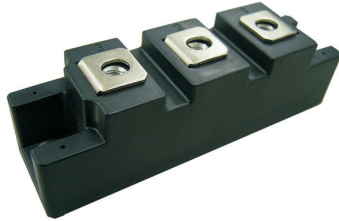
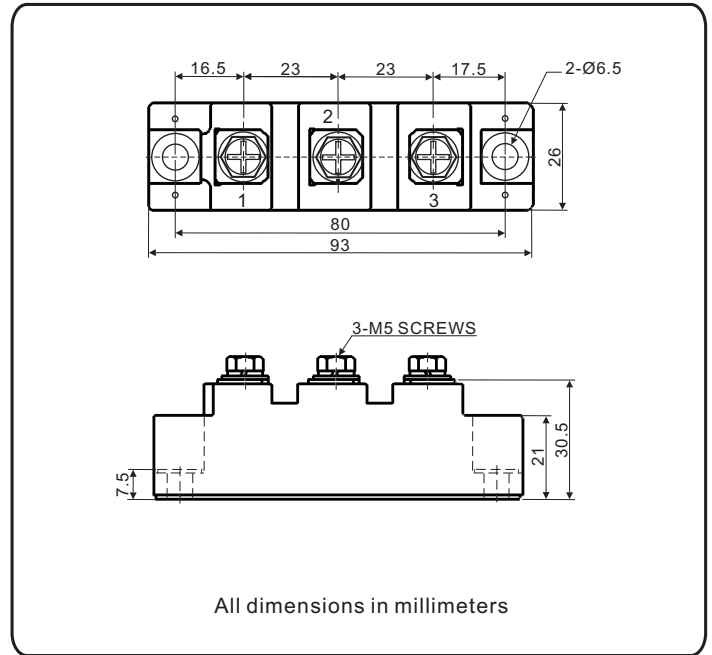


## Standard Recovery Diodes, 160 A (INT-A-PAK Power Modules)



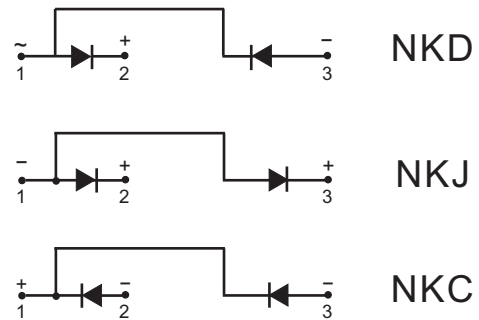
### FEATURES

- 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 diodes in four 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



PRODUCT SUMMARY	
$I_{F(AV)}$	160 A
Type	Modules - Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUE	UNITS
$I_{F(AV)}$		160	A
	$T_C$	100	C
$I_{F(RMS)}$		251	A
$I_{FSM}$	50 Hz	6000	
	60 Hz	6300	
$I^2t$	50 Hz	180	kA <sup>2</sup> s
	60 Hz	163	
$I^2\sqrt{t}$		1800	kA <sup>2</sup> $\sqrt{s}$
$V_{RRM}$		400 to 1600	V
$T_J$	Range	-40 to 150	C

## ELECTRICAL SPECIFICATIONS

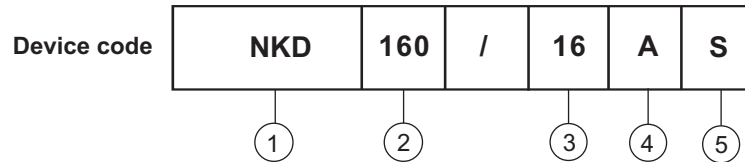
VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V <sub>RRM</sub> , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V <sub>RSM</sub> , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I <sub>RRM</sub> AT 150 °C mA
NKD160..S	04	400	500	8
	08	800	900	
NKJ160..S	12	1200	1300	
NKC160..S	14	1400	1500	
	16	1600	1700	

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNITS	
Maximum average on-state current at case temperature	I <sub>F(AV)</sub>	180 conduction, half sine wave		160	A	
				100	°C	
Maximum RMS on-state current	I <sub>F(RMS)</sub>	180 conduction, half sine wave ,50Hz ,T <sub>C</sub> = 100°C		251	A	
Maximum peak, one-cycle, on-state non-repetitive surge current	I <sub>FSM</sub>	t = 10 ms	No voltage reappplied	6000		A
		t = 8.3 ms		6300		
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms		Sine half wave, initial T <sub>J</sub> = T <sub>J</sub> maximum	180	kA
		t = 8.3 ms			163	
		t = 10 ms	100% V <sub>RRM</sub> reappplied	126		
		t = 8.3 ms	114			
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 ms to 10 ms, no voltage reappplied		1800	kA <sup>2</sup> √s	
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>FM</sub> = 300A , T <sub>J</sub> = 25 °C, 180 conduction		1.4	V	

BLOCKING					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak reverse and off-state leakage current	I <sub>RRM</sub>	T <sub>J</sub> = 150 °C		8	mA
RMS isolation Voltage	V <sub>ISO</sub>	50 Hz, circuit to base ,all terminals shorted ,t = 1s		3000	V
		t = 60s		2500	

