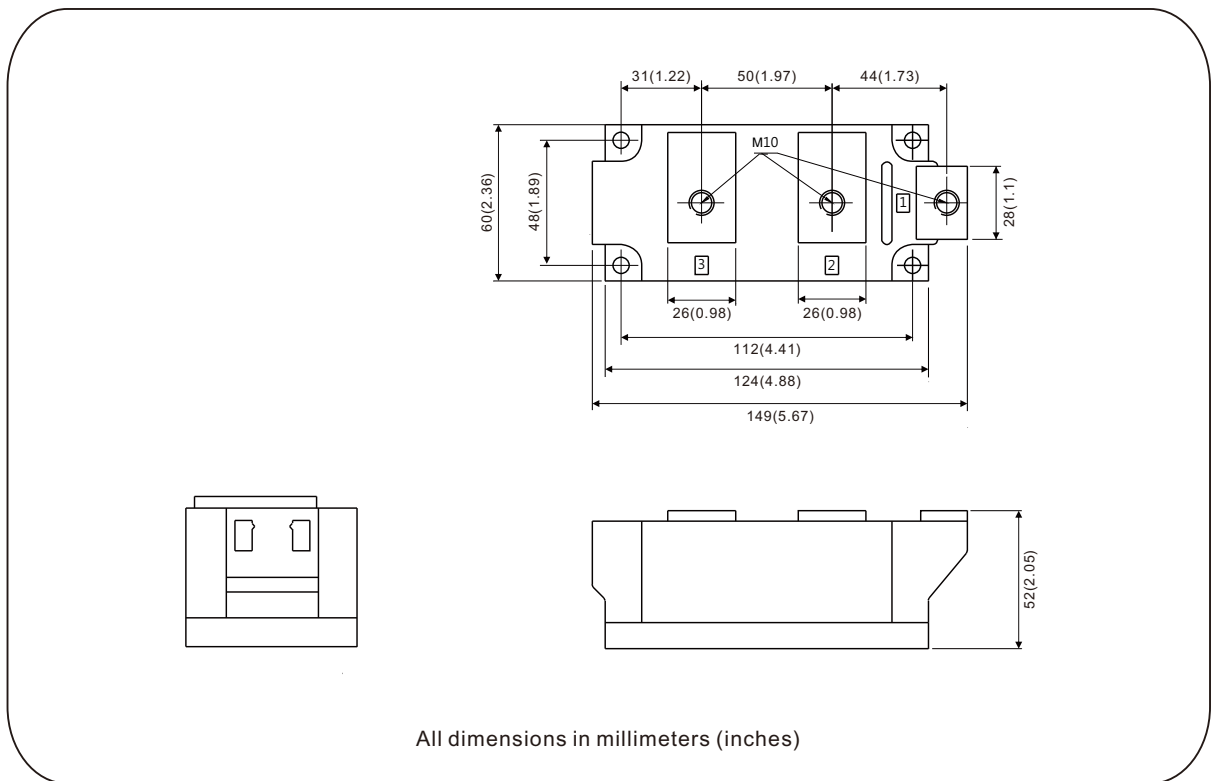
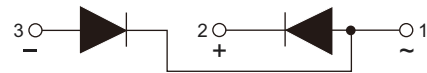




Standard Diodes Module, 600 A (MAGN-A-PAK Power Modules)



SUPER MAGN A-PAK



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	
$I^2\sqrt{f}$		18050	kA ² \sqrt{f}
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
NKD600xx-1	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 $T_C = 100^\circ\text{C}$		942	A
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reappplied	19.0	kA
		t = 8.3 ms		20.1	
		t = 10 ms	100 % V_{RRM} reappplied	16.0	kA ² s
		t = 8.3 ms		16.9	
Maximum $I^2\sqrt{f}$ for fusing	I^2t	t = 10 ms	No voltage reappplied	1805	kA
		t = 8.3 ms		1683	
		t = 10 ms	100 % V_{RRM} reappplied	1280	kA ² s
		t = 8.3 ms		1185	
Maximum $I^2\sqrt{f}$ for fusing	$I^2\sqrt{f}$	t = 0.1ms to 10 ms, no voltage reappplied		18050	kA ² \sqrt{f}
Maximum forward voltage drop	V_{FM}	$I_{pk} = 1000\text{A}, T_J = 25^\circ\text{C}, t_p = 10\text{ ms sine pulse}$		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

