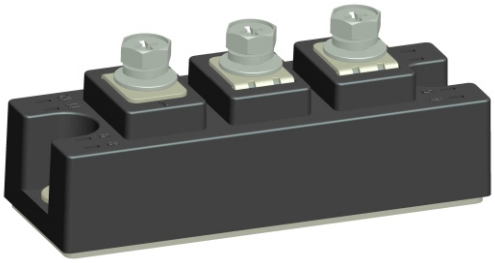
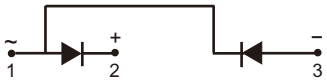
Standard Recovery Diodes, 280 A
(INT-A-PAK Power Modules)



FEATURES

- High voltage
- Electrically isolated by DBC ceramic (Al_2O_3)
- 3000 V_{RMS} isolating voltage
- Glass passivated chip junctions
- Industrial standard package
- High surge capability
- Modules uses high voltage power diodes in three basic configurations
- Simple mounting
- UL approved file E320098
- Compliant to RoHS
- Designed and qualified for multiple level



NKD

APPLICATIONS

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

PRODUCT SUMMARY	
$I_{F(AV)}$	280 A
Type	Modules - Diode, High Voltage

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUE	UNITS
$I_{F(AV)}$		280	A
	T_C	100	°C
$I_{F(RMS)}$		438	A
I_{FSM}	50 Hz	6600	A
	60 Hz	6910	A
I^2t	50 Hz	218	kA^2s
	60 Hz	198	kA^2s
$I^2\sqrt{t}$		2178	$kA^2\sqrt{s}$
V_{RRM}		800 to 1600	V
T_J	Range	-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 150 °C mA
NKD280	08	800	900	10
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	

FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average on-state current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			280	A
					100	°C
Maximum RMS on-state current	$I_{F(RMS)}$	180° conduction, half sine wave, 50Hz , T_C = 100°C			438	A
Maximum peak, one-cycle on-state, non-reptitive surge current	I_{FSM}	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial T_J = T_J maximum	6600	A
		t = 8.3ms			6910	
		t = 10ms	100%V_{RRM} reapplied		5540	
		t = 8.3ms			5800	
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied		218	kA^2s
		t = 8.3ms			198	
		t = 10ms	100%V_{RRM} reapplied		153	
		t = 8.3ms			140	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			2178	$kA^2\sqrt{s}$
Maximum value of threshold voltage	$V_{F(TO)}$	I_F=720A, T_J =T_J maximum			0.75	V
Maximum value of on-state slope resistance	r_t				1.10	mΩ
Maximum forward voltage drop	V_{FM}	I_{FM} =720A, T_J = 25°C, 180°C conduction			1.45	V

BLOCKING

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNITS
Maximum peak reverse and off-state leakage current	I_{RRM}	T_J = 150 °C	10	mA
RMS isolation 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	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	0.08	°C/W
Maximum thermal resistance, case to heatsink per module	R_{thCS}	Mounting surface, smooth , flat and greased	0.050	°C/W
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 TABLE

Device code

NKD	280	/	16	A
1	2		3	4

1 - Module type: NKD 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

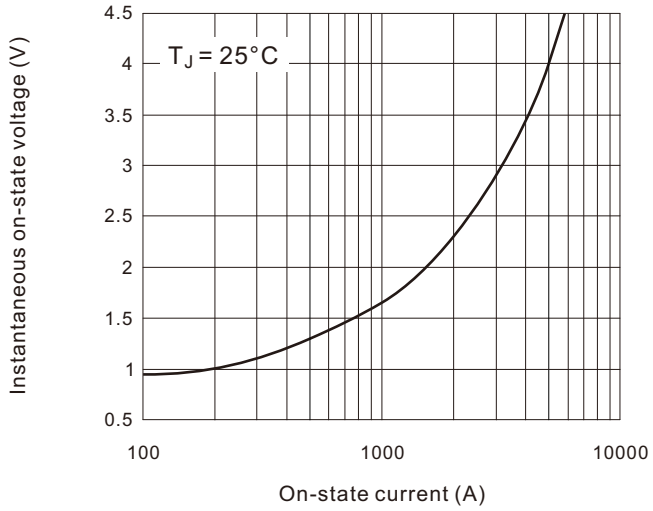


Fig.2 Transient thermal impedance(junction-case)

