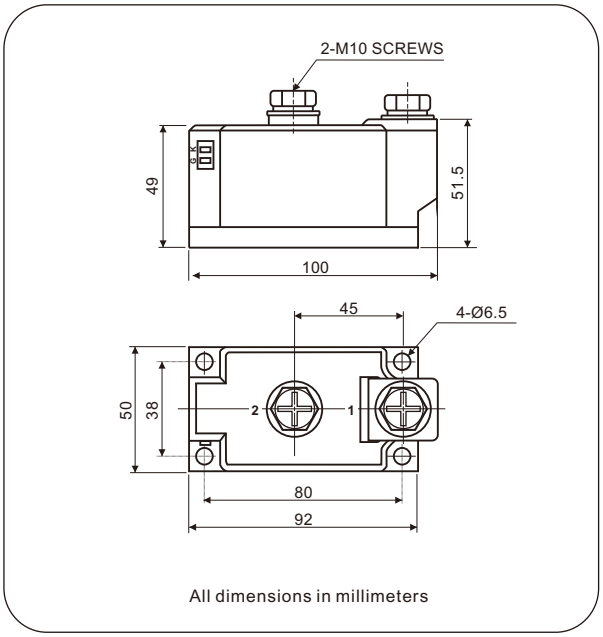
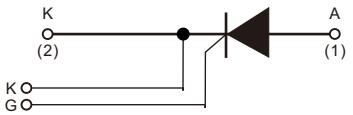
MAP Block Single Thyristor Power Module , 350A

MAP Block Power



FEATURES

- 3000 V_{RMS} isolation voltage
- High surge capablilty
- High voltage input rectification
- Designed and qualified for industrial level
- Compliant to RoHS



APPLICATIONS

- Welders
- Alternators
- Other phase-control circulits
- AC/DC electric machine control
- Heating control
- Battery Chargers
- Converters

PRODUCT SUMMARY	
Diode variation	**Single SCR**
$I_{T(AV)}$	350A
V_{DRM}/V_{RRM}	800V/1200V/1600V
V_{TM}	1.7V
I_{GT}	50 to 200 mA
T_J	-40°C to 125°C

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	**TEST CONDITIONS**	**VALUES**	**UNITS**
$I_{T(AV)}$	Sinusoidal waveform	350	A
$I_{T(RMS)}$	Lead current limitation	550	
V_{RRM}/V_{DRM}	Range	800 to 1600	V
I_{TSM}		9300	A
V_{TM}	I_T = 900 A, T_J = 25 °C	1.7	V
dV/dt		1000	V/µs
dI/dt		500	A/µs
T_J		- 40 to 125	°C

VOLTAGE RATINGS

PART NUMBER	V_{RRM}/V_{DRM}, MAXIMUM REPETITIVE PEAK AND OFF-STATE VOLTAGE V	V_{RSM}, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM}/I_{DRM} AT 125°C mA
NKET350/08	800	900	40
NKET350/12	1200	1300	
NKET350/16	1600	1700	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average on-state current	$I_{T(AV)}$	T_C = 85 ºC, 180° conduction half sine wave, one-side heat-dissipation		350	A
Maximum continuous RMS on-state current as AC switch	$I_{T(RMS)}$			550	
Maximum peak, one-cycle non-repetitive surge current	I_{TSM}	10 ms sine pulse, no voltage reapplied	Initial T_J =T_J maximum	9300	A
Maximum I^2t for fusing	I^2t			432	kA^2s
Maximum peak on-state forward voltage	V_{TM}	900A, T_J = 25°C		1.7	V
Maximum rate of rise of turned-on current	dI/dt	T_J = T_J maximum, I_{TM} = 400A, rated V_{DRM} applied		500	A/µs
Maximum holding current	I_H	T_J = 25°C	Anode supply = 12 V resistive load	200	mA
Maximum latching current	I_L			400	
Maximum reverse and direct leakage current	I_{RRM}/I_{DRM}	T_J = 25°C	V_R = Rated V_{RRM}/V_{DRM}	0.5	mA
		T_J = 125°C		40	
Maximum rate of rise of off-state voltage	dV/dt	T_J = 125°C	V_D = 2/3 V_{DRM}	1000	V/µs
RMS insulation voltage	V_{ins}	50Hz, circuit to base, all terminals shorted, t = 1s		3000	V

