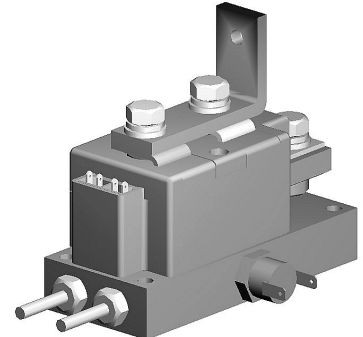
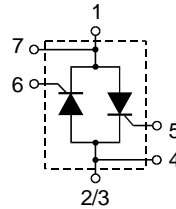


# AC Controller with Isolated Water Flow

**$I_{RMS} = 900 \text{ A}$**   
 **$V_{RRM} = 1200-1800 \text{ V}$**

Preliminary data

$V_{RSM}$ $V_{DSM}$ V	$V_{RRM}$ $V_{DRM}$ V	Type
1300	1200	HVL 900 - 12io1
1500	1400	HVL 900 - 14io1
1700	1600	HVL 900 - 16io1
1900	1800	HVL 900 - 18io1



Symbol	Test Conditions	Maximum Ratings	
$I_{RMS}$	$T_{Water} = 17^{\circ}\text{C}$ ; watervolume = 4 l/min	900	A
$I_{TSM}$ , $I_{FSM}$	$T_{VJ} = 45^{\circ}\text{C}$ ; $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	9200 A 10100 A
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	8000 A 8800 A
$I^2t$	$T_{VJ} = 45^{\circ}\text{C}$ $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	423 000 A <sup>2</sup> s 423 000 A <sup>2</sup> s
	$T_{VJ} = T_{VJM}$ $V_R = 0$	t = 10 ms (50 Hz) t = 8.3 ms (60 Hz)	320 000 A <sup>2</sup> s 321 000 A <sup>2</sup> s
$(di/dt)_{cr}$	$T_{VJ} = T_{VJM}$ repetitive, $I_T = 960 \text{ A}$ f = 50 Hz, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 1 \text{ A}$ , $di_G/dt = 1 \text{ A}/\mu\text{s}$		100 A/ $\mu\text{s}$
$(dv/dt)_{cr}$	$T_{VJ} = T_{VJM}$ ; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$ ; method 1 (linear voltage rise)		1000 V/ $\mu\text{s}$
$P_{GM}$	$T_{VJ} = T_{VJM}$	$t_p = 30 \mu\text{s}$	120 W
	$I_T = I_{TAVM}$	$t_p = 500 \mu\text{s}$	60 W
$P_{GAV}$			20 W
$V_{RGM}$			10 V
$T_{VJ}$			-40...+140 °C
$T_{VJM}$			140 °C
$T_{stg}$			-40...+125 °C
$V_{ISOL}$	50/60 Hz, RMS t = 1 min		3000 V~
	$I_{ISOL} \leq 1 \text{ mA}$ t = 1 s		3600 V~
Weight	Typical including screws		1300 g

## Features

- Isolation between water and electrical connections with Direct copper bonded  $\text{Al}_2\text{O}_3$ -ceramic
- Planar passivated chips
- Isolation voltage 3600 V~
- Keyed gate/cathode twin pins

## Applications

- Large resistance welding equipment
- Large electroplating equipment

Data according to IEC 60747 refer to a single thyristor unless otherwise stated.  
IXYS reserves the right to change limits, test conditions and dimensions

Symbol	Test Conditions	Characteristic Values
$I_{RRM}, I_{DRM}$	$T_{VJ} = T_{VJM}; V_R = V_{RRM}; V_D = V_{DRM}$	40 mA
$V_T, V_F$	$I_T, I_F = 600 \text{ A}; T_{VJ} = 25^\circ\text{C}$	1.32 V
$V_{T0}$	For power-loss calculations only	0.8 V
$r_T$		0.68 mΩ
$V_{GT}$	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	2 V
	$T_{VJ} = -40^\circ\text{C}$	3 V
$I_{GT}$	$V_D = 6 \text{ V}; T_{VJ} = 25^\circ\text{C}$	150 mA
	$T_{VJ} = -40^\circ\text{C}$	220 mA
$V_{GD}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	0.25 V
$I_{GD}$	$T_{VJ} = T_{VJM}; V_D = 2/3 V_{DRM}$	10 mA
$I_L$	$T_{VJ} = 25^\circ\text{C}; t_p = 30 \mu\text{s}; V_D = 6 \text{ V}$ $I_G = 0.45 \text{ A}; di_G/dt = 0.45 \text{ A}/\mu\text{s}$	200 mA
$I_H$	$T_{VJ} = 25^\circ\text{C}; V_D = 6 \text{ V}; R_{GK} = \infty$	150 mA
$t_{gd}$	$T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 1 \text{ A}; di_G/dt = 1 \text{ A}/\mu\text{s}$	2 μs
$Q_S$	$T_{VJ} = 125^\circ\text{C}; I_T, I_F = 300 \text{ A}; -di/dt = 50 \text{ A}/\mu\text{s}$	760 μC
$I_{RM}$		275 A
$R_{thJW}$	per thyristor ; 180° el; watervolume = 4 l/min	0.203 K/W
$d_S$	Creeping distance on surface	12.7 mm
$d_A$	Creepage distance in air	
$a$	Maximum allowable acceleration	

