Test report:MGR020-24F

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	Ripple & noise	V1:150mVp-p(Max)	I/P:230VAC O/P:Full load Ta:25℃	10mVp-p	P
2	Output voltage adjust range	CH1:21.6V~26.4V	I/P:230VAC I/P:115VAC O/P:Min load Ta:25℃	20.7-28.5V/230VAC 20.7-28.5V/115VAC	P
3	Output voltage tolerance	V1:1% ~ -1%(Max)	I/P:100VAC/264VAC O/P:Full/min load Ta:25℃	V1:0.05%~-0.05%	P
4	Line regulation	V1:1% ~ -1%(Max)	I/P:100VAC ~ 264VAC O/P:Full load Ta:25℃	V1:0%~-0%	P
5	Load regulation	V1:1% ~ -1%(Max)	I/P:230VAC O/P:Full/min load Ta:25℃	V1:0.05%~-0.05%	P
6	Set up time	230VAC/500ms(Max) 115VAC/1000ms(Max)	I/P:230VAC I/P:115VAC O/P:Full load Ta:25℃	288ms/230VAC 288ms/115VAC	P
7	Rise time	230VAC/30ms(Max) 115VAC/30ms(Max)	I/P:230VAC I/P:115VAC O/P:Full load Ta:25℃	18ms/230VAC 18ms/115VAC	P
8	Hold up time	230VAC/50ms(TYP) 115VAC/20ms(TYP)	I/P:230VAC I/P:115VAC O/P:Full load Ta:25℃	120ms/230VAC 26ms/115VAC	P
9	Over/undersho ot test	< ±5%	I/P:230VAC O/P:Full load Ta:25℃	Test: < 5%	P

Input function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Input voltage range	85VAC ~ 264VAC	I/P:Testing O/P:Full load Ta:25℃	52VAC - 264VAC	P
			I/P: Low-line-3V=82V High-line+15%=300V O/P:Full/min load ON:30Sec. OFF:30Se 10MIN (AC power ON/OFF NO damage)	ok	
2	Input frequency range	47Hz ~ 63Hz NO damage	I/P:85AC ~ 264VAC O/P:Full/min load Ta:25℃	ok	P
3	Efficiency	84%(TYP)	I/P:230VAC O/P:Full load Ta:25℃	86.50%	P
4	Input current	230V/0.35A(TYP) 115V/0.55A(TYP)	I/P:230VAC I/P:115VAC O/P:Full load Ta:25℃	0.28A/230VAC 0.42A/115VAC	P
5	Inrush current	230V/40A(TYP) 115V/20A(TYP) cold start	I/P:230VAC I/P:115VAC O/P:Full load Ta:25℃	I=26.3A/230VAC I=13.2A/115VAC	P
6	Leakage current	< 1 mA / 230 VAC	I/P:230VAC O/P:Min load Ta:25℃	L-FG: 0.9 mA N-FG: 0.9 mA	P

Protection function test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Over load protection	105~160%	I/P:230VAC I/P:115VAC O/P:Testing Ta:25℃	122%/115VAC 122%/230VAC Constant current limiting	P
2	Over voltage protection	CH1:27.6V ~ 32.4V	I/P:230VAC I/P:115VAC O/P:Min load Ta:25℃	30V/115VAC 30V/230VAC Shunt down Re-power ON	P
3	Short protection	Short every output 1 hour NO damage	I/P:264VAC O/P:Full load Ta:25℃	NO damage Constant current limiting	P

