MODEL：QP-375-24C

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 240 mVp-p (Max) V2: 50 mVp-p (Max) V3: 150 mVp-p (Max) V4: 150 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 17 mVp-p (Max) V2: 5 mVp-p (Max) V3: 3 mVp-p (Max) V4: 7 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 21.6 V~ 26.4V CH2: 4.5V~ 5.5V CH3: 13.5V~ 16.5V CH4: 13.5V~ 16.5V	I/P: 230 VAC I/P: 115 VAC C O/P:MIN LOAD Ta:25℃	CH1:20.41V~27.56V CH2: 4.35V~ 6.17V CH3: 12.83V~ 17.81V CH4: 12.84V~ 17.41V	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -1%~ +1 % (Max) V2: -1%~ +1 % (Max) V3: -1%~ +1 % (Max) V4: -1%~ +1 % (Max)	I/P: 115 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.06 %~ -0.06 % V2: 0.15 %~ -0.15 % V3: 0.1 %~ -0.1 % V4: 0.3 %~ -0.3 %	P
4	LINE REGULATION	V1: -0.5 %~+0.5 % (Max) V2: -0.5 %~+0.5 % (Max) V3: -0.5 %~+0.5 % (Max) V4: -0.5 %~+0.5 % (Max)	I/P: 115 VAC / 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 % V2: 0 %~ 0 % V3: 0 %~ 0 % V4: 0 %~ 0 %	P
5	LOAD REGULATION	V1:-0.8 %~ +0.8% (Max) V2: -0.8 %~ +0.8% (Max) V3: -0.8 %~ +0.8% (Max) V4: -0.8 %~ +0.8% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.03 %~ -0.06 % V2: 0.15 %~ 0% V3: 0.1 %~ -0.1 % V4: 0.3 %~ -0.3 %	P
6	CROSS REGULATION	V1:-0.8 %~ +0.8% (Max) V2: -0.8 %~ +0.8% (Max) V3: -0.8 %~ +0.8% (Max) V4: -0.8 %~ +0.8% (Max)	I/P: 230 VAC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25℃	V1: 0 %~ -0.03 % V2: 0.2 %~ -0.2 % V3: 0.05 %~ 0 % V4: 0.05 %~ 0 %	P
7	SET UP TIME	230VAC / 800ms (Max) 115VAC / 800ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230 VAC/ 226.554ms 115 VAC/ 294.041 ms	P
8	RISE TIME	230VAC/ 50ms (Max) 115VAC/ 50 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 37.666 ms 115VAC/ 35.803 ms	P
9	HOLD UP TIME	230 VAC/ 20ms(TYP) 115 VAC/ 20 ms(TYP)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 37.579ms 115VAC/ 37.294ms	P
10	OVER/UNDERSHOOT TEST	＜±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: ＜5 %	P
11	DYNAMIC LOAD	V1: 2400mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	310 mVp-p	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℃	65 V~ 264 V	P
			I/P: LOW-LINE-3V= 82 V HIGH-LINE+15%= 300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~ 63HZ NO DAMAGE OSC	I/P: 264 VAC ~ 115 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	POWER FACTOR	0.95/ 230VAC(TYP) 0.98/ 115VAC(TYP)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	PF= 0.96 / 230 VAC PF= 0.99 / 115 VAC	P
4	EFFICIENCY	80 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	82.5 %	P
5	INPUT CURRENT	230V/ 3 A (TYP) 115V/ 6 A(TYP)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	I = 2.25 A/ 230 VAC I = 4.61 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 45 A(TYP) COLD START	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	I =26.64 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P: 230 VAC O/P:Min LOAD Ta:25℃	L-FG: 1.2 mA N-FG: 1.2 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~ 135 %	I/P:230 VAC O/P:TESTING Ta:25℃	113 %/ 230 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 27.6V~ 32.4V	I/P:230 VAC O/P:MIN LOAD Ta:25℃	31.5 V/ 230 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1 80± 5 ℃ O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shunt down o/p voltage recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: 100% LOAD Ta:25℃	NO DAMAGE Hiccup Mode	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	Rc+ / Rc- 0 V~ 0.8 V POWER ON 4 V~ 10 V POWER OFF	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	0 V ~ 2.35 V POWER ON 2.35 V ~ 10 V POWER OFF	P
