

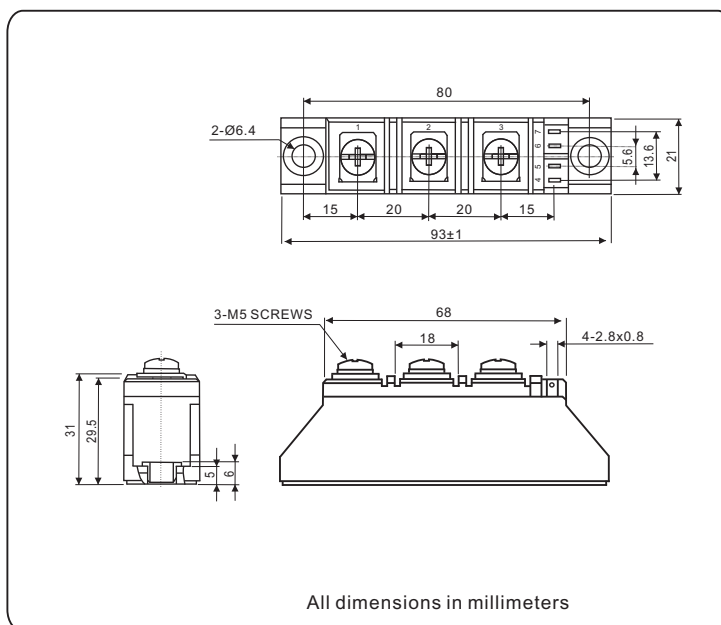
Thyristor/Diode and Thyristor/Thyristor, 27A (ADD-A-PAK Power Modules)



ADD-A-PAK

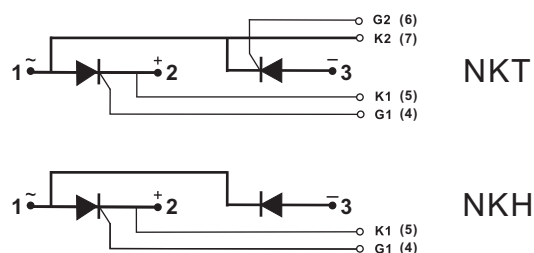
FEATURES

- High voltage
- Electrically isolated by DBC ceramic (Al_2O_3)
- 3000 V_{RMS} isolating voltage
- Industrial standard package
- High surge capability
- Glass passivated chips
- Modules uses high voltage power thyristor/diodes in two basic configurations
- 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
- Lighting control
- Heat and temperature control



PRODUCT SUMMARY

$I_{T(AV)} / I_{F(AV)}$	27 A
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MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUE	UNITS
$I_{T(AV)} / I_{F(AV)}$	85 °C	27	A
$I_{T(RMS)} / I_{F(RMS)}$	85 °C	60	A
I_{TSM} / I_{FSM}	50 Hz	520	
	60 Hz	546	
I^2t	50 Hz	1.35	kA^2s
	60 Hz	1.23	
$I^2\sqrt{t}$		13.5	$\text{kA}^2\sqrt{\text{s}}$
$V_{\text{DRM}} / V_{\text{RRM}}$	Range	400 to 1600	V
T_J	Range	-40 to 125	°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V_{RRM}/V_{DRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V_{RSM}/V_{DSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM}/I_{DRM} AT 125 °C mA
NKT26..A NKH26..A	04	400	500	8
	08	800	900	
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUE	UNITS	
Maximum average on-state current (thyristors)	$I_{T(AV)}$	180° conduction, half sine wave, $T_C = 85^{\circ}C$			27	A	
Maximum average forward current (diodes)	$I_{F(AV)}$						
Maximum RMS on-state current	$I_{T(RMS)}$ $I_{F(RMS)}$	180° conduction, half sine wave ,50Hz , $T_C = 85^{\circ}C$			60	A	
Maximum peak, one-cycle, on-state non-repetitive surge current	I_{TSM} I_{FSM}	t = 10 ms	No voltage reapplied	Sine half wave, initial $T_J = T_J$ maximum	520		
		t = 8.3 ms			546		
		t = 10 ms	100% V_{RRM} reapplied		436		
		t = 8.3 ms			458		
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		1.35	kA ² s	
		t = 8.3 ms			1.23		
		t = 10 ms	100% V_{RRM} reapplied		0.95		
		t = 8.3 ms			0.86		
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reapplied			13.5	kA ² $\sqrt{s}$	
Maximum value of threshold voltage	$V_{T(TO)}$	$T_J = T_J$ Maximum			1.10	V	
Maximum value of on-state slope resistance	r_t				0.95	mΩ	
Maximum on-state voltage drop	V_{TM}	$I_{TM} = 80A$, $T_J = 25^{\circ}C$, 180° conduction			1.6	V	
Maximum forward voltage drop	V_{FM}	$I_{FM} = 80A$, $T_J = 25^{\circ}C$, 180° conduction			1.3		
Maximum holding current	I_H	Anode supply = 6V, resistive load $T_J = 25^{\circ}C$			150	mA	
Maximum latching current	I_L				400		

