

THYRISTOR MODULE

AK90HB120/160

UL;E76102 (M)

Power ThyristorModule **AK90HB** series are designed for various rectifier circuits and power controls. For your circuit application. following internal connections and wide voltage ratings up to 1,600V are available.

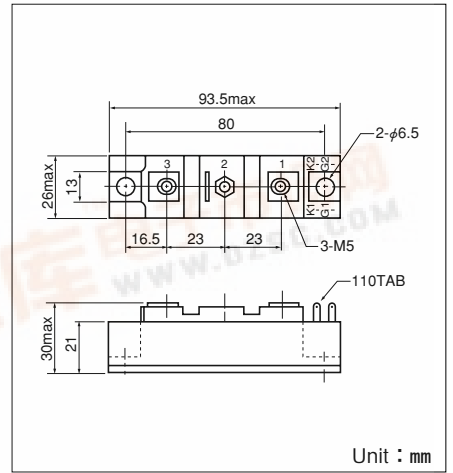
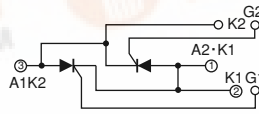
Isolated mounting base

- $I_T(AV)$ 90A, $I_T(RMS)$ 200A, I_{TSM} 1100A
- di/dt 200 A/ μ s
- dv/dt 500V/ μ s

(Applications)

- AC/DC motor drives
- Heater controls
- Light dimmers
- Static switches

Internal Configurations



■ Maximum Ratings

($T_j=25^\circ\text{C}$ unless otherwise specified)

Symbol	Item	Ratings		Unit
		AK90GB120	AK90GB160	
V _{DRM}	Repetitive Peak Off-State Voltage	1200	1600	V

Symbol	Item	Conditions	Ratings	Unit	
$I_T(AV)$	Average On-State Current	Single phase, half wave, 180° conduction, $T_c : 88^\circ\text{C}$	90	A	
$I_T(RMS)$	R.M.S. On-State Current	$T_c : 88^\circ\text{C}$	200	A	
I_{TSM}	Surge On-State Current	1/2 cycle, 50Hz/60Hz, peak value, non-repetitive	1650/1800	A	
I^2t	I^2t	Value for one cycle of surge current	15000	A ² S	
P _{GM}	Peak Gate Power Dissipation		10	W	
P _{G(AV)}	Average Gate Power Dissipation		3	W	
I _{FGM}	Peak Gate Current		3	A	
V _{FGM}	Peak Gate Voltage (Forward)		10	V	
V _{RGM}	Peak Gate Voltage (Reverse)		5	V	
di/dt	Critical Rate of Rise of On-State Current	$I_G=100\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2V_{DRM}$, $dI_G/dt=0.1\text{A}/\mu\text{s}$	200	A/ μ s	
V _{ISO}	Isolation Breakdown Voltage (R.M.S.)	A.C. 1 minute	2500	V	
T _j	Operating Junction Temperature		-40 to +125	°C	
T _{stg}	Storage Temperature		-40 to +125	°C	
	Mounting Torque	Mounting (M6)	Recommended Value 2.5-3.9 (25-40)	4.7 (48)	N·m (kgf·cm)
		Terminal (M5)	Recommended Value 1.5-2.5 (15-25)	2.7 (28)	
	Mass	Typical Value		170	g

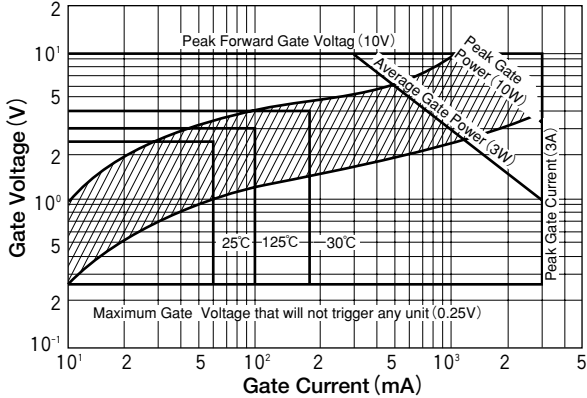
■ Electrical Characteristics

Symbol	Item	Conditions	Ratings	Unit
I _{DRM}	Repetitive Peak Off-State Current, max.	at V _{DRM} , Single phase, half wave, $T_j=125^\circ\text{C}$	30	mA
V _{TM}	Peak On-State Voltage, max.	On-State Current 270A, $T_j=125^\circ\text{C}$ Inst. measurement	1.40	V
I _{GT} /V _{GT}	Gate Trigger Current/Voltage, max.	$T_j=25^\circ\text{C}$, $I_T=1\text{A}$, $V_D=6\text{V}$	100/2	mA/V
V _{GD}	Non-Trigger Gate, Voltage. min.	$T_j=125^\circ\text{C}$, $V_D=1/2V_{DRM}$	0.25	V
t _{gt}	Turn On Time, max.	$I_T=90\text{A}$, $I_G=100\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2V_{DRM}$, $dI_G/dt=0.1\text{A}/\mu\text{s}$	10	μ s
dv/dt	Critical Rate of Rise of Off-State Voltage, min.	$T_j=125^\circ\text{C}$, $V_D=2/3V_{DRM}$, Exponential wave.	500	V/ μ s
I _H	Holding Current, typ.	$T_j=25^\circ\text{C}$	50	mA
I _L	Latching Current, typ.	$T_j=25^\circ\text{C}$	100	mA
R _{th(j-c)}	Thermal Impedance, max.	Junction to case, per 1/2 Module	0.30	°C/W
		Junction to case, per 1 Module	0.15	

