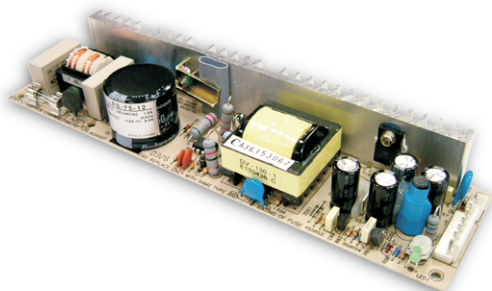




75W Single Output Switching Power Supply

LPS-75 series



■ Features :

- Universal AC input / Full range
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- PWM control and regulated
- Small and compact size
- Built-in remote ON-OFF control
- LED indicator for power on
- 100% full load burn-in test
- 2 years warranty

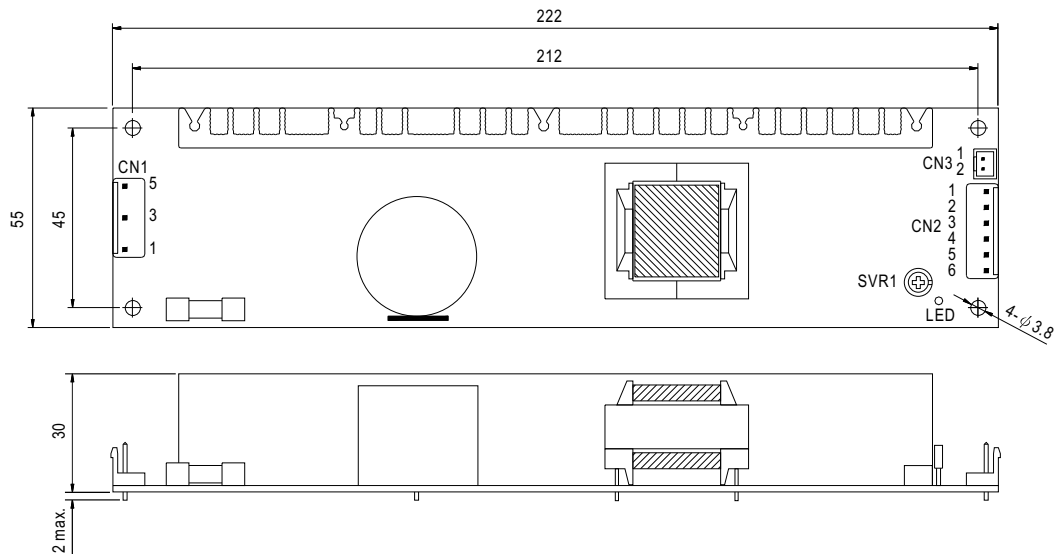


SPECIFICATION

MODEL		LPS-75-3.3	LPS-75-5	LPS-75-12	LPS-75-15	LPS-75-24	LPS-75-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	15A	15A	6.2A	5A	3.2A	1.56A
	CURRENT RANGE	0 ~ 16.5A	0 ~ 16.5A	0 ~ 6.8A	0 ~ 5.5A	0 ~ 3.5A	0 ~ 1.7A
	RATED POWER	49.5W	75W	74.4W	75W	76.8W	75W
	PEAK LOAD(10sec.) Note.4	54.45W	82.5W	81.6W	82.5W	84W	81.6W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	100mVp-p	100mVp-p	120mVp-p	120mVp-p
	VOLTAGE ADJ. RANGE	3 ~3.5V	4.75 ~ 5.5V	11 ~ 13.5V	13.5 ~ 16.5V	22 ~ 27V	45 ~ 54V
	VOLTAGE TOLERANCE Note.3	±3.0%	±3.0%	±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±3.0%	±3.0%	±2.0%	±2.0%	±1.0%	±1.0%
	SETUP, RISE TIME	100ms, 35ms/230VAC 100ms, 35ms/115VAC at full load					
	HOLD UP TIME (Typ.)	60ms/230VAC 12ms/115VAC at full load					
INPUT	VOLTAGE RANGE	90 ~ 264VAC 127 ~ 370VDC					
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY(Typ.)	69%	77%	80%	81%	83%	83%
	AC CURRENT (Typ.)	1.9A/115VAC 1.1A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START 18A/115VAC 36A/230VAC					
	LEAKAGE CURRENT	<1mA / 240VAC					
PROTECTION	OVERLOAD	115 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	3.8 ~ 4.45V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	57.6 ~ 67.2V
		Protection type : Hiccup mode, recovers automatically after fault condition is removed					
FUNCTION	REMOTE ON/OFF	RC+/RC- : 0 ~ 0.8V power on ; 4 ~ 10V power off					
ENVIRONMENT	WORKING TEMP.	-20 ~ +70℃ (Refer to output load derating curve)					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.04%/℃ (0 ~ 50℃)					
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes					
SAFETY & EMC (Note 5)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC					
	EMI CONDUCTION & RADIATION	Compliance to EN55011, EN55022 (CISPR22) Class B					
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3					
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN61000-6-2 (EN50082-2), heavy industry level, criteria A					
OTHERS	MTBF	355Khrs min. MIL-HDBK-217F (25℃)					
	DIMENSION	222*55*30mm (L*W*H)					
	PACKING	0.3Kg; 48pcs/15.6Kg/1.12CUFT					
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. 33.3% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power. 5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.						

