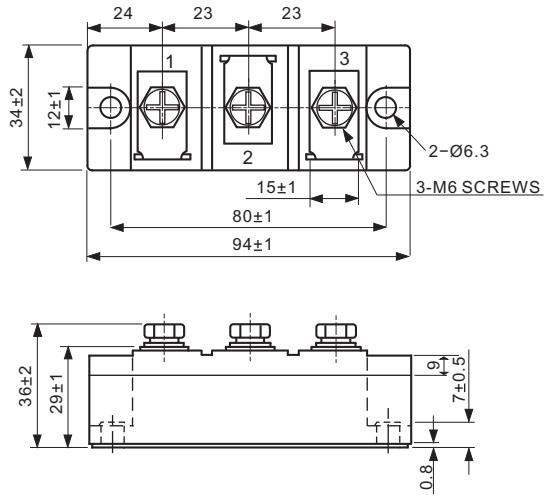
Standard Recovery Diodes, 135 A
(INT-A-PAK Power Modules)



All dimensions in millimeters

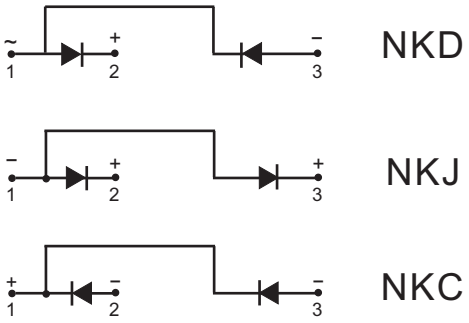
FEATURES

- 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 four basic configurations
- Simple mounting
- UL approved file E320098
- Compliant to RoHs
- Designed and qualified for multiple level

RoHS COMPLIANT

BENEFITS

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



PRODUCT SUMMARY	
$I_{F(AV)}$	135A
Type	Modules-Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNIT
$I_{F(AV)}$		135	A
	T_C	100	°C
$I_{F(RMS)}$		212	A
I_{FSM}	50 HZ	3800	
	60 HZ	3979	
I^2t	50 HZ	72.2	kA^2s
	60 HZ	65.7	
$I^2\sqrt{t}$		722	$kA^2\sqrt{s}$
V_{RRM}	Range	400 to 1600	V
t_J		-40 to 150	°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°C mA
NKD135 NKJ135 NKC135	04	400	500	8
	08	800	900	
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	

FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNIT
Maximum average on-state current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			135	A
					100	°C
Maximum RMS on-state current	$I_{F(RMS)}$	DC at 100°C case temperature			212	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	3800	A
		t = 8.3ms			3979	
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied	Sine half wave, initial T_J = T_J maximum	72.2	kA^2s
		t = 8.3ms			65.7	
		t = 10ms	100%V_{RRM} reapplied		50.5	
		t = 8.3ms			46	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			722	$kA^2\sqrt{s}$
Maximum forward voltage drop	V_{FM}	I_{FM} = 400A, T_J = 25°C, 180° conduction			1.4	V

BLOCKING

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum peak reverse and off-state leakage current	I_{RRM}	T_J = 150°C	8	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	0.31	°C/W
Maximum thermal resistance, case to heatsink per module	R_{thCS}	Mounting surface, smooth, flat and greased	0.09	
Mounting torque, ±10% — IAP to heatsink, M6 / busbar to IAP, M6		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			220	g
			7.8	oz.
Case style			New INT-A-PAK	

Ordering Information Tabel

Device code

NKD	135	/	16	A
①	②		③	④

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

Fig.1 On-state current vs. voltage characteristic

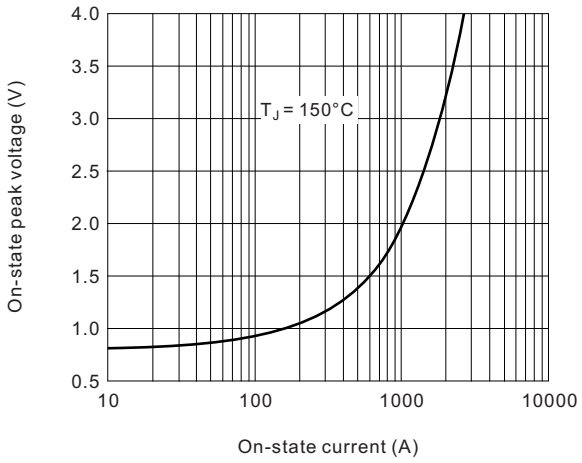


Fig.2 Transient thermal impedance (junction-case)