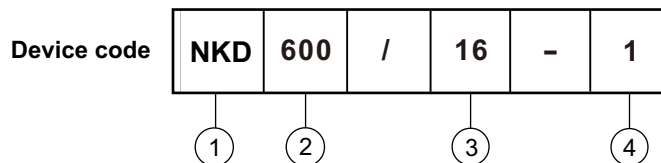
THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating and storage temperature range	T_J, T_{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to case per junction	R_{thJC}	DC operation	0.065	K/W
Maximum thermal resistance, case to heatsink	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 12 to 15	Nm
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	$T_J = T_J$ maximum	K/W
120°	0.011	0.011		
90°	0.014	0.015		
60°	0.021	0.022		
30°	0.037	0.038		

Note

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

ORDERING INFORMATION TABLE



- ① - Module type: NKD for (Diode + Diode) module
- ② - Current rating: $I_{F(AV)}$, 600 = 600V
- ③ - Voltage code x 100 = V_{RRM}
- ④ - "1" for Vishay-Super MAP VSKD600 package outline

Fig. 1 Current Ratings Characteristics

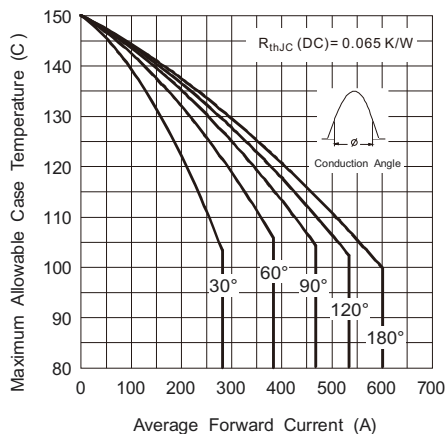


Fig. 2 Current Ratings Characteristics

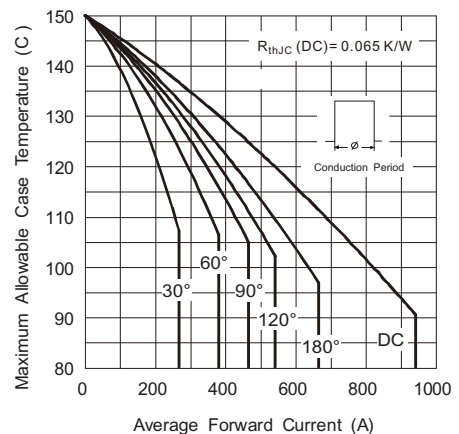


Fig. 3 Forward Power Loss Characteristics

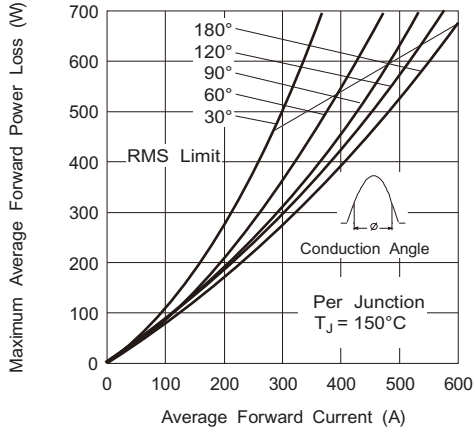


Fig. 4 Forward Power Loss Characteristics

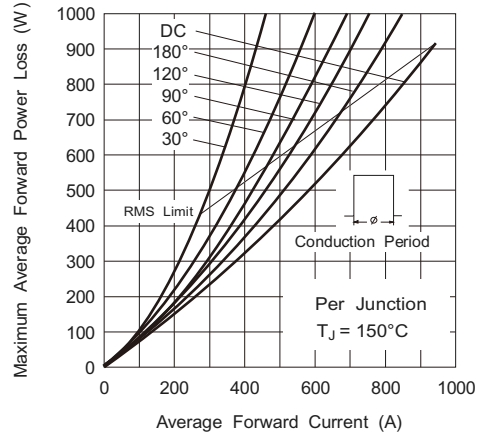


Fig.5 Maximum Non-Repetitive Surge Current

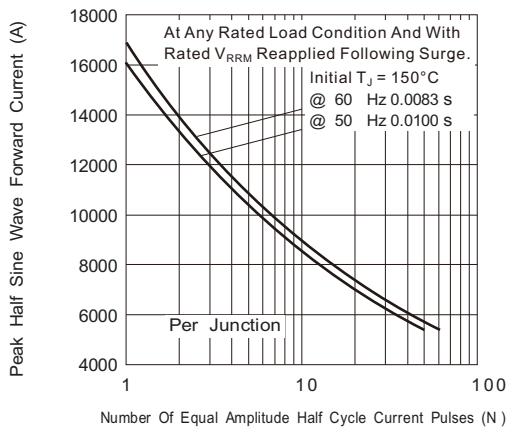


Fig.6 Maximum Non-Repetitive Surge Current

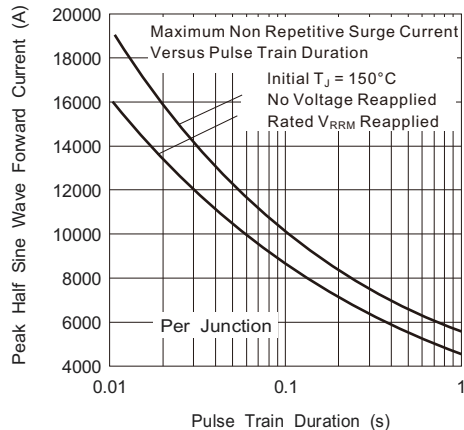


Fig. 7 Forward Power Loss Characteristics

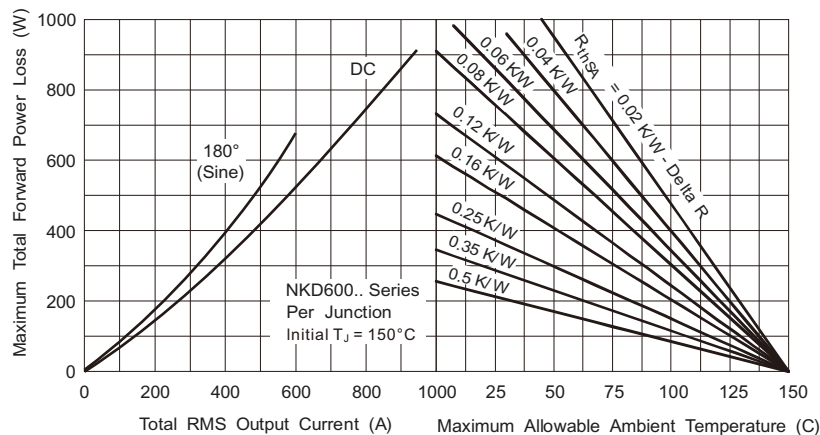


Fig.8 Forward Power Loss Characteristics

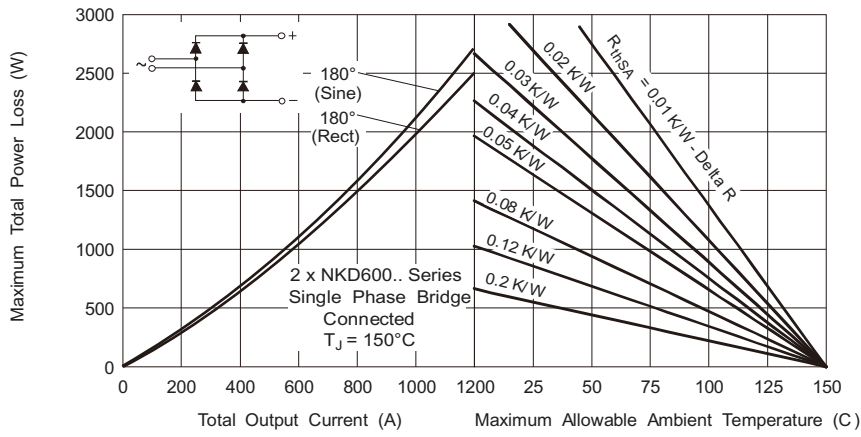


Fig. 9 Forward Power Loss Characteristics

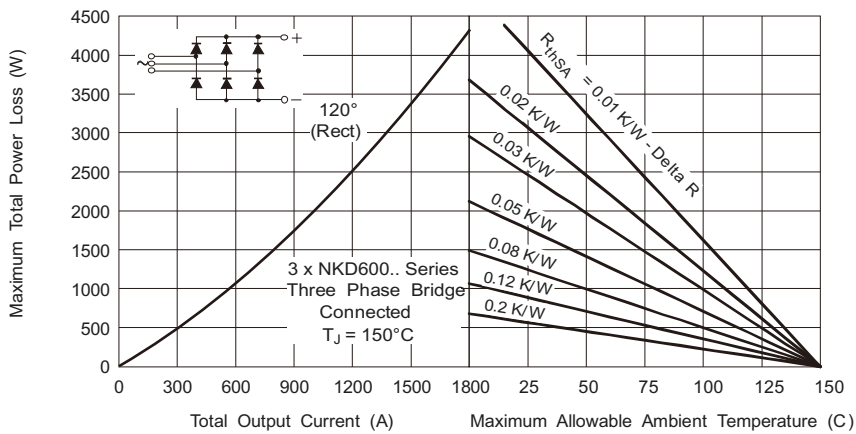


Fig.10 Thermal Impedance Z_{thJC} Characteristic