Environment test

<table>
<tr><th>NO.</th><th>Test item</th><th colspan="3">Specication</th><th>Test condition</th><th>Result</th><th>Verdict</th></tr>
<tr><td rowspan="16">1</td><td rowspan="16">Temperature rise test</td><td colspan="5">Model：MGR020-24F</td><td rowspan="16">P</td></tr>
<tr><td colspan="5">1.Room ambient burn-in：2HRS</td></tr>
<tr><td colspan="5">I/P:230VAC O/P:Full load Ta=31.4℃</td></tr>
<tr><td colspan="5">2.High ambient burn-in：2HRS</td></tr>
<tr><td colspan="5">I/P:230VAC O/P:Full load Ta=44.6℃</td></tr>
<tr><td>NO.</td><td colspan="2">P/N</td><td>Room ambient
Ta= 31.4℃</td><td>High ambient
Ta= 44.6℃</td></tr>
<tr><td>1</td><td colspan="2">U1</td><td>61.4</td><td>73.9</td></tr>
<tr><td>2</td><td colspan="2">C5</td><td>47.5</td><td>58.3</td></tr>
<tr><td>3</td><td colspan="2">BD1</td><td>53.3</td><td>63.1</td></tr>
<tr><td>4</td><td colspan="2">LF1</td><td>49.6</td><td>66.2</td></tr>
<tr><td>5</td><td colspan="2">D1</td><td>69.1</td><td>80.5</td></tr>
<tr><td>6</td><td colspan="2">Q1</td><td>74.8</td><td>87.8</td></tr>
<tr><td>7</td><td colspan="2">ZD1</td><td>63</td><td>73.5</td></tr>
<tr><td>8</td><td colspan="2">D100</td><td>82</td><td>92.5</td></tr>
<tr><td>9</td><td colspan="2">C36</td><td>61.2</td><td>72.5</td></tr>
<tr><td>10</td><td colspan="2">C105</td><td>66.8</td><td>77</td></tr>
<tr><td>10</td><td colspan="2">J100</td><td>57.9</td><td>68.9</td></tr>
<tr><td>11</td><td colspan="2">L100</td><td>61.2</td><td>72.6</td></tr>
<tr><td>12</td><td colspan="2">D300</td><td>75.1</td><td>87.3</td></tr>
<tr><td>13</td><td colspan="2">Q302</td><td>76.9</td><td>87</td></tr>
<tr><td>2</td><td>Over load burn-in test</td><td colspan="3">NO damage
1 Hours(min)</td><td>I/P:230VAC
O/P:132%load
Ta:25℃</td><td>ok</td><td rowspan="2">P</td></tr>
<tr><td>3</td><td>Low temperature turn on test</td><td colspan="3">Turn-in after 2 hour</td><td>I/P:230VAC
O/P:100%load
Ta:-20℃</td><td>ok</td></tr>
<tr><td>4</td><td>Vibration test</td><td colspan="4">(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℃</td><td>ok</td><td>P</td></tr>
</table>

Safety test

NO.	Test item	Specication	Test condition	Result	Verdict
1	Withstand voltage	I/P-O/P:3.0KVAC/min I/P-FG:1.5KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P:3.6KVAC/min I/P-FG:1.8KVAC/min O/P-FG:0.6KVAC/min Ta:25℃	I/P-O/P:5mA I/P-FG:5.2mA O/P-FG:2.5mA No damage	P
2	Isolation resistance	I/P-O/P:500VDC>100MΩ I/P-FG:500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P:500VDC I/P-FG:500VDC O/P-FG:500VDC Ta:25℃	I/P-O/P:8GΩ I/P-FG:7GΩ O/P-FG:15.5GΩ No damage	P

Componment stress tset

NO.	Test item	Specication	Test condition	Result	Verdict
1	Power transistor peak voltage	6A/600V	I/P:High-line +3V = 267V O/P:(1)Full load turn on (2)Output short Ta:25℃	 568V 555V	P
2	Diode peak voltage	20A/300V	I/P:High-line +3V = 267V O/P:(1)Full load turn on (2)Output short Ta:25℃	 297V 255V	P
3	Input capacitor voltage	33uF/400V	I/P:High-line +3V = 267V O/P:(1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	 383V 387V 383V	P
4	Control IC voltage test	IC:16V	I/P:High-line +3V = 267V O/P:(1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	 12.5V 10.5V 12.5V	P

E.M.C test

NO.	Test item	Specication	Test condition	Result	Verdict
1	HARMONIC	EN IEC 61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	/	P
2	CONDUCTION	EN 55032 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS	P
3	RADIATION	EN 55032 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS	P
4	E.S.D	EN 61000-4-2 LIGHT INDUSTRY AIR:8KV	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN 61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	EN 61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	CRITERIA A	P

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