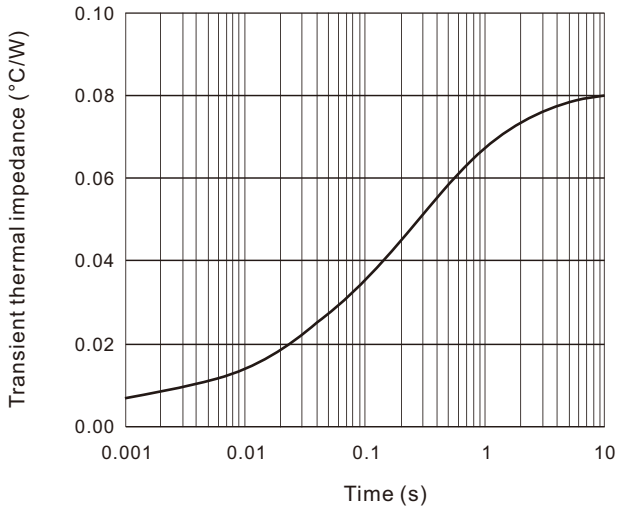


Fig.3 Power consumption vs. average current

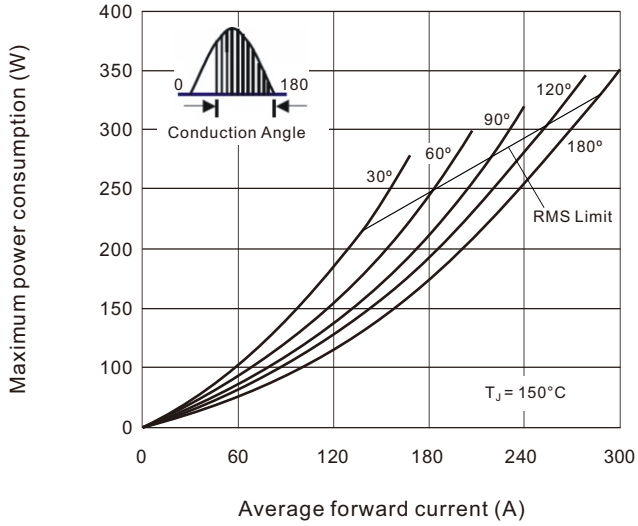


Fig.4 Case temperature vs. on-state average current

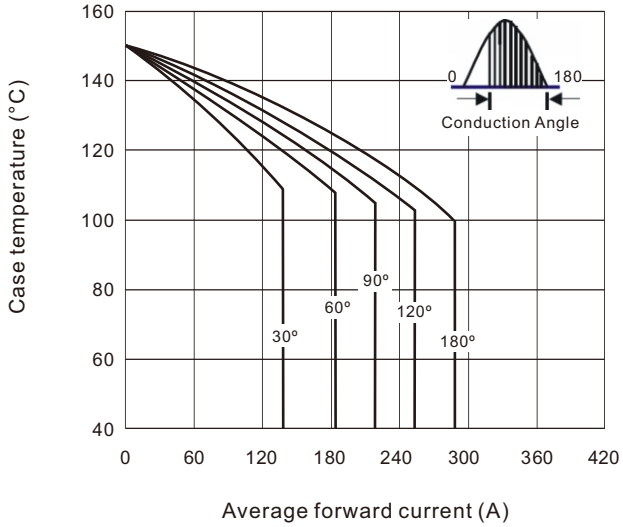


Fig.5 On-state surge current vs. cycles

