



MODEL : LPV-100-15

## OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 120 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 8 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE TOLERANCE	V1: -5%~ +5% (Max)	I/P: 100VAC / 264 VAC O/P:FULL/ 0% LOAD Ta:25°C	V1: -0.7%~ 0.3%	PASS
3	LINE REGULATION	V1: -1%~ +1% (Max)	I/P: 100 VAC ~ 264VAC O/P:FULL LOAD Ta:25°C	V1: -0.03%~ 0.03%	PASS
4	LOAD REGULATION	V1: -2%~ +2% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.3%~ 0.3%	PASS
5	SET UP TIME	230VAC/ 2000 ms (Max) 115VAC/ 2000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/550.212ms 115 VAC/1409.489ms	PASS
6	RISE TIME	230VAC/ 25 ms (Max) 115 VAC/ 25 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230 VAC/8.619ms 115 VAC/6.913ms	PASS
7	HOLD UP TIME	230VAC/ 50ms (Typ) 115VAC/ 14ms (Typ)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/85.857ms 115 VAC/17.477ms	PASS
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: +2.66% -2.66%	PASS
9	DYNAMIC LOAD	V1: 1500 mVp-p	I/P: 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta:25°C	(1) 604 mVp-p (2) 924 mVp-p	PASS

## INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90 VAC~ 264 VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	90 V~ 264 V	PASS
			(1) I/P: LOW-LINE-3V= 87 V HIGH-LINE+15%= 300 V O/P: FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (2) I/P: 230VAC ON: 0.5 Sec . OFF: 0.5 Sec 20MIN ( AC POWER ON/OFF NO DAMAGE )	TEST: (1) OK (2) OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90 VAC ~264 VAC O/P: FULL~MIN LOAD Ta: 25°C	TEST: OK	PASS
3	EFFICIENCY	87 % (Typ)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	88.146 %	PASS
4	INPUT CURRENT	230 V/ 1.2 A (Typ) 115 V/ 2.2 A (Typ)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 0.832A/ 230VAC I = 1.768A/ 115VAC	PASS
5	INRUSH CURRENT	230 V/ 75 A 115 V/ 30 A COLD START	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	I = 72.695A/ 230VAC I = 28.164A/ 115VAC	PASS

## PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110%~ 150 % RATED OUTPUT POWER	I/P: 264 VAC I/P: 230 VAC I/P: 100 VAC O/P: TESTING Ta: 25°C	120.446 %/264VAC 128.253 %/ 230VAC 123.804 %/ 100 VAC  Hiccup Mode	PASS
2	OVER VOLTAGE PROTECTION	CH1: 17.25 V~ 20.25 V	I/P: 264 VAC I/P: 230 VAC I/P: 90 VAC O/P: MIN LOAD Ta: 25°C	18.4 V/264VAC 18.3 V/ 230VAC 18.4 V/ 90 VAC  Shunt down Re- power ON	PASS
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup Mode	PASS

## ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																						
1	TEMPERATURE RISE TEST	MODEL : LPV-100-15 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 30.5 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 50 °C			PASS																																																																						
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>P/N</th> <th>ROOM AMBIENT Ta= 30.5 °C</th> <th>HIGH AMBIENT Ta= 50 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>TR-6091</td><td>66.4°C</td><td>78.9°C</td></tr> <tr><td>2</td><td>C6</td><td>100u/400V KXG</td><td>68.6°C</td><td>81.6°C</td></tr> <tr><td>3</td><td>Q1</td><td>STF14NM65N</td><td>76.9°C</td><td>90.7°C</td></tr> <tr><td>4</td><td>C47</td><td>220u/35V YXG-LLC</td><td>73.4°C</td><td>87.1°C</td></tr> <tr><td>5</td><td>T1</td><td>TF2121</td><td>88°C</td><td>103.3°C</td></tr> <tr><td>6</td><td>D100</td><td>MBR30U100CTH</td><td>81.1°C</td><td>97°C</td></tr> <tr><td>7</td><td>D101</td><td>MBR30U100CTH</td><td>81.4°C</td><td>97.3°C</td></tr> <tr><td>8</td><td>C105</td><td>560u/35V ZLH</td><td>73.6°C</td><td>89.2°C</td></tr> <tr><td>9</td><td>C106</td><td>560u/35V ZLH</td><td>77.5°C</td><td>92.9°C</td></tr> <tr><td>10</td><td>U1</td><td>NCP1380BDR2G</td><td>65.7°C</td><td>79°C</td></tr> <tr><td>11</td><td>ZD1</td><td>2W 39KΩ</td><td>80.2°C</td><td>92.1°C</td></tr> <tr><td>12</td><td>D1</td><td>1N5406</td><td>83.3°C</td><td>97.4°C</td></tr> <tr><td>13</td><td>C40</td><td>10u/50V YXF</td><td>67.3°C</td><td>80.9°C</td></tr> </tbody> </table>	NO	Position		P/N	ROOM AMBIENT Ta= 30.5 °C	HIGH AMBIENT Ta= 50 °C	1	LF1	TR-6091	66.4°C	78.9°C	2	C6	100u/400V KXG	68.6°C	81.6°C	3	Q1	STF14NM65N	76.9°C	90.7°C	4	C47	220u/35V YXG-LLC	73.4°C	87.1°C	5	T1	TF2121	88°C	103.3°C	6	D100	MBR30U100CTH	81.1°C	97°C	7	D101	MBR30U100CTH	81.4°C	97.3°C	8	C105	560u/35V ZLH	73.6°C	89.2°C	9	C106	560u/35V ZLH	77.5°C	92.9°C	10	U1	NCP1380BDR2G	65.7°C	79°C	11	ZD1	2W 39KΩ	80.2°C	92.1°C	12	D1	1N5406	83.3°C	97.4°C	13	C40	10u/50V YXF	67.3°C	80.9°C		
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 230 VAC O/P: 125 % LOAD Ta:25°C	TEST : OK	PASS																																																																						
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 264 VAC/100 VAC O/P: 100% LOAD Ta= -25 °C	TEST : OK	PASS																																																																						
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	PASS																																																																						
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.007 %(0~50°C)	PASS																																																																						
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C~ +80°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		TEST : OK	PASS																																																																						
7.	THERMAL SHOCK TEST	1. Thermal shock Temperature : -30 °C~ +45 °C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load 58SEC ON/2SEC OFF		TEST : OK	PASS																																																																						

8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:12min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C	TEST : OK	PASS
9	CAPACITOR LIFE CYCLE	SUPPOSE C106 IS THE MOST CRITICAL COMPONENT (1) I/P: 230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 83288.4 HRS (2) I/P: 230 VAC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 27875.2 HRS (3) I/P: 230 VAC O/P:75% LOAD Ta= 50 °C LIFE TIME= 57661.2 HRS (4) I/P: 230 VAC O/P:50% LOAD Ta= 50 °C LIFE TIME= 116221.6 HRS		PASS
10	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 703K HRS		PASS
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 20,000 hours @ Tcase 85°C; 50,000 hours @ Tcase70°C		PASS

## SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min EN 60950	I/P-O/P: 3.6 KVAC/min Ta:25°C	I/P-O/P: 2.388 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P: >9999 MΩ NO DAMAGE	PASS
3	LEAKAGE CURRENT	< 0.25 mA / 240VAC EN 60950	I/P: 264 VAC O/P:NO LOAD Ta:25°C	L-FG: 0.005 mA N-FG: 0.003 mA	PASS

## E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 220/230/240 VAC/50HZ O/P:100%/75%/50%/25% LOAD Ta:25°C	PASS	PASS
2	CONDUCTION	EN55022 CLASS B	I/P:230 VAC (50HZ) /115V(60HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	PASS
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ)/115V(60HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	PASS
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS



7	Test by certified Lab & Test Report Prepare
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) <b>Peak Voltage</b>	Q 1 Rated STF14NM65N : 650 V 12 A	I/P:High-Line +3V = 280 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 594 V (2) 528 V (3) 590 V (4) 576 V	PASS
2	Diode <b>Peak Voltage</b>	D 100 Rated MBR30U100CTH : 100 V 30 A	I/P:High-Line +3V = 280 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 97.6 V (2) 86.8 V (3) 94.0 V (4) 94.4 V	PASS
3	Clamp Diode <b>Peak Voltage</b>	D 1 Rated 1N5406 : 600 V 3 A	I/P:High-Line +3V = 280 V O/P: (1)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz (2)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 438 V (2) 436 V	PASS
4	Control IC Voltage Test	U 1 Rated NCP1380BDR2G : 28 V	I/P:High-Line +3V =280 V O/P: (1) Output Short (2)O.L.P (3)O.V.P Ta:25°C	(1) 17.4 V (2) 17.5 V (3) 15.8 V	PASS

2007/11/26 A50-G058

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/5/20	RD SAMPLE	PASS	ZOULF	HOWAY
2011/1/6	PRODUCT SAMPLE (W1012I093)	PASS	ZOULF	HOWAY