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating temperature range	$T_{Stg}, T_J$		- 40 to 150	C
Maximum thermal resistance, junction to case per junction	$R_{thJC}$	DC operation	0.21	C/W
Maximum thermal resistance, case to heatsink per module	$R_{thCS}$	Mounting surface, smooth, flat and greased	0.054	
Mounting torque 10 %	IAP to heatsink, M6 busbar to IAP, 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 to 6	N.m
Approximate weight			140	g
			4.9	oz.
Case style			New INT-A-PAK	

### ORDERING INFORMATION TABLE



- 1 - Module type: NKD.NKJ and NKC for (Diode + Diode) module
- 2 - Current rating:  $I_{F(AV)}$
- 3 - Voltage code x 100 =  $V_{RRM}$
- 4 - Assembly type, "A" for soldering type
- 5 - "S" for sanrex's IAP package

Fig1. Power consumption

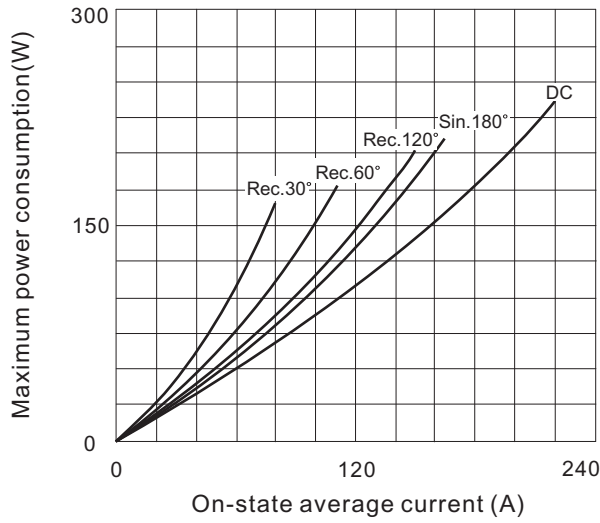


Fig2. Forward Current Derating Curve

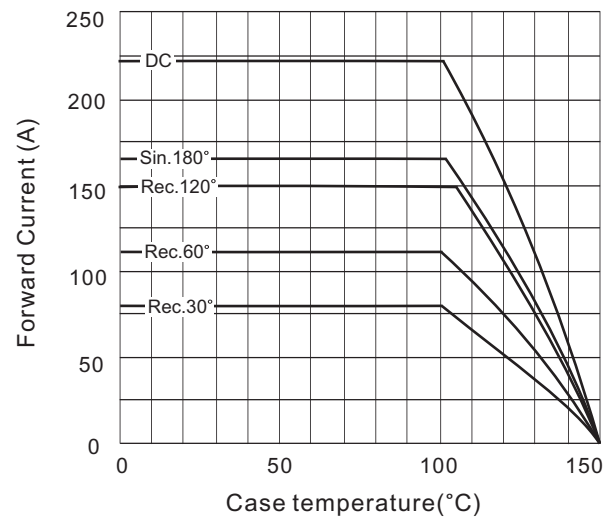


Fig3. Transient thermal impedance

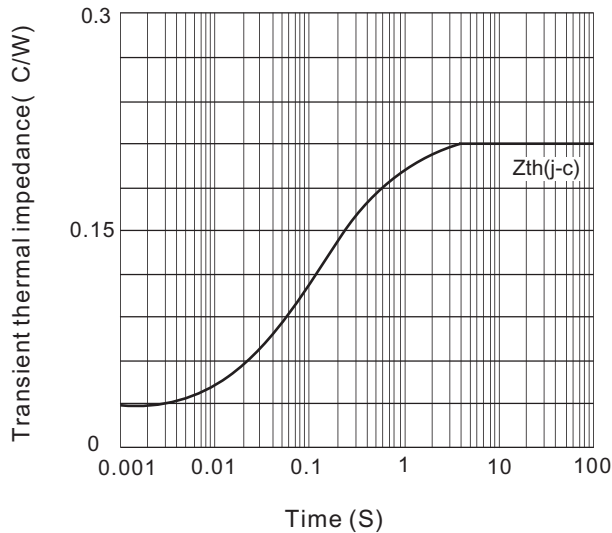


Fig4. Max Non-Repetitive Forward Surge Current

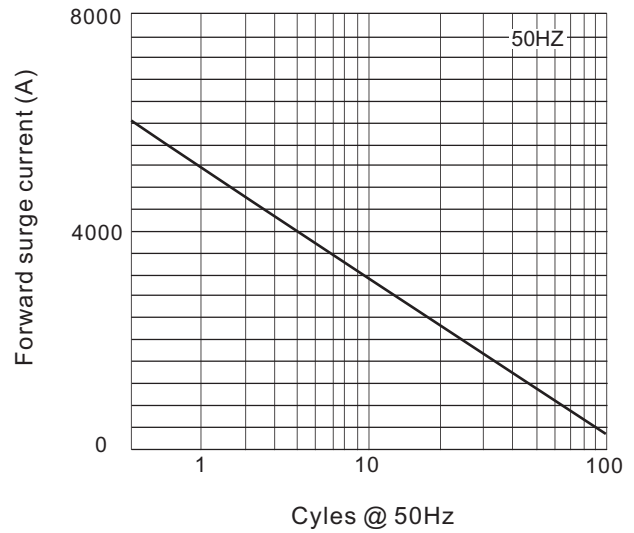


Fig5. Forward Characteristics