### Optional accessories for modules

Keyed Gate/Cathode twin plugs with wire length = 350 mm, gate = yellow, cathode = red  
 Type **ZY 180 L** (L = Left for pin pair 4/5) } UL 758, style 1385,  
 Type **ZY 180 R** (R = Right for pin pair 6/7) } CSA class 5851, guide 460-1-1

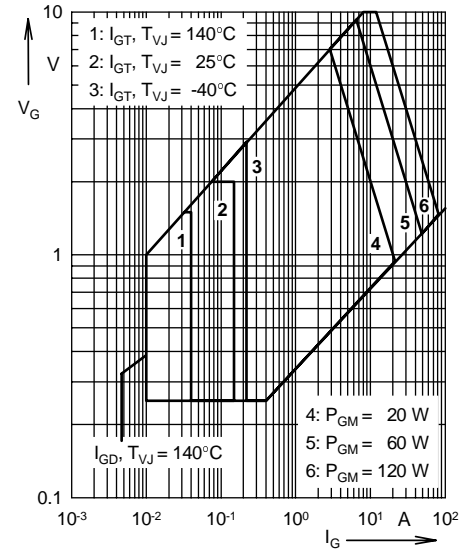
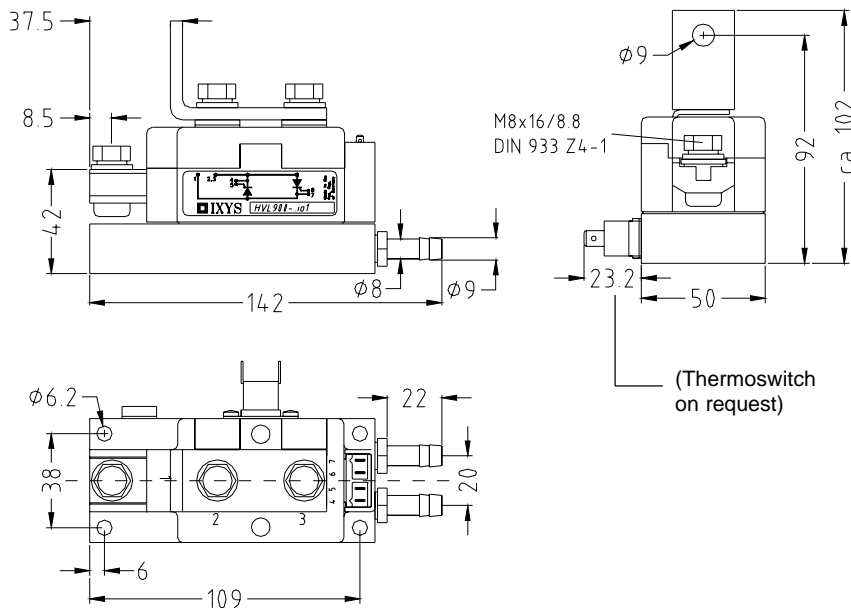