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak reverse and off-state leakage current	I_{RRM} I_{DRM}	$T_J = 150^\circ\text{C}$	8	mA
RMS isolation Voltage	V_{ISO}	50 Hz, circuit to base, all terminals shorted	2500 (1min) 3000 (1s)	V
Critical rate of rise of off-state voltage	dV/dt	$T_J = T_J$ maximum, exponential to 67 % rated V_{DRM}	1000	V/μs

TRIGGERING					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak gate power	P _{GM}	t _p ≤ 5 ms, T _J = T _J maximum		10	W
Maximum average gate power	P _{G(AV)}	f = 50 Hz, T _J = T _J maximum		3	
Maximum peak gate current	I _{GM}	t _p ≤ 5 ms, T _J = T _J maximum		3	A
Maximum peak negative gate voltage	- V _{GM}			10	V
Maximum required DC gate voltage to trigger	V _{GT}	T _J = 25 °C	Anode supply = 6 V, resistive load; R _a = 1 Ω	0.7~1.5	
Maximum required DC gate current to trigger	I _{GT}			20~100	mA
Maximum gate voltage that will not trigger	V _{GD}	T _J = T _J maximum, 66.7% V _{DRM} applied		0.25	V
Maximum gate current that will not trigger	I _{GD}			10	mA
Maximum rate of rise of turned-on current	di/dt	T _J = 25°C ,I _{GM} = 1.5A ,t _r ≤ 0.5 μs		150	A/μs

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating temperature range	T _J		- 40 to 125	°C
Maximum storage temperature range	T _{Stg}		- 40 to 150	
Maximum thermal resistance, junction to case per junction	R _{thJC}	DC operation	0.7	°C/W
Maximum thermal resistance, case to heatsink per module	R _{thCS}	Mounting surface, smooth , flat and greased	0.19	
Mounting torque ± 10 %	AAP to heatsink, M6 busbar to AAP, M5	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	N.m
Approximate weight			120	g
			4.23	oz.
Case style			ADD-A-PAK	

ORDERING INFORMATION TABLE

Device code	NKT	26	/	16	A
	①	②	③	④	
①	- Module type: NKT for (Thyristor + Thyristor) module NKH for (Thyristor + Diode) module				
②	- Current rating: $I_{T(AV)}$ / $I_{F(AV)}$				
③	- Voltage code x 100 = V_{RRM}				
④	- Assembly type, "A" for soldering type				

