



Power Rectifier Thyristor

Features:

- all diffused design
- high current capabilities
- high surge current capabilities
- high rates voltages
- high dv/dt
- low gate current
- dynamic gate
- low thermal impedance
- compact size and small weight

APPLICATION

- High Power Drives
- DC Motor Control
- High Voltage Power Supplies

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
600	600	650

- V_{RRM} = Repetitive peak reverse voltage
 V_{DRM} = Repetitive peak off state voltage
 V_{RSM} = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	I_{RRM} / I_{DRM}	10 mA 50 mA (3)
Critical rate of voltage rise	dV/dt (4)	1000 V/ μ sec

Notes:

All ratings are specified for $T_j=25^\circ\text{C}$ unless otherwise stated.

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+125^\circ\text{C}$.
- (2) 10 msec. max. pulse width
- (3) Maximum value for $T_j = 125^\circ\text{C}$.
- (4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM} . Gate open. $T_j = 125^\circ\text{C}$.
- (5) Non-repetitive value.
- (6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-2-6. The value defined would be in addition to that obtained from aubber circuit, comprising a 0.2 μF capacitor and 20 ohms resistance in parallel with the thristor under test.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Max. average value of on-state current	$I_{T(AV)M}$		925		A	Sinewave, 180° conduction, $T_c=85^\circ\text{C}$
RMS value of on-state current	I_{TRMSM}		1500		A	Nominal value
Peak one cPSTCle surge (non repetitive) current	I_{TSM}		-		kA	8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$
			12		kA	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		720×10^3		A^2s	10 msec
Treshold voltage	$V_{T(T0)}$		1.00		V	
Slope resistance	r_T		0.23		$\text{m}\Omega$	
Latching current	I_L		1000		mA	$V_D = 12\text{ V}; R_L = 12\text{ ohms}$
Holding current	I_H		200		mA	$V_D = 12\text{ V}; I = 2.5\text{ A}$
Peak on-state voltage	V_{TM}		1.65		V	$I_{TM} = 2500\text{ A(MAX)}; T_j = 125^\circ\text{C}$
Critical rate of rise of on-state current (5, 6)	di/dt		300		A/ μs	Switching from $V_{DRM} \leq 1000\text{ V}$, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		-		A/ μs	Switching from $V_{DRM} \leq 1000\text{ V}$

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		-		W	
Average gate power dissipation	$P_{G(AV)}$		-		W	
Peak gate current	I_{GM}		-		A	
Gate current required to trigger all units	I_{GT}		200		mA	$V_D = 10\text{ V}; I_T = 3\text{ A}; T_j = +25\text{ °C}$
Gate voltage required to trigger all units	V_{GT}		2.0		V	$V_D = 10\text{ V}; I_T = 3\text{ A}; T_j = +25\text{ °C}$
Peak negative voltage	V_{RGM}		-		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_{gd}		-	-	μs	$V_D = 67\% V_{DRM}, di/dt = 10\text{ A}/\mu\text{s}, I_{FG} = 2\text{ A}, t_r = 0.5\mu\text{s}, T_j = 25\text{ °C}$
Turn-on time	t_{gt}		-	-		
Turn-off time (with $V_R = -5\text{ V}$)	t_q	-	150		μs	$I_{TM} = 925\text{ A}, di/dt = 10\text{ A}/\mu\text{s}, V_r = 100\text{ V}, V_{dr} = 67\% V_{DRM}, dV_{dr}/dt = 20\text{ V}/\mu\text{s}$
Reverse recovery current	I_{rm}		-		A	$I_{TM} = 4000\text{ A}, t_p = 2000\mu\text{s}, di/dt = 60\text{ A}/\mu\text{s}$

