

	Specification	Symbol	Condition / Comment	1001-120-LC2	Unit	
ABSOLUTE MAXIMUM RATINGS	Maximum Operating Voltage	V _{O(max)}	I _{off} < 40 μADC, T _{case} = 70°C	± 100	kVDC	
	Maximum Isolation Voltage	V _I	Between HV switch and control / GND, continuously	± 180	kVDC	
	Max. Housing Insulation Voltage	V _{INS}	Between switch and housing surface, 3 minutes	± 200	kVDC	
	Maximum Turn-On Peak Current	I _{P(max)}	T _{case} = 25°C t _p < 200 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%	1200 708 396 233	ADC	
	Maximum Continuous Load Current	I _{L(max)}	T _{case} = 25°C Standard devices Devices with option DLC	5 37	ADC	
	Max. Continuous Power Dissipation	P _{d(max)}	T _{case} = 25°C Standard devices & FC, forced air 4 m/s Devices with option DLC	150 3500	Watt	
	Linear Derating		Above 25°C Standard devices & FC, forced air 4 m/s Devices with option DLC	3.72 354,81	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)	5.5	VDC	
ELECTRICAL CHARACTERISTICS	Permissible Operating Voltage Range	V _O		0... ± 100	kVDC	
	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	110	kVDC	
	Typical Off-State Current	I _{off}	0.8xV _O , T _{case} =25...70°C, reduced I _{off} on request	< 40	μADC	
	Typical Turn-On Resistance	R _{stat}	Each switching path t _p < 1μs, duty cycle < 1% 0.1 x I _{P(max)} , T _{case} =25°C 1.0 x I _{P(max)} , T _{case} =25°C 1.0 x I _{P(max)} , T _{case} =70°C	2.5 10 29.6	Ohm	
	Typical Propagation Delay Time	t _{d(on)}	Resistive load, 0.1 x I _{P(max)} , 0.8 x V _{O(max)} , 50-50%	250	ns	
	Typical Output Pulse Jitter	t _j	Impedance matched input, V _{aux} / V _{ctrl} = 5.00 VDC	3	ns	
	Typical Turn-On Rise Time	t _{r(on)}	Resistive load, 10-90% 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 = 1.0 x I _{P(max)}	250 200 350	ns	
	Typical Turn-Off Rise Time	t _{off} , t _q	Resistive load, 10-90% 0.1 x V _{O(max)} , I _L = 0.1 x I _{P(max)} 0.8 x V _{O(max)} , I _L = 1.0 x I _{P(max)}	100 150	ns	
	Maximum Turn-On Time	t _{on(max)}	No limitation	∞	ns	
	Minimum Turn-On Time	t _{on(min)}	t _{on(min)} can be customized. Please consult factory	250	ns	
	Maximum Turn-Off Time	t _{off(max)}	No limitation	∞	ns	
	Minimum Turn-Off Time	t _{off(min)}	t _{off(min)} can be customized. Please consult factory	250	ns	
	Max. Continuous Switching Frequency	f _(max)	@ V _{aux} = 5.00 V Sw. shutdown if f _(max) is exceeded Standard devices without HFS option Standard devices with HFS supply Opt. HFS + sufficient cooling option	<1.0 30 60	kHz	
	Maximum Burst Frequency	f _{b(max)}	Use option HFB for >10 pulses within 20μs or less	400	kHz	
	Maximum Number of Pulses / Burst	N _(max)	@ f _{b(max)} Standard Option I-HFB Option HFB Note: Option HFB requires external buffer capacitors with a voltage rating of > 630VDC and a capacitance of 100nF per additional	>10 >100 >1000	Pulses	
	Coupling Capacitance	C _C	HV side against control side	<100	pF	
	Natural Capacitance	C _N	Between switch poles, @ 0.5 x V _{O(max)}	10... 5	pF	
	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.	4.5 ... 5.5	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) @ f _(max)	400 800	mADC	
	Fault Signal Output		Switch will be turn off, if f>f _(max) , V _{aux} <4.75V or T _{case} >75°C Fault condition is indicated by a logical "L"	>4.0 <0.8	VDC	
	Opt. HFS, Ext. Supply Voltage V1	V _{HFS(V1)}	Stability ±3%, current consumption <0.4 mA/kHz @ 25°C	15	VDC	
	Opt. HFS, Ext. Supply Voltage V2	V _{HFS(V2)}	Stability ±3%, current consumption <0.5 mA/kHz @ 25°C	TBD	VDC	
	Intrinsic Diode Forward Voltage	V _F	T _{case} = 25°C, I _F = 0.3 x I _{P(max)}	120	VDC	
	Diode Reverse Recovery Time	t _{rrc}	T _{case} = 25°C, I _F = 0.3 x I _{P(max)} , di/dt = 100 A/μs	<250ns	ns	
	HOUSING	Dimensions	LxWxH	Standard housing Devices with option DLC	Please contact the manufacturer!	mm ³
		Weight		Standard housing Devices with option DLC	Please contact the manufacturer!	Kg
	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: Shielding). The ground pin is internally connected with the safety earthings terminals (threaded inserts) on bottom side.			
	ORDERING	5V Auxiliary Supply	Pin 3 / Red (LS-C: Pin 4). 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 3). TTL output, short circuit proof. Indicating switch & driver over-heat, over-frequency, low auxiliary voltage. L = Fault.				
Inhibit Signal Input		Pin 5 / Green (LS-C: Pin 2). TTL compatible, Schmitt-Trigger characteristics for the connection of external safety circuits. L = Switch Inhibited.				
LED Indicators		GREEN: "Auxiliary power good, switch OFF". YELLOW: "Control signal received, switch ON". RED: "Fault condition, switch OFF"				
Temperature Protection		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.				
HTS 1001-120-LC2		Fast HV Mosfet Switch, 100kV, 1200 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 load.	
		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 10.	
		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.		