

DCT-500IT PROVISIONAL DATASHEET

Absolute maximum ratings (not operating)

PARAMETER	SYMBOL	UNIT	SPECIFICATION
Maximum peak primary current (not operating)	I_p max.	A	Defined by busbar to have $T^\circ \leq 150^\circ\text{C}$
Primary nominal DC or r.m.s. current	I_{PN}	A	Defined by busbar to have $T^\circ \leq 150^\circ\text{C}$
Ambient operating temperature	T_A	$^\circ\text{C}$	$-40 < T_A < 105^\circ\text{C}$
Ambient storage temperature	T_S	$^\circ\text{C}$	$-40 < T_S < 125^\circ\text{C}$
Electrostatic discharge	V discharge	V	2000
Maximum admissible vibration	γ	m.s^{-2}	100
R.m.s. voltage for AC isolation test 50Hz, 1mn	V_D	V	2000

Operating characteristics

	Symbol	Unit	SPECIFICATION			Conditions
			Min	Typical	Max	
ELECTRICAL DATA						
Primary current measuring range	I_p	A	-500	—	500	@ $-40^\circ\text{C} < T^\circ < 105^\circ\text{C}$
Supply voltage	V_C	V	4.75	5.00	5.25	@ $-40^\circ\text{C} < T^\circ < 105^\circ\text{C}$
Analog output voltage	V_{OUT}	V	$V_{OUT} = V_C \cdot 15 \cdot (2.5 + 0.004 \cdot I_p)$			@ $-40^\circ\text{C} < T^\circ < 105^\circ\text{C}$
Gain	G	V/A	0.0039	0.0040	0.0041	@ $T_A = 25^\circ\text{C}$
Offset voltage	V_O	V	2.450	2.500	2.550	@ $V_C = 5.00\text{V}; T_A = 25^\circ\text{C}; I_p = 0\text{A}$
Current consumption	I_C	mA	—	—	30	@ $-40 < T_A < 105^\circ\text{C};$ $4.75\text{V} < V_C < 5.25\text{V}$
Load resistance	R_L	$\text{K}\Omega$	10	—	—	
Output internal resistance	R_{OUT}	Ω	—	—	10	
PERFORMANCE DATA (1)						
Gain error	ϵ_G	%	-2.0	± 0.7	2.0	@ $T_A = 25^\circ\text{C}, V_C = 5.00\text{V};$ $G_{th} = 0.0040\text{V/A}$
Electrical offset current	I_{OE}	A	-3.1	± 1.4	3.1	@ $V_C = 5.00\text{V}; T_A = 25^\circ\text{C}$
	V_{OE}	mV	-9.0	± 4.0	9.0	
Residual current (magnetic offset)	I_{OM}	A	-2.4	± 1.4	2.4	@After excursion to $\pm I_p$; $T_A = 25^\circ\text{C}$
	V_{OM}	mV	-7.0	± 4.0	7.0	
Linearity error	ϵ_L	% I_p	-1.0	± 0.4	1.0	@ $I_p; V_C = 5.00\text{V}, T_A = 25^\circ\text{C}$
Response time	t_ν	μS	—	—	10	@ $di/dt = 50\text{A}/\mu\text{S}; I_T = 100\text{A}$
Frequency bandwidth	f	kHz	20	—	—	@-3 dB; $I_T = 100\text{A rms}$
Output voltage noise peak-peak	$V_{NO P-P}$	mV	—	11.5	15.5	@ $T_A = 25^\circ\text{C}; 0\text{Hz} < f < 1\text{MHz}$
Output voltage noise r.m.s.	$V_{NO rms}$	mV	—	2.5	4	@ $T_A = 25^\circ\text{C}; 0\text{Hz} < f < 1\text{MHz}$

Note (1): min and max value are specified after one operating T° cycle.

Environmental test specifications

NAME	STANDARD	CONDITIONS
Thermal shocks	IEC 60068 Part 2-14	$T^\circ -40^\circ\text{C}$ to $105^\circ\text{C}/1000$ cycles, not connected
Low T° operation at min. supply voltage	IEC 60068 Part 2-1	$T^\circ -40^\circ\text{C}/1000\text{H}$, supply voltage = 4.75V
High T° operation at max. supply voltage	IEC 60068 Part 2-2	$T^\circ 105^\circ\text{C}/1000\text{H}$, supply voltage = 5.25V
Temperature humidity bias	IEC 60068 Part 2-3	$T^\circ 90^\circ\text{C}/95\%\text{RH}/1000\text{H}$, supply voltage = 5.25V
MECHANICAL TESTS		
Vibration	IEC 60068 Part 2-64	Room T° , acceleration 100 m/s^2 , Frequency 20 to 500 Hz/96H each axis
Drop test	IEC 60068 Part 2-29	Height 750mm concrete floor each directions
EMC TEST		
Electrostatic discharge	JESD22-A114-B	Applied voltage = ± 2 kV pin to pin number of Discharge = 1