

THYRISTOR MODULE

AK90HB120/160

TOP



UL;E76102 (M)

Power Thyristor Module **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.

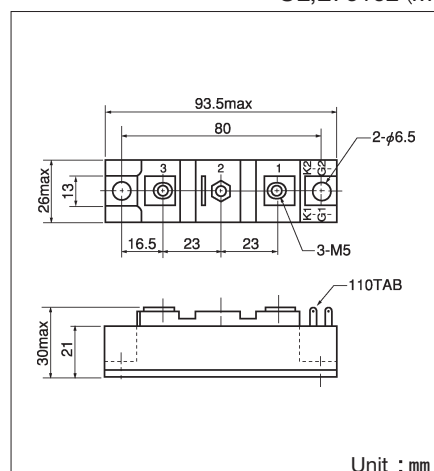
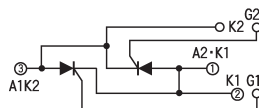
Isolated mounting base

- $I_T(AV)$ 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)

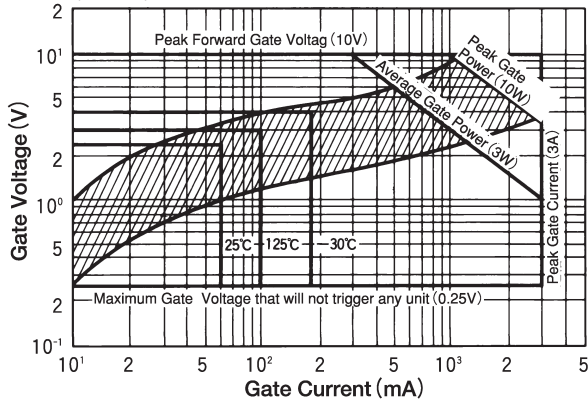
Symbol	Item	Ratings		Unit
		AK90GB120	AK90GB160	
V_{DRM}	Repetitive Peak Off-State Voltage	1200	1600	V

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^2S
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	$I_G=100\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2 V_{DRM}$, $dI_G/dt=0.1\text{A}/\mu\text{s}$	200	$\text{A}/\mu\text{s}$
V_{ISO}	Isolation Breakdown Voltage (R.M.S.)	A.C. 1 minute	2500	V
T_j	Operating Junction Temperature		$-40 \sim +125$	$^\circ\text{C}$
T_{stg}	Storage Temperature		$-40 \sim +125$	$^\circ\text{C}$
	Mounting Torque	Mounting (M6)	Recommended Value 2.5~3.9 (25~40)	$\text{N} \cdot \text{m}$ ($\text{kgf} \cdot \text{cm}$)
		Terminal (M5)	Recommended Value 1.5~2.5 (15~25)	
	Mass	Typical Value	170	g

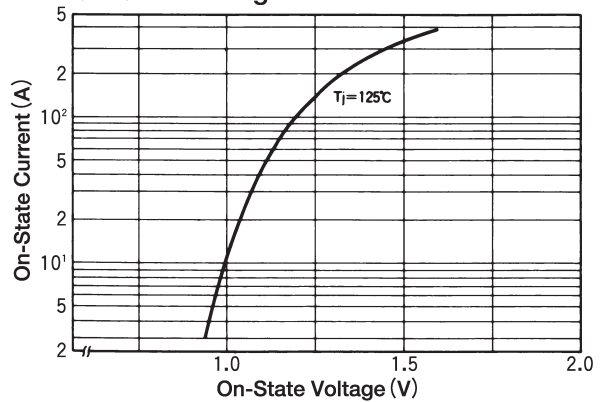
Electrical Characteristics

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.	$T_j=125^\circ\text{C}$, $V_D=1/2 V_{DRM}$	0.25	V
t_{gt}	Turn On Time, max.	$I_T=90\text{A}$, $I_G=100\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2 V_{DRM}$, $dI_G/dt=0.1\text{A}/\mu\text{s}$	10	μs
dv/dt	Critical Rate of Rise of Off-State Voltage, min.	$T_j=125^\circ\text{C}$, $V_D=2/3 V_{DRM}$, Exponential wave.	500	$\text{V}/\mu\text{s}$
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	$^\circ\text{C}/\text{W}$
		Junction to case, per 1 Module	0.15	

