



Test report:M3DN40-48

Output function test
Input function test
Protection function test
Environment test
Safety test
Componment stress tset
E.M.C test

Output function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Rated current	0-40A continuous	I/P:48VDC O/P:Full load Ta:25°C	OK	P
2	Peak current	60A 5 Sec No damage	I/P:48VDC O/P:60A 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	0.9W	P

Input function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Input voltage range	36VDC~60VDC	I/P:Testing O/P:Full load Ta:25°C	34.2VDC~62.1VDC	P
2	Rated current	0~20Ax2 input, 0~40Ax1 input continuous	I/P:48VDC O/P:0-10Ax2 input.0-20Ax1 Ta:25°C	ok	P
3	Voltage drop(Vin-Vout)(max.)	0.3V	I/P:48VDC O/P:Full load Ta:25°C	0.26V	P
4	Peak current	0~30Ax2 input, 0~60Ax1 5 Sec No damage	I/P:48VDC O/P:60A Ta:25°C	OK	P
5	Input reverse current(max.)	1mA	I/P:48VDC O/P:Full load Ta:25°C	2.8uA	P
6	Input reverse voltage(max.)	65VDC 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	99.60%	P

Protection function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Over load protection	<60A No damage 5 Sec (max.)	I/P:48VDC O/P:Testing Ta:25°C	No damage	P
3	Short protection	<60A 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:M3DN40-48			P		
		1.Room ambient burn-in: 2HS					
		I/P:48VDC O/P:Full load Ta=28.4°C					
		2.High ambient burn-in: 2HS					
		I/P:48VDC O/P:Full load Ta=63.6°C					
						Room ambient Ta=28.4°C	High ambient Ta=63.6°C
			NO.	P/N			
			1	ZNR2		65.5	103.2
			2	Q1		68.6	107.6
			3	Q2		69.5	108.5
			4	C17		72.2	110.2
			5	C15		50.2	87.6
			6	C16		48.2	83.6
			7	RY1		55.3	94.2
			8	RY2		55.3	93.2
			9	PCB		78.9	118.2
			10	U4		55.3	92.2
			11	U1		54.6	91.9
			12	U2		53.9	90.8
			13	C4		67.9	106.2
			14	Q3		78.2	119.5
			15	Q4		71.2	111.5
			16	D3		56.3	92.6
	17	R54	62.2	95.8			
	18	R56	63.5	99.5			
	19	Q13	63.2	98.5			
	20	Q14	72.2	108.5			
	21	R48	63.6	100.2			
	22	Q21	45.6	83.4			
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	P		
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: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 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