TRIGGERING

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak gate power	P_{GM}	$T_p \leq 5$ ms, T_J = T_J maximum		10	W
Maximum average gate power	$P_{G(AV)}$	f = 50 Hz, T_J = T_J maximum		2	
Maximum required gate voltage to trigger	V_{GT}	T_J = 25°C	Anode supply = 12 V resistive load	2.0	V
Maximum required gate current to trigger	I_{GT}			50 to 200	mA
Maximum DC gate voltage not to trigger	V_{GD}	T_J = 125°C, V_D = 2/3 V_{DRM}		0.25	V
Maximum DC gate current not to trigger	I_{GD}			10	mA

THERMAL AND MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction temperature range	T_J		- 40 to 125	ºC
Maximum storage temperature range	T_{stg}		- 40 to 150	
Maximum thermal resistance junction to case	R_{thJC}	DC operation	0.10	ºC/W
Typical thermal resistance case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.02	
Approximate weight			800	g
			28.2	oz.
Mounting torque, ±10%		For copper plate, M6	4	N.m
		For connection terminal, M10	12	

Ordering Information Tabel

Device code

NKET	350	/	16
①	②		③

1 - Module type, NKET for single thyristor module
2 - Current rating : $I_{T(AV)}$
3 - Voltage code x 100 = V_{RRM}

Fig.1 On-state current vs. voltage characteristics

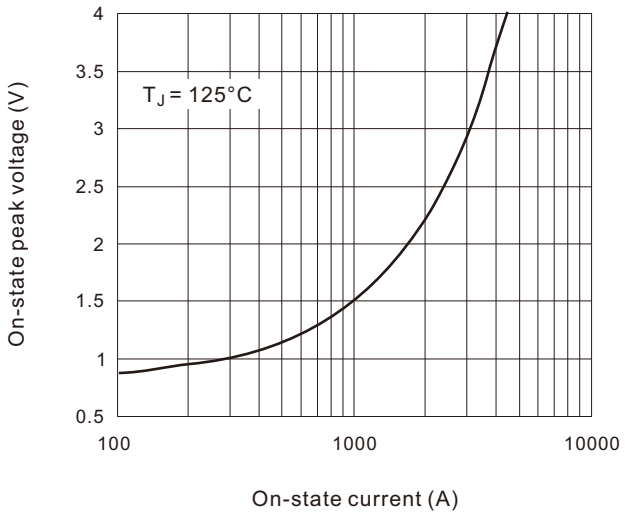


Fig.2 Transient thermal impedance(junction-case)