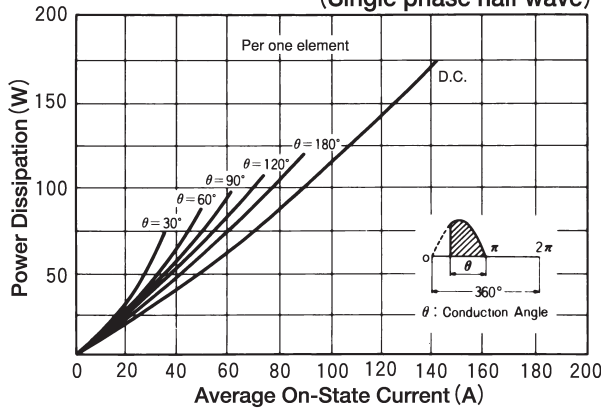
Gate Characteristics



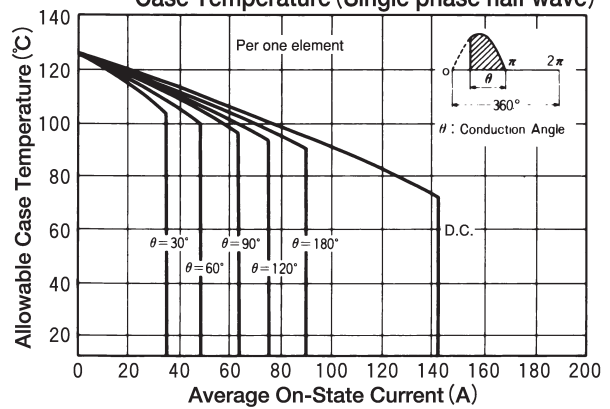
On-State Voltage max



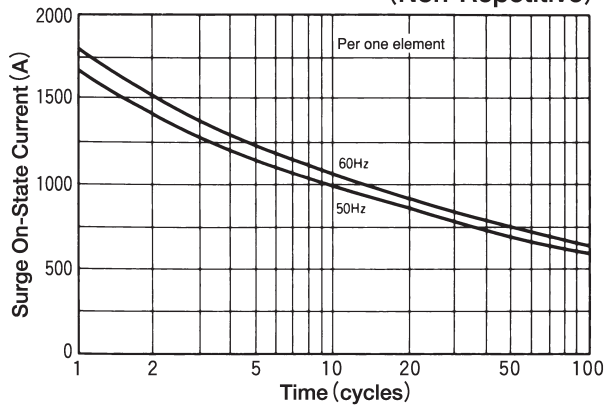
Average On-State Current Vs Power Dissipation (Single phase half wave)



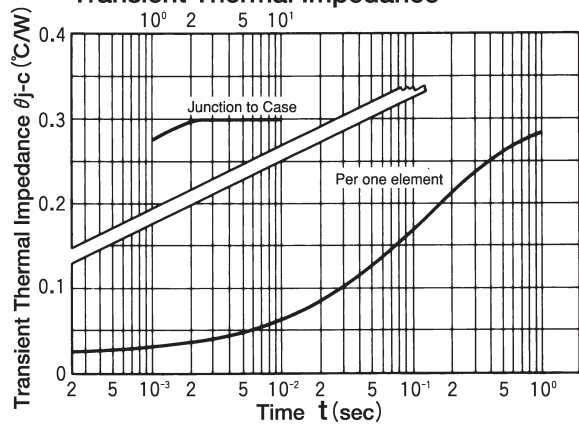
Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)



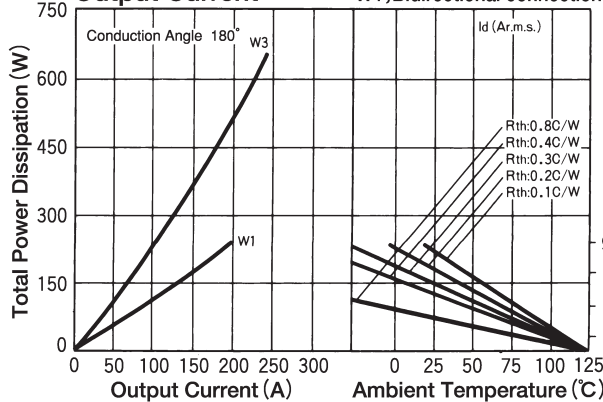
Surge On-State Current Rating (Non-Repetitive)



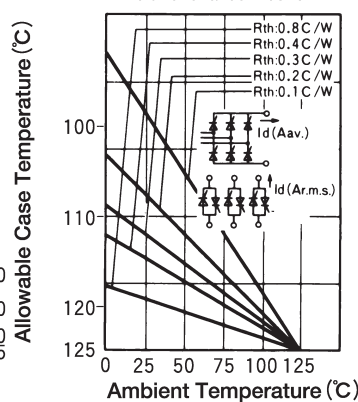
Transient Thermal Impedance



Output Current W1; Bidirectional connection



B6; Six pulse bridge connection W3; Three phase bidirectional connection



RMS On-State Current Vs Allowable Case Temperature