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

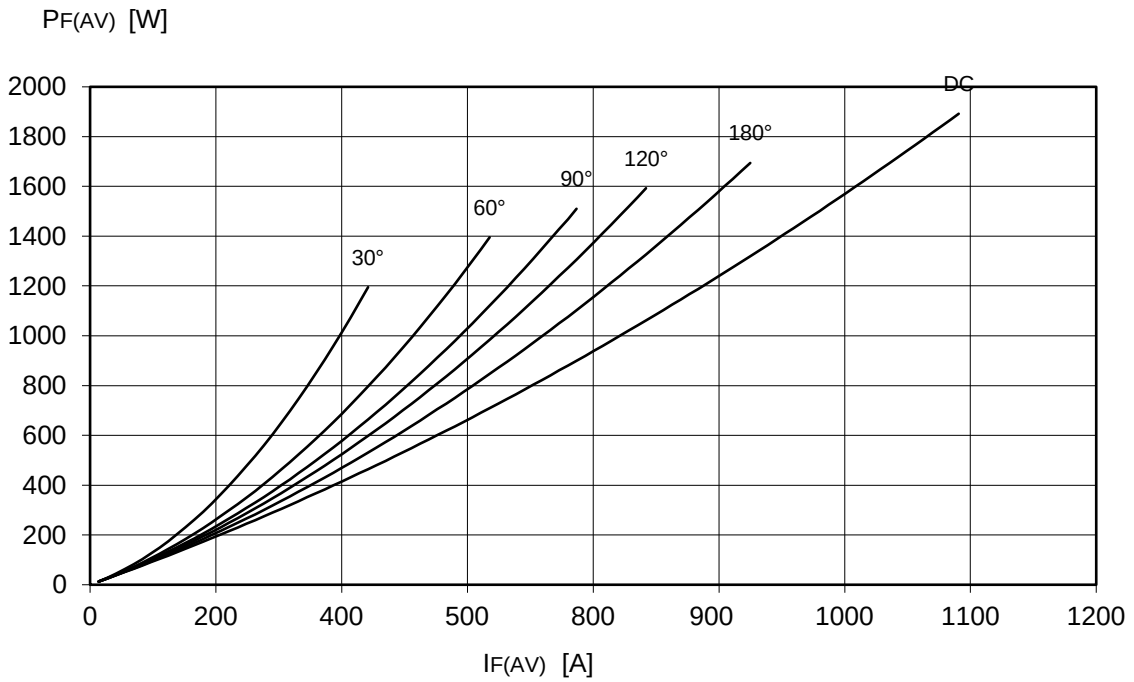
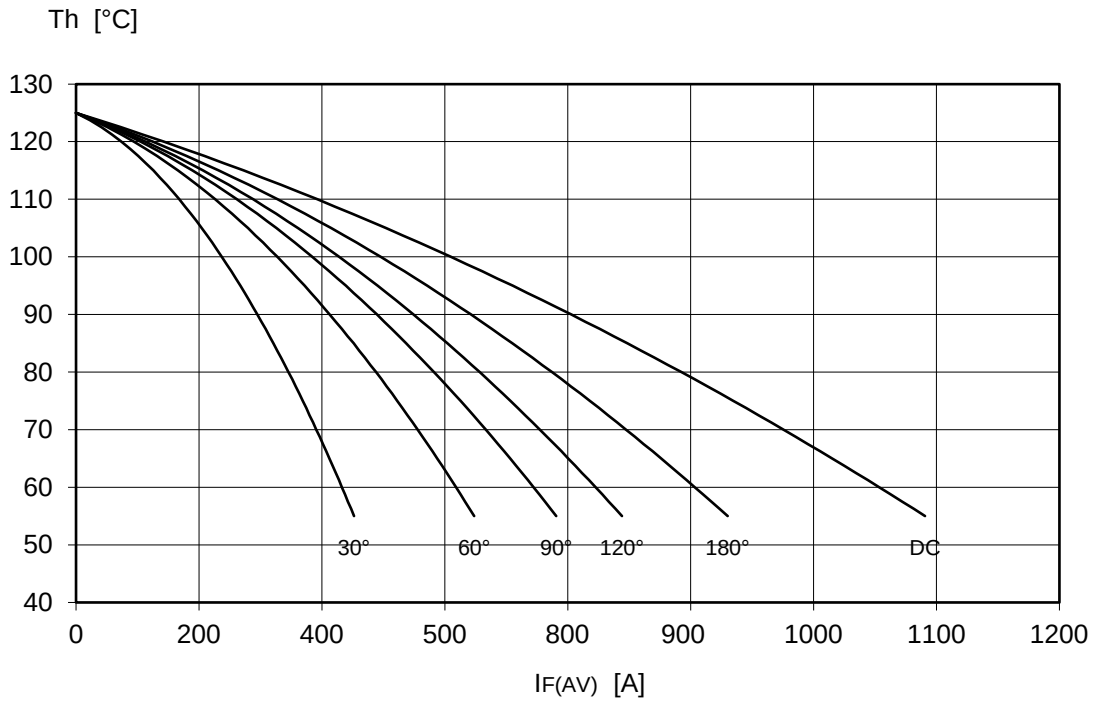
Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+140		$^{\circ}\text{C}$	
Storage temperature	T_{stg}	-40	+150		$^{\circ}\text{C}$	
Thermal resistance - junction to case	$R_{\Theta(j-c)}$		0.039 -		K/W	Double sided cooled Single sided cooled
Thermal resistance - case to sink	$R_{\Theta(c-s)}$		0.01 -		K/W	Double sided cooled * Single sided cooled *
Thermal resistance - junction to case	$R_{\Theta(j-s)}$		- -		$^{\circ}\text{C}/\text{W}$	Double sided cooled Single sided cooled
Mounting force	F	5.5	8	-	kN	
Weight	W			0.11	Kg	about

* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in page 3 of this Technical Data

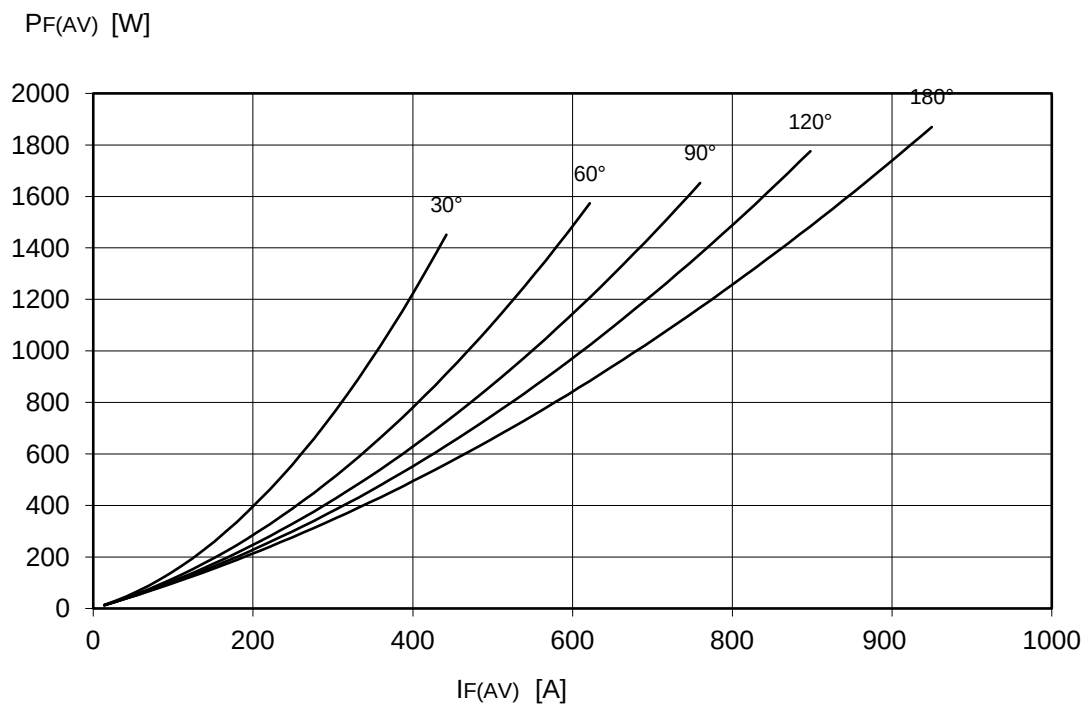
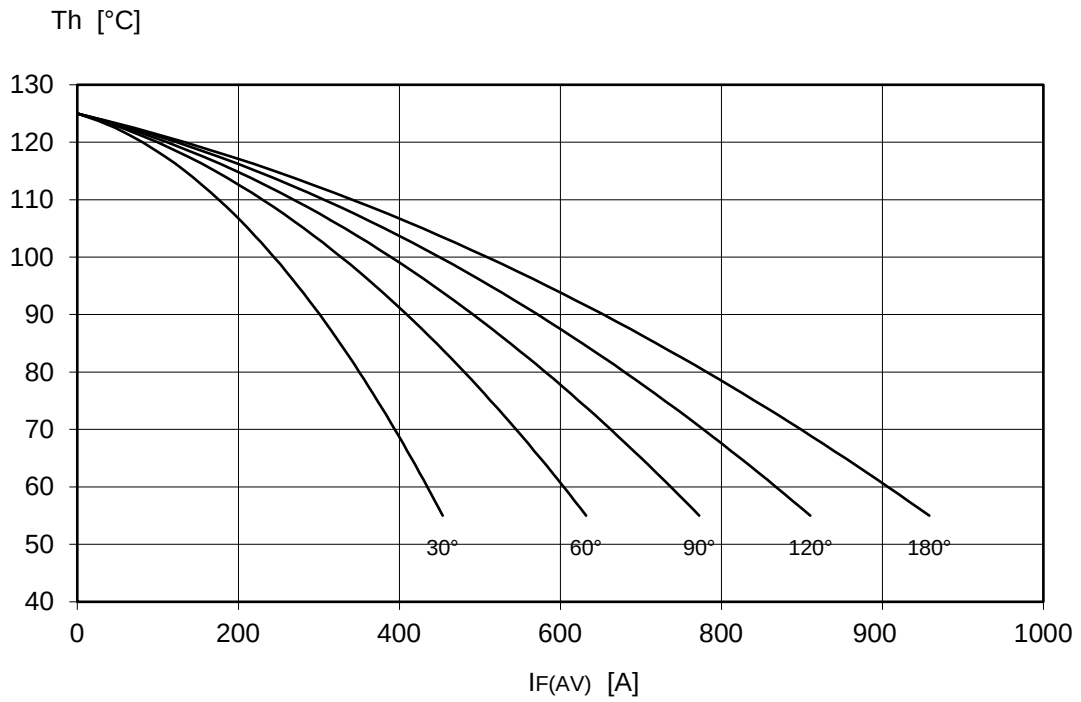
DISSIPATION CHARACTERISTICS