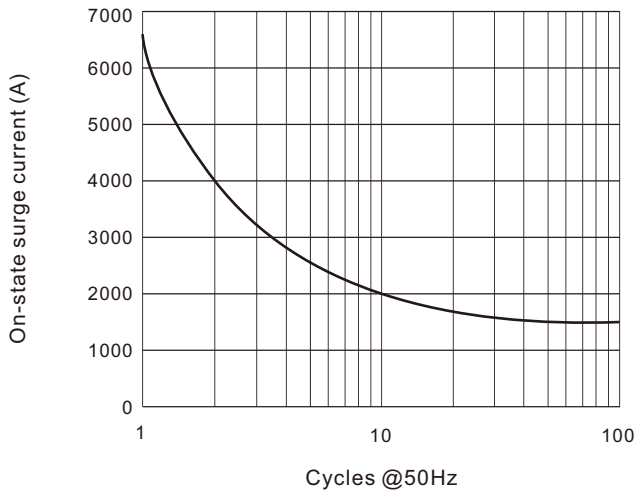
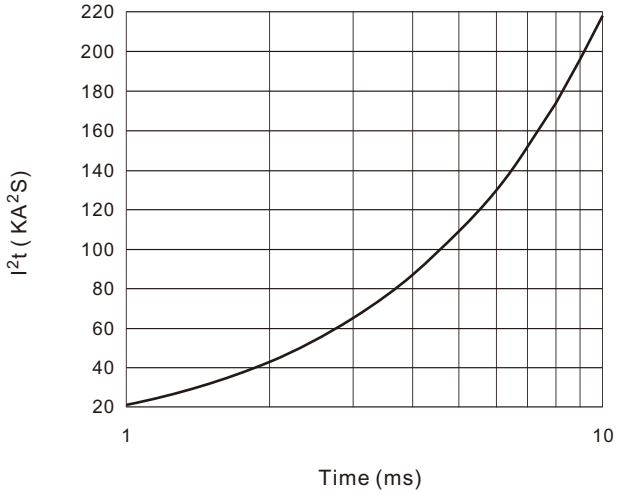
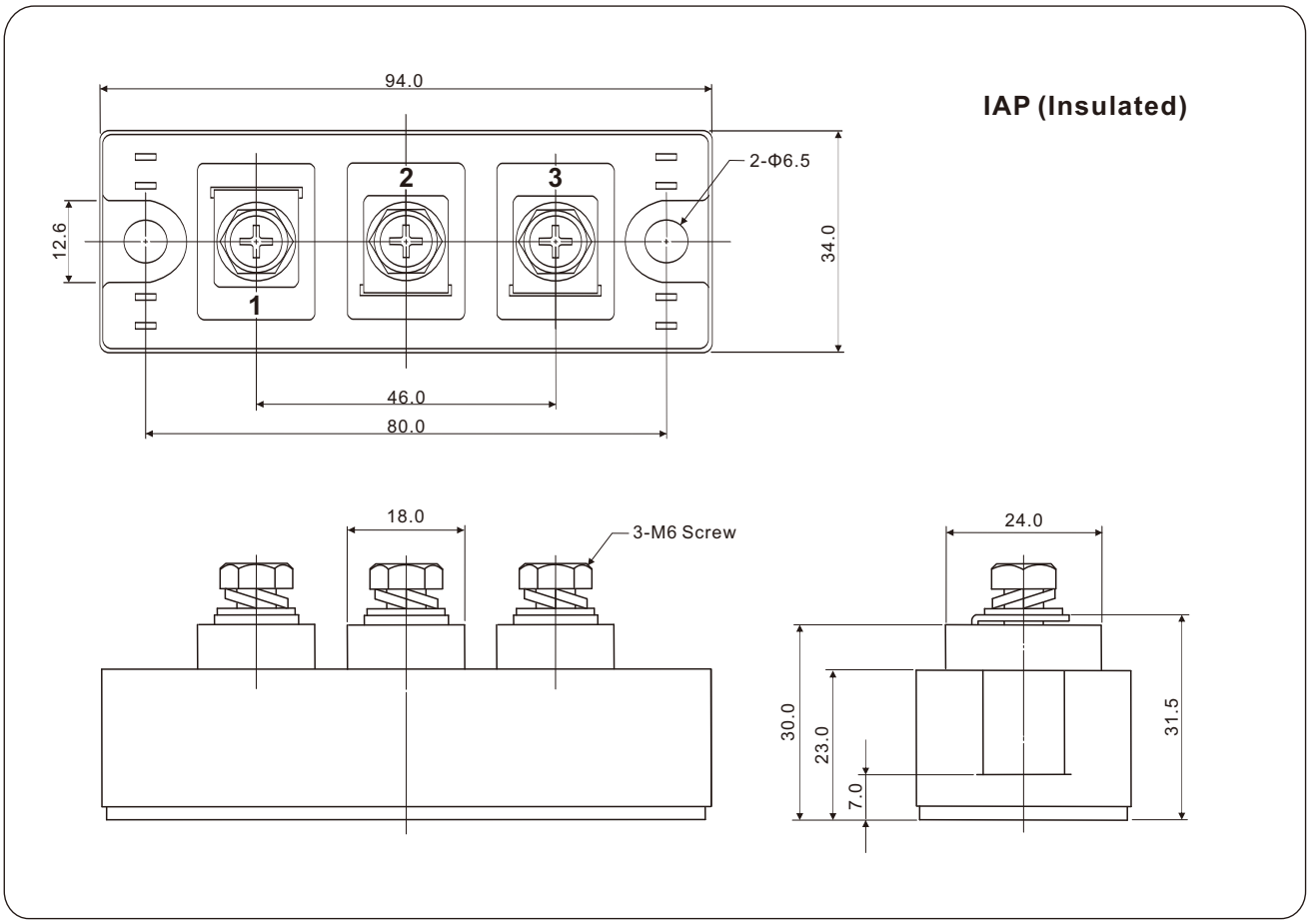


Fig.6 I^2t Characteristic




IAP (Insulated)
94.0
2-Φ6.5
12.6
34.0
1
2
3
46.0
80.0
18.0
3-M6 Screw
24.0
30.0
23.0
7.0
31.5