Nell High Power Products

Fig.1 Peak on-state voltage vs. peak on-state current

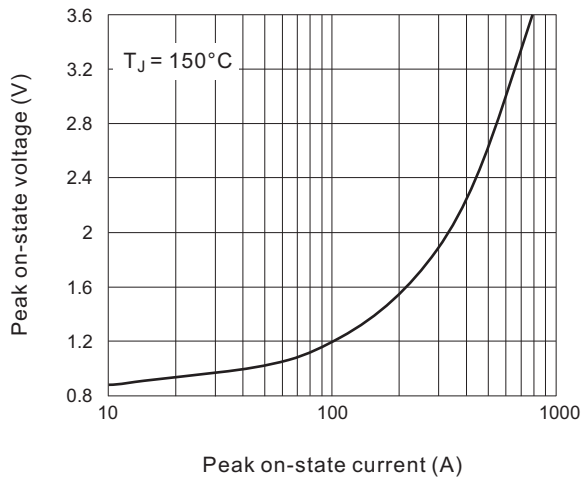


Fig.2 Max. junction to case thermal impedance vs. time

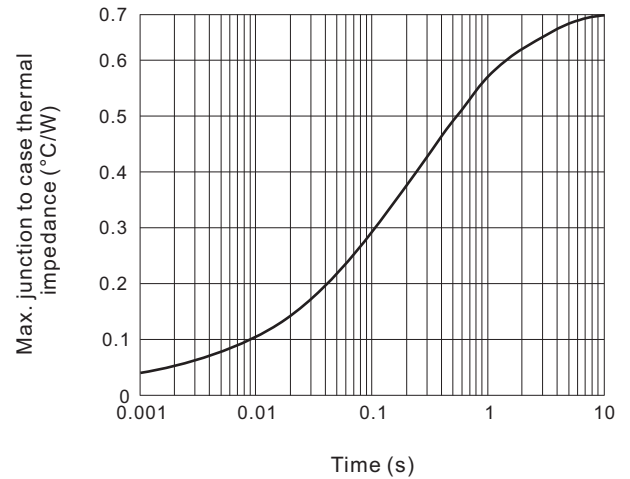


Fig.3 Power Dissipation Vs. Average On-state Current

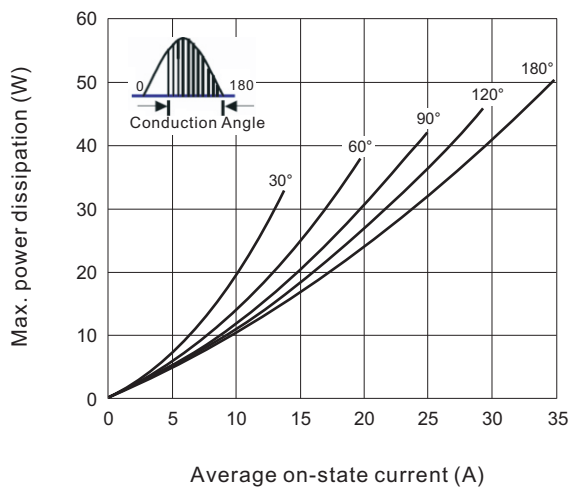


Fig.4 Case temperature vs. average on-state current

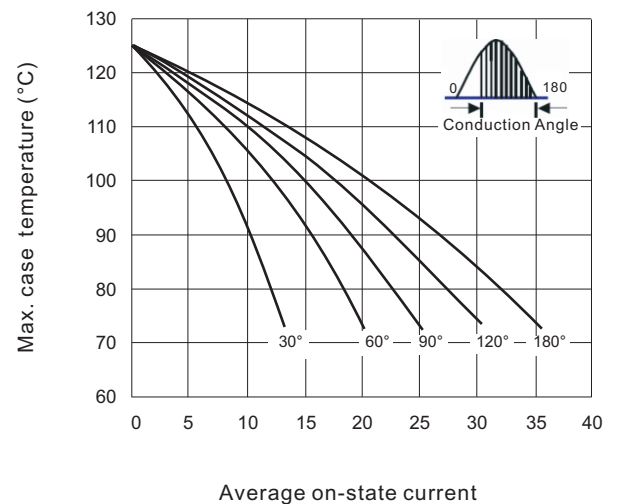


Fig.5 Surge on-state current vs. cycles

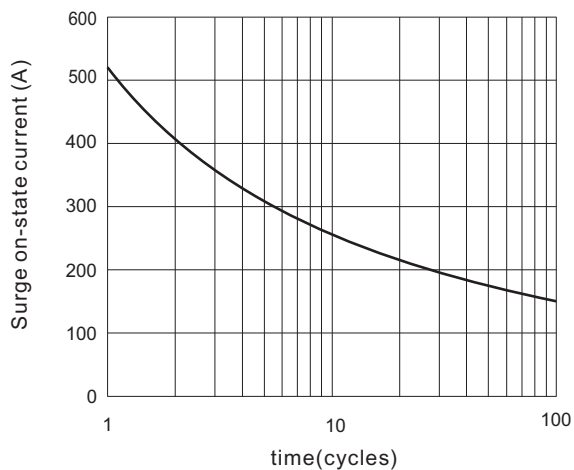


Fig.6 Gate characteristics