SQUARE WAVE

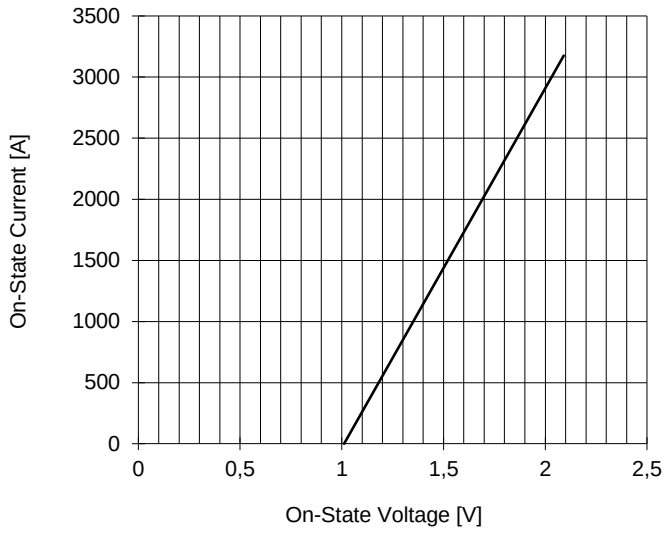


DISSIPATION CHARACTERISTICS

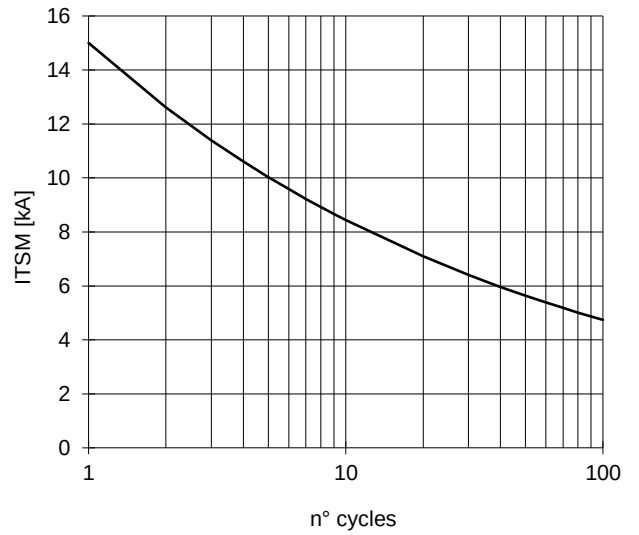
SINE WAVE



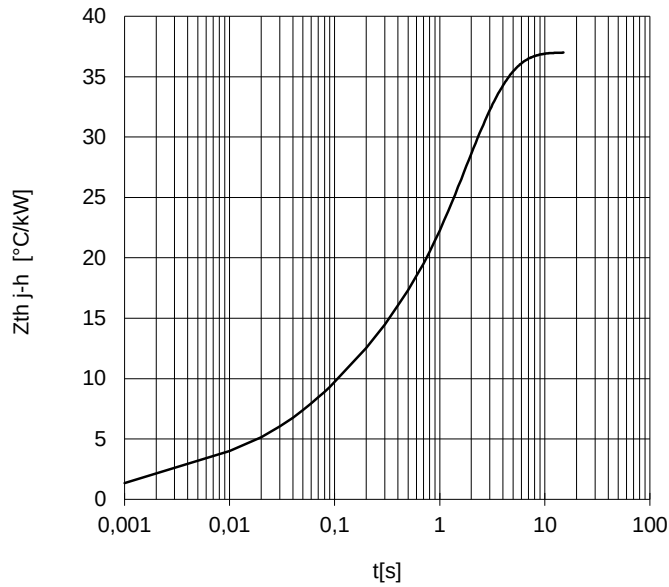
ON-STATE CHARACTERISTIC
