



Test report:M3DN20-48

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Output function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Rated current	0-20A continuous	I/P:48VDC O/P:Full load Ta:25°C	OK	P
2	Peak current	30A 5 Sec No damage	I/P:48VDC O/P:30A Ta:25°C	OK	P
3	Capacitance	320uF	I/P:48VDC O/P:320uF Ta:25°C	OK	P
4	Standby power losses(Typ.)	1.5W	I/P:48VDC O/P:No load Ta:25°C	0.89W	P

Input function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Input voltage range	36~60VDC	I/P:Testing O/P:Full load Ta:25°C	34.1VDC~62.2VDC	P
2	Rated current	0~10Ax2 input, 0~20Ax1 input Continuous	I/P:48VDC O/P:0-10Ax2 input.0-20Ax1 Ta:25°C	ok	P
3	Voltage drop(Vin-Vout)(max.)	0.25V	I/P:48VDC O/P:Full load Ta:25°C	0.13V	P
4	Peak current	0-15Ax2 input,0-30Ax1 5 Sec No damage	I/P:48VDC O/P:30A Ta:25°C	OK	P
5	Input reverse current(max.)	1mA	I/P:65VDC O/P:Full load Ta:25°C	2.33uA	P
6	Input reverse voltage(max.)	40VDC No damage	I/P:65VDC O/P:Full load Ta:25°C	OK	P
7	Efficiency	98%	I/P:48VDC O/P:Full load Ta:25°C	98.60%	P

Protection function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Over load protection	<30A No damage 5 Sec (max.)	I/P:48VDC O/P:Testing Ta:25°C	No damage	P
3	Short protection	<30A No damage 5 Sec (max.)	I/P:60VDC 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:M3DN20-48				P		
		1.Room ambient burn-in: 2HS						
		I/P:48VDC O/P:Full load Ta=24.8°C						
		2.High ambient burn-in: 2HS						
		I/P:48VDC O/P:Full load Ta=60.3°C						
					Room ambient		High ambient	
					Ta=24.8°C		Ta=60.3°C	
		1	ZNR1		48.6		85.6	
		2	Q1		46.9		84.6	
		3	Q3		51.5		91.6	
		4	C17		55.6		92.6	
		5	C15		42.6		80.9	
		6	C16		39.6		77.6	
		7	RY1		45.2		83.2	
		8	RY2		45.6		81.5	
		9	U1		46.5		82.5	
		10	U2		44.2		82.6	
		11	PCB		53.6		92.5	
		12	U4		47.5		84.6	
		13	D3		46.5		83.6	
		14	R54		52.3		87.9	
15	R56		52.9	89.5				
16	Q13		55.6	90.3				
17	Q14		58.5	94.5				
18	R48		51.6	89.6				
19	C4		55.6	91.5				
20	Q21		38.9	76.5				
2	Over load burn-in test	NO damage 1 Hours(min)	I/P:48VDC O/P:115 % load Ta:25°C	OK	P			
3	Low temperature turn on test	Turn-in after 2 hour	I/P:36VDC/60VDC 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/P/O/P-FG:0.5KVAC/min I/P/FG-RELAY:0.5KVAC/min FG-RELAY:0.5KVAC/min	I/P/O/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:7.65mA I/P/FG-RELAY:0.29mA FG-RELAY:0.28mA 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:60VDC DC ON/OFF O/P:Full load Ta:25°C	Q1 VGS:12.6V 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: 48VDC O/P:Full/50% load Ta:25°C	/	P
2	CONDUCTION	EN 55032 CLASS B	I/P: 48VDC O/P:Full/50% load Ta:25°C	PASS	P
3	RADIATION	EN 55032 CLASS B	I/P: 48VDC O/P:Full load Ta:25°C	PASS	P
4	E.S.D	EN61000-4-2 AIR: 15KV / Contact: 8KV	I/P: 48VDC O/P:Full load Ta:25°C	Criteria A	P
5	E.F.T	EN 61000-4-4 Input:2KV	I/P: 48VDC 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: 48VDC 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