Fig. 1 Gate trigger characteristics

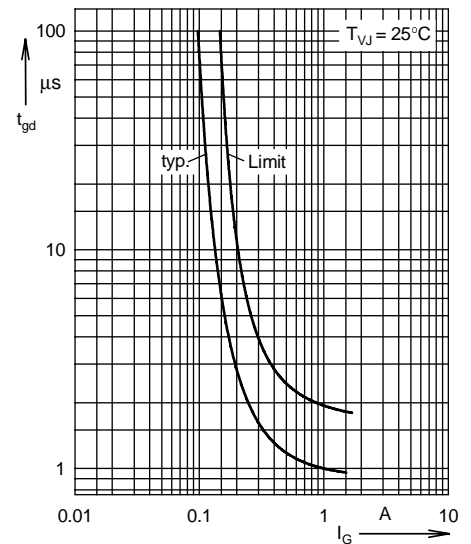


Fig. 2 Gate trigger delay time

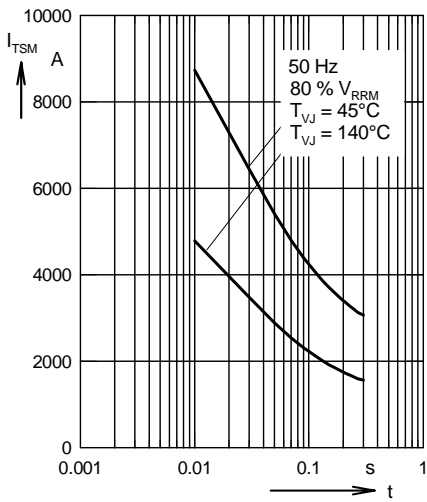


Fig. 3 Surge overload current  
 $I_{TSM}$ : Crest value, t: duration

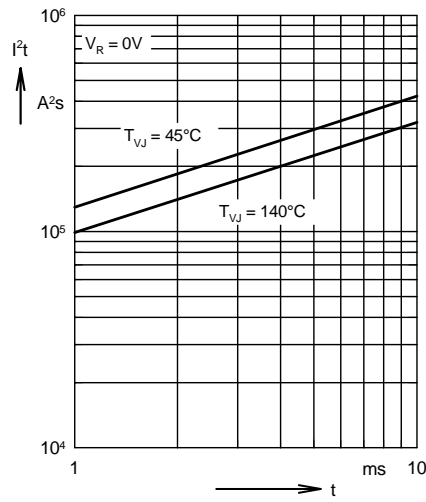


Fig. 4  $I^2t$  versus time (1-10 ms)

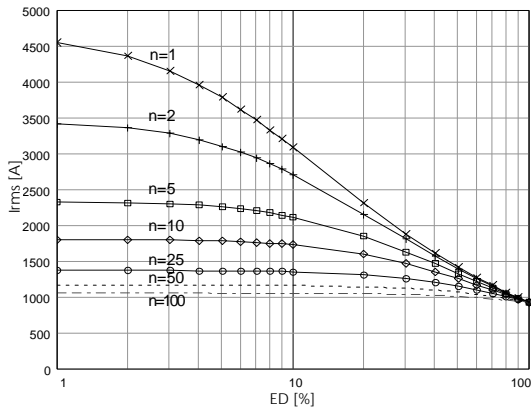


Fig. 5 Rated rms current vs. duty cycle

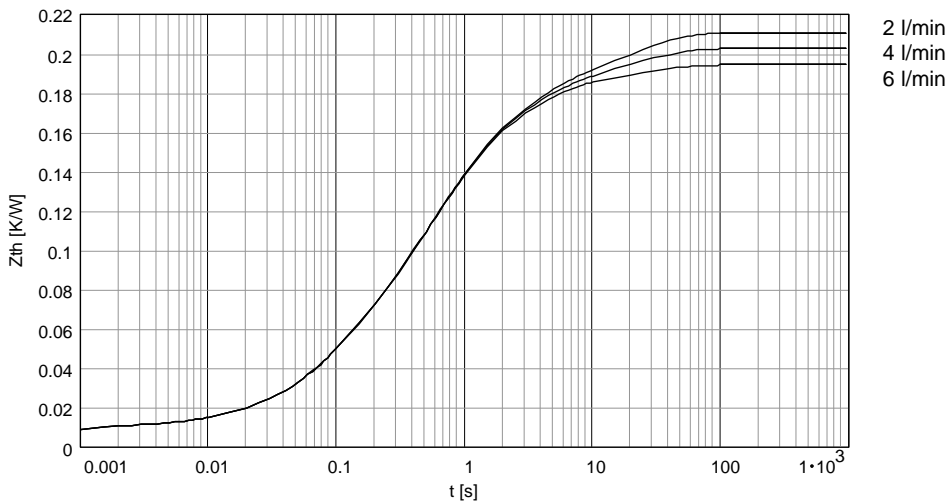


Fig. 6 Transient thermal impedance vs. time