

	Specification	Symbol	Condition / Comment	200-800 SCR	220-800-SCR	Unit	
ABSOLUTE MAXIMUM RATINGS	Maximum Operating Voltage	V _{O(max)}	I _{off} < 100 μADC, T _{case} = 70°C	20	22	kVDC	
	Minimum Operating Voltage	V _{O(min)}	t _{r(on)} may increase slightly if operated below 5% of V _{O(max)}	Please consult factory		kVDC	
	Typical Breakdown Voltage	V _{br}	I _{off} < 3 mADC, T _{case} = 70°C	22	24	kVDC	
	Maximum Isolation Voltage	V _I	Between HV switch and control / GND, continuously		40	kVDC	
	Maximum Turn-On Peak Current	I _{P(max)}	T _{case} = 25°C, half sine single pulse, Please note P _{d(max)} limitations!	t _p < 100 μs, duty cycle <1% t _p < 500 μs, duty cycle <1% t _p < 1 ms, duty cycle <1% t _p < 10 ms, duty cycle <1% t _p < 100 ms, duty cycle <1%	8000 4000 2720 1600 940	ADC	
	Max. Non-repetitive Peak Current	I _{P(nr)}	T _{case} = 25°C	Half sine single pulse, t _p < 200 μs Half sine single pulse, t _p < 20 μs	16000 32000	ADC	
	Maximum Continuous Load Current	I _{L(max)}	T _{case} = 25°C	Standard plastic case With opt. CF-VII-0.5(air>4m/s) 1)	2.88 28	Increased I _{L(max)} on request ADC	
	Max. Continuous Power Dissipation	P _{d(max)}	T _{case} = 25°C T _{fin} = 25°C	Standard plastic case With opt. CF VII-0.5 (air stream 4 m/s) 1)	43 375	49 410	Watt
	Linear Derating		Above 25°C T _{case} /T _{fin}	Standard plastic case With opt. CF VII-0.5 (air stream 4 m/s) 1)	0.72 8	0.79 9	W/K
	Operating Temperature Range	T _O	Standard devices & options CF, GCF, ILC. (Option DLC)		-40...70 (60)		°C
	Storage Temperature Range	T _S	Switches with option ILC may require frost protection!		-40...90		°C
	Max. Permissible Magnetic Field	B	Homogeneous steady-field, surrounding the whole switch		25		mT
	Max. Auxiliary Voltage	V _{aux}	Built-in overvoltage limiter (replaceable)		5		VDC
ELECTRICAL CHARACTERISTICS	Critical Rate-of-Rise to Off-State Voltage	dv/dt	@ V _{O(max)} , exponential waveform	125	137	kV/μs	
	Typical Off-State Current	I _{off}	0.8xV _O , T _{case} =25...70°C, reduced I _{off} on request	100		μADC	
	Typical Holding Current	I _H	T _{case} = 25°C T _{case} = 70°C	50 35		mADC	
	Typical On-State Voltage	V _{sat}	T _{case} = 25°C t _p < 10μs, duty cycle < 1%	0.001 x I _{P(max)} 0.01 x I _{P(max)} 0.1 x I _{P(max)} 1.0 x I _{P(max)}	19 22 55 310	21 26 43 350	VDC
	Typical Propagation Delay Time	t _{d(on)}	Resistive load, 0.1 x I _{P(max)} , 0.8 x V _{O(max)} , 50-50%		400		ns
	Typical Turn-On Rise Time	t _{r(on)}	Resistive load, 10-80%	0.1 x V _{O(max)} , I _L = 0.1 x I _{P(max)} 0.8 x V _{O(max)} , I _L = 0.1 x I _{P(max)} 0.8 x V _{O(max)} , I _L = 0.5 x I _{P(max)} 0.8 x V _{O(max)} , I _L = 1.0 x I _{P(max)}	50 29 23 18	58 33 26 20	ns
	Typical Turn-Off Fall Time	t _q , t _{off}	inductive load with free-wheeling diode	I _L = 0.1 x I _{P(max)} I _L = 1.0 x I _{P(max)}	35 90		μs
	Maximum On-Time	t _{on(max)}	Please note P _{d(max)} limitations!		Infinitely if I _L > I _H		
	Typical Output Pulse Jitter	t _j	Impedance matched input, V _{aux} / V _{ctrl} = 5.00 VDC		1		ns
	Max. Switching Frequency	f _(max)	Please note P _{d(max)} limitations!		0.9	0.5	kHz
	Maximum Burst Frequency	f _{b(max)}	With option HFB, I _{p(max)} >16kA, please consult factory With option HFB, I _{p(max)} >3kA, please consult factory		1 10		kHz
	Coupling Capacitance	C _C	Switch against control side		<250		pF
	Minimum Trigger Pulse Width		Trigger pulse has no influence on switching behaviour		> 50		ns
	Control Voltage Range	V _{ctrl}	The V _{ctrl} has no impact on the output pulse shape.		3 ... 10		VDC
	Auxiliary Supply Voltage Range	V _{aux}	The +5 V supply is not required in the HFS mode.		4.75 ... 5.25		VDC
	Typical Auxiliary Supply Current	I _{aux}	V _{aux} = 5.00 VDC, T _{case} = 25°C. Active current limitation above 1A.	0.01 x f _(max) @ specified f _(max)	270 600	230 600	mADC
	Fault Signal Output Voltage		Short circuit proof, source/ sink current max. 10mA	Ready = High Fault = Low	> 4.0 < 0.8		VDC
	Fault Signal Output Load		Sink/ source current. Output is short circuit proof.		10		mADC
	Synchronization Input/Output		Short circuit proof, output pulse 4VDC/1ms		20		kVDC
	HOUSING	Dimensions	LxWxH	Standard housing with option PT-HV Other housing dimensions on request.	Please consult factory		mm ³
Weight			Standard housing, with option PT-HV Reduce weight on request.	Please consult factory		g	
FUNCTIONS	Control Signal Input	Pin 1 / Yellow (LS-C: Pin 1). TTL compatible (LS-C: With 100Ω termination). Schmitt-Trigger characteristics. Control voltage 2-10 V (3-5 V for low jitter).					