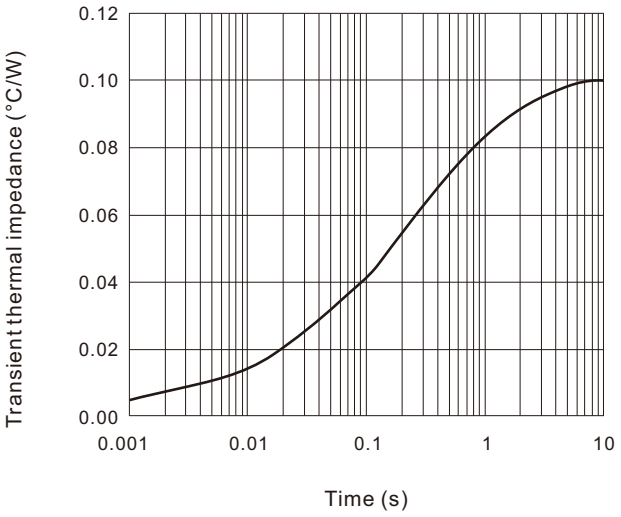


Fig.3 Power consumption vs. average current

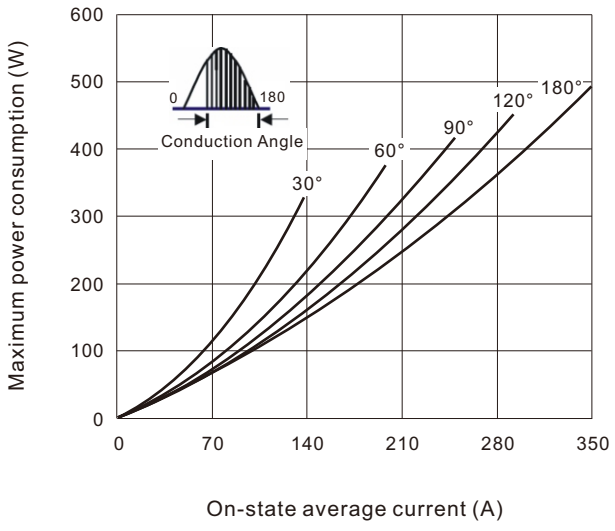


Fig.4 Case temperature vs. on-state average current

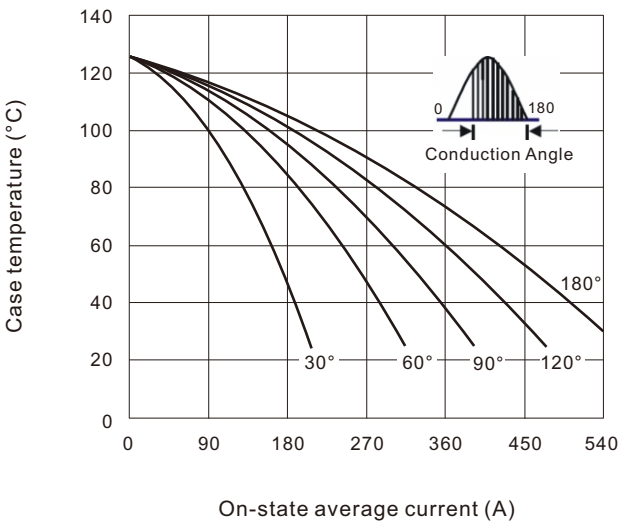


Fig.5 On-state surge current vs. cycles

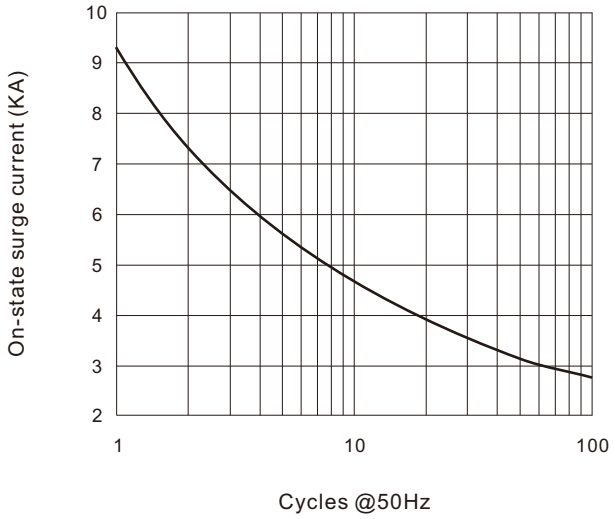
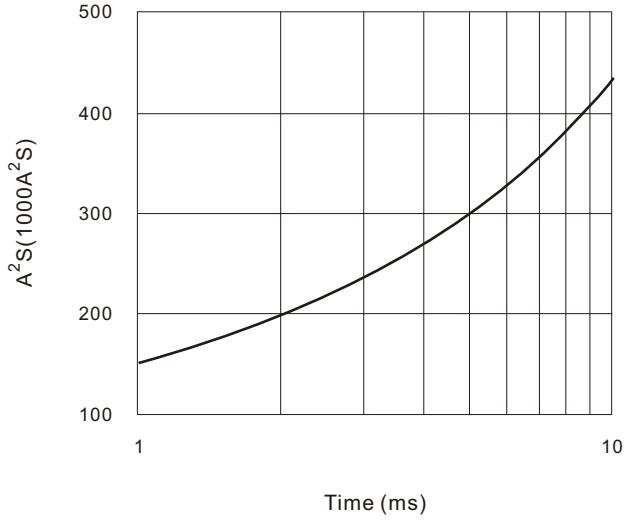



Fig.6 I^2t characteristics