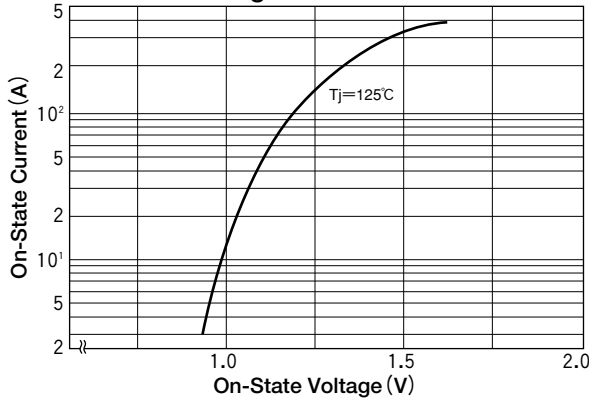


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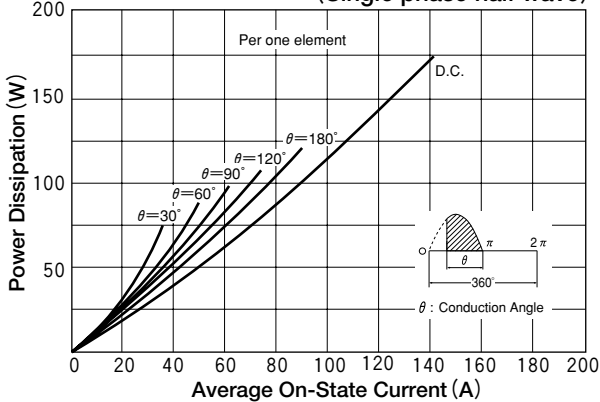
Gate Characteristics



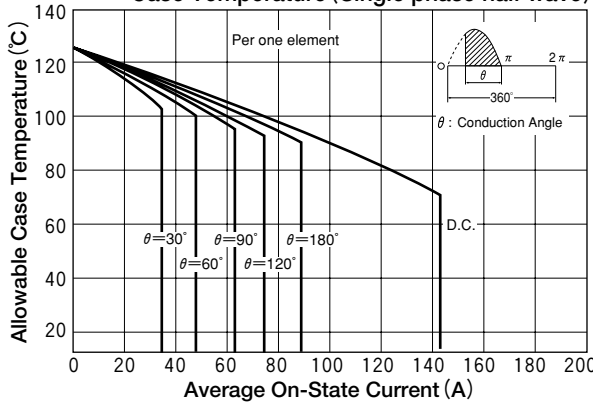
On-State Voltage max



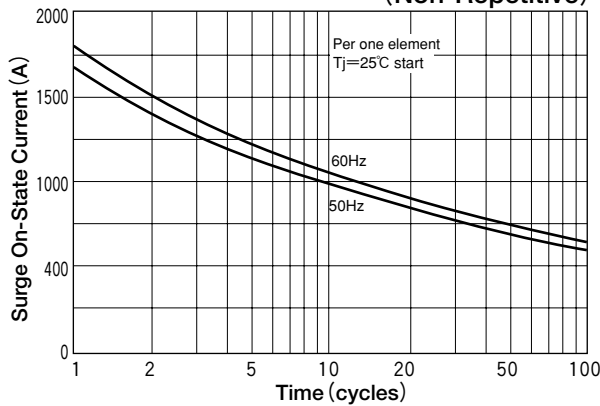
Average On-State Current Vs Power Dissipation (Single phase half wave)



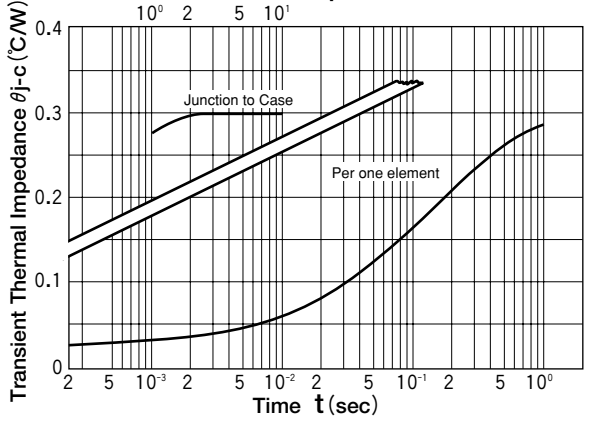
Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)



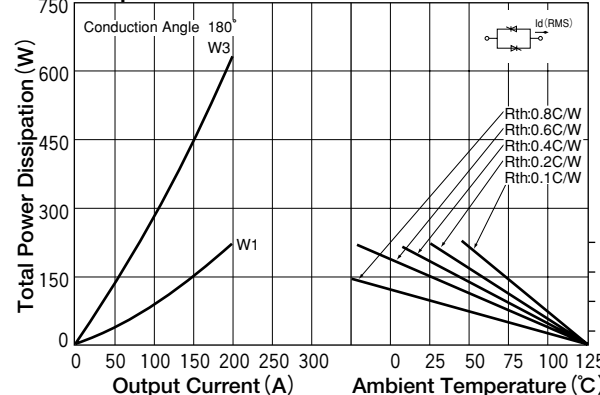
Surge On-State Current Rating (Non-Repetitive)



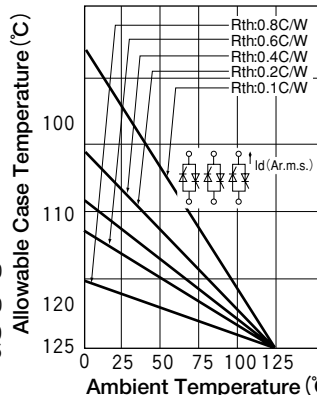
Transient Thermal Impedance



Output Current W1; Bidirectional connection



W3; Three phase bidirectional connection



RMS On-State Current Vs Allowable Case Temperature