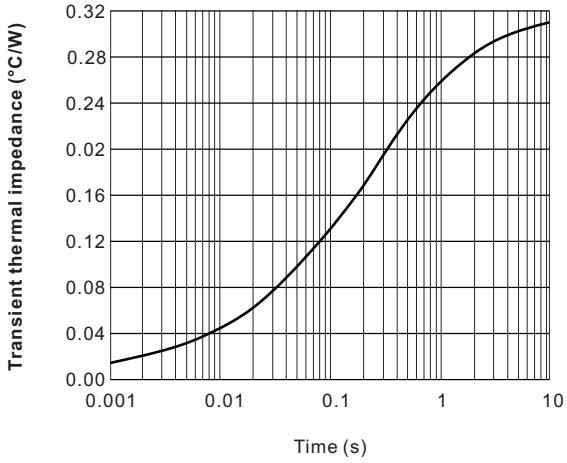


Fig.3 Power consumption vs. average current

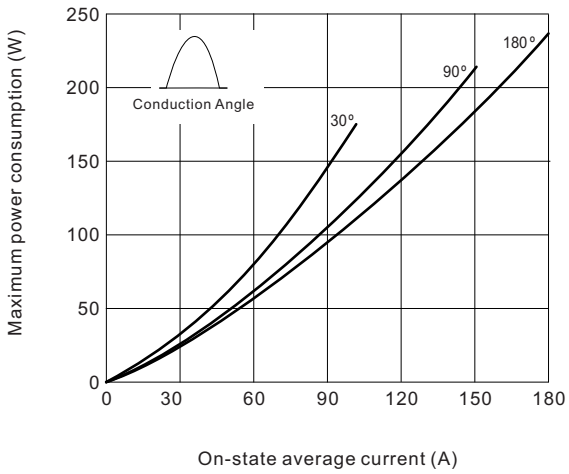


Fig.4 Case temperature vs. on-state average current

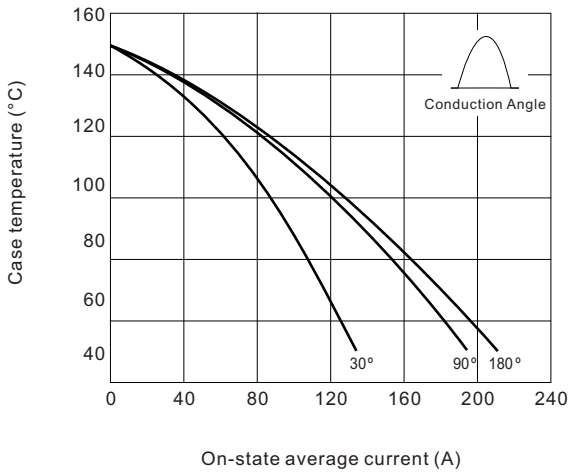


Fig.5 On-state surge current vs cycles

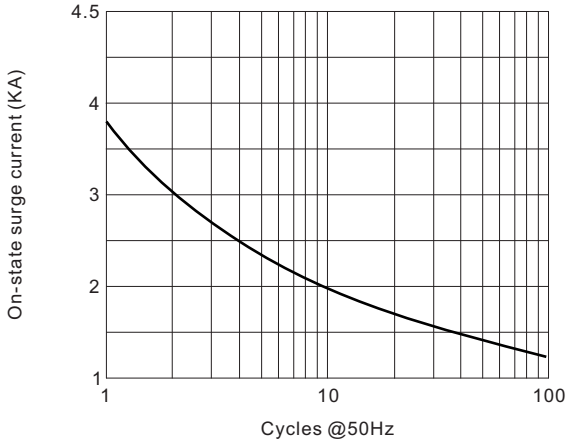


Fig.6 I^2t Characteristic