



Test report:M3DN40-24

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Output function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Rated current	0-40A continuous	I/P:24VDC O/P:Full load Ta:25°C	OK	P
2	Peak current	60A 5 Sec No damage	I/P:24VDC O/P:60A Ta:25°C	OK	P
3	Capacitance	320uF	I/P:24VDC O/P:320uF Ta:25°C	OK	P
4	Standby power losses(Typ.)	1.5W	I/P:24VDC O/P:No load Ta:25°C	0.44W	P

Input function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Input voltage range	19-29VDC	I/P:Testing O/P:Full load Ta:25°C	17.89-30.5VDC	P
2	Rated current	0-20Ax2 input,0-40Ax1 input continuous	I/P:24VDC O/P:0-10Ax2 input.0-20Ax1 Ta:25°C	ok	P
3	Voltage drop(Vin-Vout)(max.)	0.3V	I/P:24VDC O/P:Full load Ta:25°C	0.25V	P
4	Peak current	0-30Ax2 input,0-60Ax1 5 Sec No damage	I/P:24VDC O/P:60A Ta:25°C	OK	P
5	Input reverse current(max.)	1mA	I/P:24VDC O/P:Full load Ta:25°C	3.8uA	P
6	Input reverse voltage(max.)	40VDC No damage	I/P:40VDC O/P:Full load Ta:25°C	OK	P
7	Efficiency	98%	I/P:24VDC O/P:Full load Ta:25°C	99.00%	P

Protection function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Over load protection	<60A No damage 5 Sec (max.)	I/P:24VDC O/P:Testing Ta:25°C	No damage	P
3	Short protection	<60A No damage 5 Sec (max.)	I/P:29VDC O/P:Full load Ta:25°C	No damage	P

Environment test

NO.	Test item	Specication	Test condition	Result	Verdict		
1	Temperature rise test	Model:M3DN40-24				P	
		1.Room ambient burn-in: 2HS					
		I/P:24VDC O/P:Full load Ta=22.7°C					
		2.High ambient burn-in: 2HS					
		I/P:24VDC O/P:Full load Ta=59.3°C					
				Room ambient	High ambient		
				Ta=22.7°C	Ta=59.3°C		
		1	ZNR2	58.3	99.2		
		2	Q1	56.3	94.6		
		3	Q2	57.2	97.5		
		4	Q3	71.5	115.6		
		5	Q4	66.5	109.2		
		5	C17	64.8	105.6		
		6	C15	43.6	85.2		
		7	C16	41.5	82.1		
		8	RY1	52.6	89.5		
9	RY2	52.9	90.2				
10	PCB	72.2	114.5				
11	U4	47.9	87.5				
12	D3	51.8	91.6				
13	R54	49.8	88.9				
14	R56	56.4	91.9				
15	R48	53.6	92.5				
2	Over load burn-in test	NO damage 1 Hours(min)	I/P:24VDC O/P:115% load Ta:25°C	OK	P		
3	Low temperature turn on test	Turn-in after 2 hour	I/P:19VDC/29VDC O/P:100% load Ta:-45°C	OK			
4	Vibration test	(1) Waveform: Sine wave (2) Frequency:10~500Hz (3) Sweep time:10min/sweep cycle (4) Acceleration:2G (5) Test time:1 hour in each axis (X.Y.Z) Ta:25°C		OK	P		

Safety test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Withstand voltage	I/PO/P-FG:0.5KVAC/min I/P/FG-RELAY:0.5KVAC/min FG-RELAY:0.5KVAC/min	I/PO/P-FG:0.6KVAC/min I/P/FG-RELAY:0.6KVAC/min O/P-FG:0.6KVAC/min Ta:25°C	I/P/O/P-FG:7.85mA I/P/FG-RELAY:0.286mA FG-RELAY:0.273mA NO damage	P
2	Isolation resistance	I/P/O/P-FG:500VDC>100M Ω I/P/FG-RELAY:500VDC>100M Ω FG-RELAY:500VDC>100M Ω	I/P/O/P-FG:500VDC I/P/FG-RELAY:500VDC FG-RELAY:500VDC Ta:25°C	I/P/O/P-FG:9999M Ω I/P/FG-RELAY:9999M Ω FG-RELAY:9999M Ω NO damage	P

Componment stress tset

NO.	Test item	Specication	Test condition	Result	Verdict
1	Transistor peak voltage	Q1 VGS Rated:±20V Q3 VGS Rated:±20V	I/P:29VDC DC ON/OFF O/P:Full load Ta:25°C	Q1 VGS:12.2V Q3 VGS:12.4V	P

E.M.C test

NO.	Test item	Specication	Test condition	Result	Verdict
1	HARMONIC	EN IEC 61000-3-2	I/P: 24VDC O/P:Full/50% load Ta:25°C	/	P
2	CONDUCTION	EN 55032 CLASS B	I/P: 24VDC O/P:Full load Ta:25°C	PASS	P
3	RADIATION	EN 55032 CLASS B	I/P: 24VDC O/P:Full load Ta:25°C	PASS	P
4	E.S.D	EN61000-4-2 AIR: 15KV / Contact: 8KV	I/P: 24VDC O/P:Full load Ta:25°C	Criteria A	P
5	E.F.T	EN 61000-4-4 Input:2KV	I/P: 24VDC O/P:Full load Ta:25°C	Criteria A	P
6	SURGE	EN 61000-4-5 INDUSTRY L-N:1KV L,N-FG :2KV	I/P: 24VDC O/P:Full load Ta:25°C	Criteria A	P

Date	TEST	Check	Approver	Result
2023-9-6	JH HUANG	GL YAO	YX CHEN	PASS