2	POWER GOOD SIGNAL	DELAY 10ms ~ 500ms	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	32.7 ms/ 230 VAC 31.66 ms/ 115 VAC	P
3	POWER FAIL SIGNAL	> 1ms	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	12.16 ms/ 230 VAC 11.86 ms/ 115 VAC	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：QP-375-24B
1. ROOM AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: FULL LOAD Ta= 27.5 ℃
2. HIGH AMBIENT BURN-IN： 4 HRS
I/P: 230 VAC O/P: FULL LOAD Ta= 49.3 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 27.5 ℃</th><th>HIGH AMBIENT Ta= 49.3 ℃</th></tr>
<tr><td>1</td><td>LF1</td><td>TF-360 3.12mH</td><td>33.6℃</td><td>54.1℃</td></tr>
<tr><td>2</td><td>LF2</td><td>TF-360 3.12mH</td><td>31.0℃</td><td>51.0℃</td></tr>
<tr><td>3</td><td>D1</td><td>SMD 3A/600V S3J</td><td>32.4℃</td><td>52.8℃</td></tr>
<tr><td>4</td><td>D4</td><td>BYV26E 1A/1KV</td><td>47.1℃</td><td>68.1℃</td></tr>
<tr><td>5</td><td>BD1</td><td>KBJ608G 6A/800V</td><td>38.1℃</td><td>59.1℃</td></tr>
<tr><td>6</td><td>L1</td><td>TR-288 600u</td><td>37.0℃</td><td>57.6℃</td></tr>
<tr><td>7</td><td>U2</td><td>ML4800CP</td><td>31.8℃</td><td>52.1℃</td></tr>
<tr><td>8</td><td>Q1</td><td>IRFP460 20A/500V</td><td>46.5℃</td><td>69.9℃</td></tr>
<tr><td>9</td><td>Q2</td><td>IRFP460 20A/500V</td><td>51.1℃</td><td>75.4℃</td></tr>
<tr><td>10</td><td>D3</td><td>RHRP1560 15A/600V</td><td>62.0℃</td><td>87.8℃</td></tr>
<tr><td>11</td><td>Q5</td><td>2SK2652 6A/900V</td><td>77.4℃</td><td>100.1℃</td></tr>
<tr><td>12</td><td>Q4</td><td>2SK2652 6A/900V</td><td>70.4℃</td><td>97.6℃</td></tr>
<tr><td>13</td><td>TRC1</td><td>BTA16-600B 16A</td><td>49.7℃</td><td>71.6℃</td></tr>
<tr><td>14</td><td>L103</td><td>TR-289 46.66u</td><td>82.4℃</td><td>104.2℃</td></tr>
<tr><td>15</td><td>C111</td><td>1000u/35V</td><td>49.7℃</td><td>71.8℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 121% LOAD
Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100% LOAD
Ta= -10 ℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 50℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 50 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.01 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set Operating at I/P: VAC NO LOAD
(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)
(6) Ta:25℃</td><td>TEST：N/A</td><td>N/A</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG:0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 9.51 mA I/P-FG: 8.1 mA O/P-FG: 8.69 mA 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: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-O/P: 1.5G Ω I/P-FG: 1.13G Ω O/P-FG: 1.29G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	30 A / 2min Ta:25℃	42 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R50014021 UL: File NO ：E183223			P

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS D	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 L,N-PE:2KV INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 111 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 403882 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 69898 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 75.9K HRS			P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2002/6/10	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2002/9/13	PRODUCT SAMPLE A2047C20	PASS	VINCENT TSENG	MAX LIN
2002/10/18	PRODUCT SAMPLE A210A14	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023