	Logic GND / 5V Return	Pin 2 / Black (LS-C: Pin 2). The ground pin is internally connected with the safety earthings terminals (threaded inserts) on bottom side.					
	5V Auxiliary Supply	Pin 3 / Red (LS-C: Pin 3). The 5 V input is used for rep rates up to the specified max. frequency f _(max) . Higher rep rates require option HFS.					
	Fault Signal Output	Pin 4 / Orange (LS-C: Pin 4). TTL output, short circuit proof. Indicating switch & driver over-heat, over-frequency, low auxiliary voltage. L = Fault.					
	Logic GND / 5V Return	Pin 5 / Black (LS-C: Shielding). The ground pin is internally connected with the safety earthings terminals (threaded inserts) on bottom side.					
	LED Indicators	GREEN: "Auxiliary power good, switch OFF". YELLOW: "Control signal received, switch ON". RED: "Fault condition, switch OFF"					
	Temperature Protection	A) Standard switches and switches with option FC, CF, GCF: Thermo trigger 75°C, response time < 60 s @ 3xP _{d(max)} , ΔT=25K (50 to 75°C). Separate driver protection. B) Switches with option DLC: 65°C, response time < 3 s @ 3xP _{d(max)} , ΔT=25K (40 to 65°C), coolant flow > 3l / min. Separate driver protection.					
ORDERING	HTS 200-800-SCR	Thyristor Switch, 20kV, 8000 A	Option LP	Low Pass. Input filter for increased noise immunity.	Option LPC	Integrated part components according to customer specification.	
	HTS 220-800-SCR	Thyristor Switch, 22kV, 8000 A	Option HFB	High Frequency Burst (improved capability by external capacitors)	Option UL-94	Flame retardant casting resin, UL94-V0	
			Option HFS	High Frequency Switching (two auxiliary supply inputs V1 & V2)	Option I-FWD	Integrated Free-Wheeling Diode. In connection with inductive load only.	
			Option I-HFS	Integrated High Frequency Burst	Option I-FWDN	Integrated Freewheeling Diode Network. In connection with inductive	
			Option S-TT	Soft Transition Time decrease the rise and fall time by 20%	Option PT-C	Pigtail for control connection: Flexible leads (l=75mm) with lemo	
			Option Min-On	Individually increased "Min. On-Time" to avoid unwanted triggering	Option SEP-C	Separated control unit. Control unit with LED indicators in a separate	
			Option Min-Off	Individually increased "Min. Off-Time" to avoid unwanted triggering	Option TH	Tubular Housing	
			Option PCC	Pulser Configuration. Switch combined with custom specific parts.	Option CF	Copper Cooling Fins. P _{d(max)} can be increased by the factor 3 to	
			Option ISO-40	40kV Isolation. Isolation Voltage increased to 40kV.	Option GCF	Grounded Cooling Flange. P _{d(max)} can be increased by the factor 3 to	
			Option ISO-80	80kV Isolation. Isolation Voltage increased to 80kV.	Option ILC	Indirect Liquid Cooling (for water). P _{d(max)} can be increased by the factor 3	
			Option ISO-120	120kV Isolation. Isolation Voltage increased to 120kV.	Option DLC	Direct Liquid Cooling. P _{d(max)} can be increased by the factor 10 to 100.	
			Option ISO-200	200kV Isolation. Isolation Voltage increased to 200kV.			
	FOR FURTHER PRODUCT OPTIONS PLEASE REFER TO THE OPTIONS PAGE.						
	Customized switching units are available on request. All data and specifications subject to change without notice. Please visit www.behlke.com for up-dates. 200-800-SCR / Revision 15-02-2019 ©2012 All rights reserved						