	Specification	Symbol	Condition / Comment		240-100-SCR	300-100-SCR	400-100-SCR	Unit
ABSOLUTE MAXIMUM RATINGS	Maximum Operating Voltage	$V_{O(max)}$	I_{off} < 250 µADC, T_{case} = 70°C		24000	30000	40000	VDC
	Minimum Operating Voltage	$V_{O(min)}$	$t_{r(on)}$ and $t_{r(off)}$ may increase sligthly if operated below 5% of $V_{O(max)}$			0		VDC
	Typical Breakdown Voltage	V_{br}	**NOTE:** V_{br} is a test parameter for quality control purposes only. Not applicable in normal operation!	I_{off} > 0.5 mA	27000	33000	44000	VDC
	Maximum Isolation Voltage	V_I	Between HV switch and control / GND, continuously		40000	40000	50000	VDC
	Max. Housing Insulation Voltage	V_{INS}	Between switch and housing surface, 3 minutes		50000	50000	60000	VDC
	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%		1000 800 650 240 115		ADC
	Max. Non-repetitive Peak Current	$I_{P(nr)}$	T_{case} = 25°C			Please consult factory		ADC
	Maximum Continuous Load Current	$I_{L(max)}$	T_{case} = 25°C	Increased $I_{L(max)}$ on request		0.7		ADC
	Max. Continuous Power Dissipation	$P_{d(max)}$	T_{case} = 25°C	Standard devices & FH, forced air 4 m/s	7.2	9	12	Watt
	Linear Derating		Above 25°C	Standard devices & FH, forced air 4 m/s	0.166	0.2	0.266	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. Auxilliary Voltage	V_{aux}	Built-in overvoltage limiter (replaceable)			5.25		VDC
ELECTRICAL CHARACTERISTICS	Critical Rate-of-Rise to Off-State Voltage	dv/dt	@ $V_{O(max)}$, exponential waveform		36	45	60	kV/µs
	Typical Off-State Current	I_{off}	0.8xV_O, T_{case} =25...70°C, reduced I_{off} on request			< 150		µADC
	Typical Holding Current	I_H	T_{case} = 25°C T_{case} = 70°C			100 70		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 $I_{P(max)}$	11 13 33 180	14 16 41 225	18 21 54 300	VDC
	Typical Propagation Delay Time	$t_{d(on)}$	Resistive load, 0.1 x $I_{P(max)}$, 0.8 x $V_{O(max)}$, 50-50%			200		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 $I_{p(max)}$	810 60 150 200	830 80 170 220	850 100 190 240	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 $I_{p(max)}$		40 100		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!			5		kHz
	Maximum Burst Frequency	$f_{b(max)}$	HFB option required, @ 0.1 x $I_{p(max)}$			20		kHz
	Coupling Capacitance	C_C	Switch against control side	Standard devices & options CF, DLC Devices with options GCF, ILC		<30 70 ... 200		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 $f_{(max)}$		200 600		mADC
	Fault Signal Output Voltage		Short circuit proof, source/ sink current max. 10mA	Ready = High Fault = Low		> 4.0 < 0.5		VDC
	Fault Signal Output Load		Sink/ source current. Output is short circuit proof.			10		mADC
	Typical Insulation Strength of Housing	V_{Ins}	**Caution:** Keep appropriate distance between module housing and all conductive elements of the setup!			20		kVDC
HOUSING	Dimensions	LxWxH	Standard housing with option PT-HV Devices with option FH Devices with option FH & CF		103x70x35 150x100x38 150x100x83	103x70x35 150x100x38 150x100x83	- 200x100x38 200x100x83	mm^3
	Weight		Standard housing, with option PT-HV Devices with option FH Devices with option FH & CF		480 1200 1400	480 1200 1400	- 1500 1800	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 opt. FC, CF , GCF: Thermo trigger 75°C, response time < 60 s @ 3xPd(max), ΔT=25K (50 to 75°C). Separate driver protection. **B)** Switches with option DLC: 65°C, response time < 3 s @ 3xPd(max), ΔT=25K (40 to 65°C), coolant flow > 3l / min. Separate driver protection.

ORDERING

HTS 240-100-SCR	Thyristor Switch, 24kV, 1000 A
HTS 300-100-SCR	Thyristor Switch, 30kV, 1000 A
HTS 400-100-SCR	Thyristor Switch, 40kV, 1000 A

Option LP	Low Pass. Input filter for increased noise immunity.	**Option I-PC**	Integrated part components according to customer specification.
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 15.
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 t
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**	

Customized switching units are available on request. All data and specifications subject to change without notice. Please visit www.behlke.com for up-dates. 300-100-SCR / Revision 10-03-2017 ©2012 All rights reserved