Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test 50/60 Hz/1 min	U_d	kV	4.3	
Impulse withstand voltage 1.2/50 µs	$\hat{U}_W$	kV	8	
Clearance (pri. - sec.)	d_{Cl}	mm	> 8	Shortest distance through air
Creepage distance (pri. - sec.)	d_{Cp}	mm	> 8	Shortest path along device body
Clearance (pri. - sec.)	-	mm	8	When mounted on PCB with recommended layout
Case material	-	-	V0	According to UL 94
Comparative tracking index	*CTI*		600	
Application example	-	-	600 V CAT III PD2	Reinforced insulation, non uniform field according to EN 50178, IEC 61010
Application example	-	-	1000 V CAT III PD2	Simple insulation, non uniform field according to EN 50178, IEC 61010
Application example	-	-	600 V CAT III PD2	According to UL 508

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	°C	−40		105	
Ambient storage temperature	T_S	°C	−40		105	
Mass	*m*	g			5	

Electrical data HLSR 10-SM

At T_A = 25 °C, U_C = +5 V, R_L = 10 kΩ unless otherwise noted (see Min, Max, typ. definition paragraph in page 10).

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		10		
Primary current, measuring range	I_{PM}	A	−25		25	For U_C > 4.6 V
Number of primary turns	N_P	-		1		
Resistance of primary jumper @ T_A = 25 °C	R_P	mΩ		0.21		
Resistance of primary jumper @ T_A = 105 °C	R_P	mΩ		0.29		T jumper = 120 °C
Supply voltage [1]	U_C	V	4.5	5	5.5	
Current consumption	I_C	mA		19	25	
Reference voltage (output)	V_{ref}	V	2.48	2.5	2.52	Internal reference
Reference voltage (input)	V_{ref}	V	0.5		2.65	External reference
Output voltage range @ I_{PM}	$V_{out} - V_{ref}$	V	−2		2	Over operating temperature range
V_{ref} output resistance	R_{ref}	Ω	130	200	300	series
V_{out} output resistance	R_{out}	Ω		2	5	series
Capacitive loading	C_L	nF	0		6	
Electrical offset voltage @ I_P = 0	V_{OE}	mV	−5		5	$V_{out} - V_{ref}$ @ V_{ref} = 2.5 V
Electrical offset current referred to primary	I_{OE}	mA	−62.5		62.5	
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K	−170		170	−40 °C … 105 °C
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K	−0.075		0.075	−40 °C … 105 °C
Temperature coefficient of I_{OE}	TCI_{OE}	mA/K	−0.94		0.94	−40 °C … 105 °C
Theoretical sensitivity	G_{th}	mV/A		80		800 mV @ I_{PN}
Sensitivity error	ε_G	%	−0.5		0.5	Factory adjustment
Temperature coefficient of G	TCG	ppm/K	−200		200	−40 °C … 105 °C
Linearity error 0 … I_{PN}	ε_L	% of I_{PN}	−0.5		0.5	
Linearity error 0 … I_{PM}	ε_L	% of I_{PM}	−0.5		0.5	
Magnetic offset current (@ 10 × I_{PN}) referred to primary	I_{OM}	A	−0.25		0.25	
Reaction time @ 10 % of I_{PN}	t_{ra}	µs			2	@ 50 A/µs
Response time @ 90 % of I_{PN}	t_r	µs			2.5	@ 50 A/µs
Frequency bandwidth (−3 dB)	BW	kHz		400		
Output rms voltage noise spectral density 100 Hz … 100 kHz	e_{no}	µV/√Hz			28	
Output voltage noise DC … 10 kHz DC … 100 kHz DC … 1 MHz	V_{no}	mVpp		17.5 46.1 65.7		
Accuracy @ I_{PN}	X	% of I_{PN}	−1		1	
Accuracy @ I_{PN} @ T_A = +85 °C	$X_{85\,°C}$	% of I_{PN}	−2.9		2.9	See formula note [2]
Accuracy @ I_{PN} @ T_A = +105 °C	$X_{105\,°C}$	% of I_{PN}	−3.4		3.4	See formula note [2]

Notes: [1] 3.3 V SP version available

[2] Accuracy @ T_A (% of I_{PN}) = $X + \left(\frac{TCG}{10000} \times (T_A - 25) + \frac{TCI_{OE}}{1000 \times I_{PN}} \times 100 \times (T_A - 25)\right)$.