

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC isolation test 50/60 Hz/1 min	U_d	kV	4.3	
Impulse withstand voltage 1.2/50 μ s	$\hat{U}_w$	kV	8	
Partial discharge extinction rms voltage @ 10 pC	U_e	V	1650	
Clearance (pri. - sec.)	d_{Cl}	mm	8	Shortest distance through air
Creepage distance (pri. - sec.)	d_{Cp}	mm	8	Shortest path along device body
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
Application example	-	-	300 V CAT III PD2	Reinforced insulation, non uniform field according to IEC 61010
Application example	-	-	1000 V CAT III PD2	Simple insulation, non uniform field according to EN 50178, IEC 61010

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	
Surrounding temperature according to UL 508		°C			105	
Mass	m	g		5		

Electrical data HO 8-NSM/SP33-1000

At $T_A = 25^\circ\text{C}$, $U_C = +3.3\text{ V}$, $N_P = 3$ turns, $R_L = 10\text{ K}\Omega$ unless otherwise noted (see Min, Max, typ. definition paragraph in page 12).

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	At		8		
Primary current, measuring range	I_{PM}	At	-20		20	
Number of primary turns	N_P			1,2,3		
Supply voltage	U_C	V	3.14	3.3	3.46	
Current consumption	I_C	mA			25	
Reference voltage	V_{ref}	V	1.636	1.65	1.664	Internal reference
External reference voltage	V_{ref}	V	0.5		1.85	@ $U_C = 3.3 \approx 3.46\text{ V}$
			0.5		1.7	@ $U_C = 3.14 \approx 3.3\text{ V}$
Output voltage range @ I_{PM}	$V_{out} - V_{ref}$	V	-1.15		1.15	
Output voltage @ $I_P = 0\text{ A}$	V_{out}	V		$V_{ref} + V_{OE}$		
Electrical offset voltage	V_{OE}	mV	-7		7	
Temperature coefficient of V_{ref}	TCV_{ref}	ppm/K			± 170	-20 °C .. 85 °C Internal reference
					± 180	-40 °C .. 105 °C Internal reference
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K			± 0.080	-40 °C .. 105 °C
Theoretical sensitivity	G_{th}	mV/A		57.5		460 mV/ I_{PN} @ $U_C = 3.3\text{ V}$
Sensitivity error	ϵ_G	%			± 0.5	Factory adjustment
Temperature coefficient of G	TCG	ppm/K			± 200	-20 °C .. 85 °C
					± 210	-40 °C .. 105 °C
Linearity error 0 .. I_{PN}	ϵ_L	% of I_{PN}			± 0.5	@ $U_C = 3.3\text{ V}$
Linearity error 0 .. I_{PM}	ϵ_L	% of I_{PM}			± 0.8	@ $U_C = 3.3\text{ V}$
Gain error with respect to $U_C \pm 10\%$		%/%			± 0.4	Gain error per U_C drift
Magnetic offset voltage @ $I_P = 0$ after $2.5 \times I_{PN}$	V_{OM}	mV			± 4	
Reaction time @ 10 % of I_{PN}	t_{ra}	μs			2	$di/dt = I_{PN}/\mu\text{s}$
Response time @ 90 % of I_{PN}	t_r	μs			3.5	$di/dt = I_{PN}/\mu\text{s}$
Frequency bandwidth (-3 dB)	BW	kHz		250		
Output rms voltage noise (spectral density) (DC .. 100 kHz)	e_{no}	$\mu\text{V}/\sqrt{\text{Hz}}$			18.9	
Output voltage noise (DC .. 20 MHz)	V_{no}	mVpp		40		
Standby pin "0" level		V			0.3	
Standby pin "1" level		V	$U_C - 0.3$			
Time to switch from standby to normal mode		μs			20	
Over-current detect		At	$2.6 \times I_{PN}$	$2.9 \times I_{PN}$	$3.2 \times I_{PN}$	peak value
Accuracy @ I_{PN}	X	% of I_{PN}			± 1	$= \epsilon_G + \epsilon_L$
Accuracy @ I_{PN} @ $T_A = +85^\circ\text{C}$	X	% of I_{PN}			± 3.3	See formula note ¹⁾
Accuracy @ I_{PN} @ $T_A = +105^\circ\text{C}$	X	% of I_{PN}			± 4.1	See formula note ¹⁾

Note: ¹⁾ Accuracy @ I_P and $X_{TA} = \pm [X + (TCG/10000) \cdot (T_A - 25) + TCV_{OE} \cdot 100 \cdot (T_A - 25) / (G_{th} \cdot I_P)]$.