T_j = 125 °C

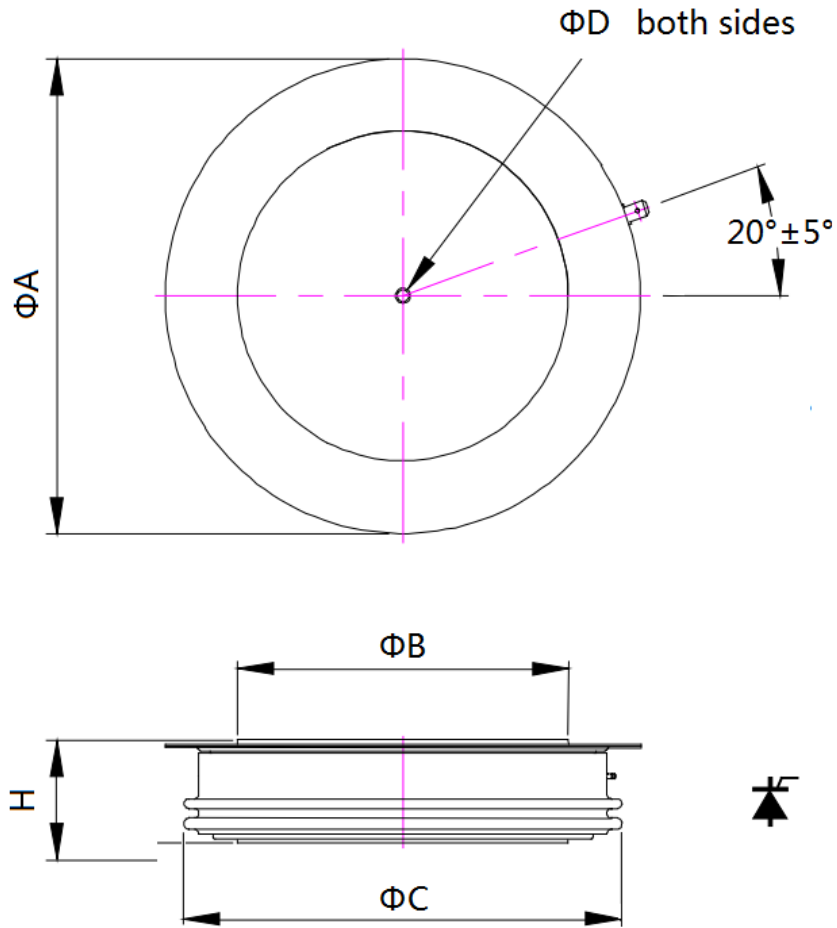


SURGE CHARACTERISTIC
T_j = 125 °C



TRANSIENT THERMAL IMPEDANCE
DOUBLE SIDE COOLED





Sym	A	B	C	D	H
mm	49	30	45	3.5×1.8	15±1