■ Mechanical Specification

Unit:mm



AC Input Connector (CN1) : JST B5P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/L	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2,4	No Pin		
3	AC/N		
5	FG $\perp$		

DC Output Connector (CN2) : JST B6P-VH or equivalent

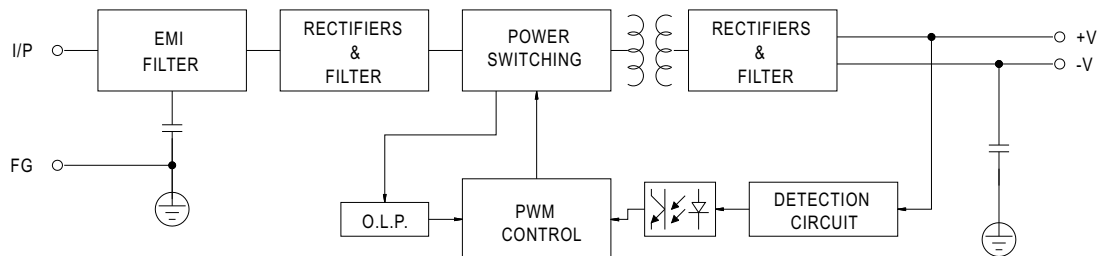
Pin No.	Assignment	Mating Housing	Terminal
1,2,3	-V	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
4,5,6	+V		

Remote ON/OFF Connector(CN3):JST B2B-XH or equivalent

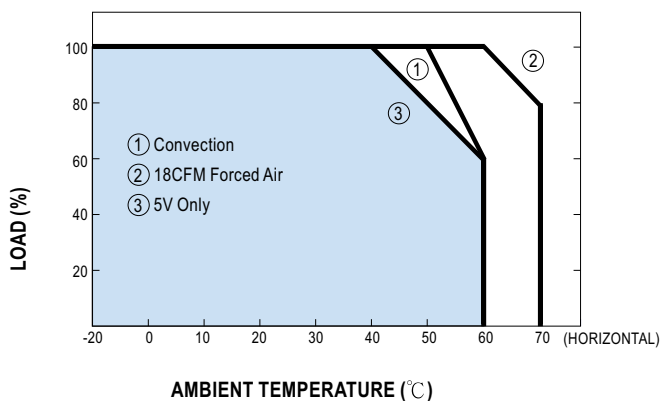
Pin No.	Assignment	Mating Housing	Terminal
1	RC+	JST XHP or equivalent	JST SXH-001T-P0.6 or equivalent
2	RC-		

■ Block Diagram

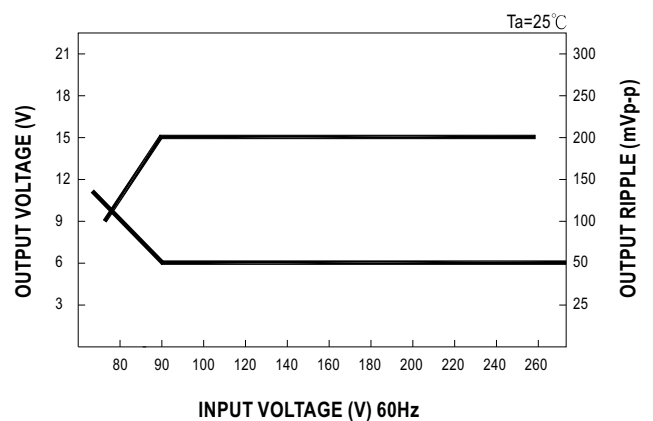
fosc : 60KHz



■ Derating Curve



■ Static Characteristics (15V)



Quality Engineering Test Report

V1 : 5 V / 15 A / 75W

AC-DC

Single Output Switching Power Supply

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 80 mVp-p (Max)	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	V1: 15 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 4.75 V ~ 5.5 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta: 25°C	4.62 V ~ 5.81V/230 VAC 4.62 V ~ 5.80 V/115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: +3 % ~ -3 % (Max)	I/P: 264 VAC / 90 VAC O/P: FULL / 0 % LOAD Ta: 25°C	V1: +0.1 % ~ -0.1 %	P
4	LINE REGULATION	V1: +1 % ~ -1 % (Max)	I/P: 264 VAC ~ 90 VAC O/P: FULL LOAD Ta: 25°C	V1: +0.1 % ~ -0.1 %	P
5	LOAD REGULATION	V1: +3 % ~ -3 % (Max)	I/P: 230 VAC O/P: FULL ~ MIN LOAD Ta: 25°C	V1: +0.1 % ~ -0.1 %	P
6	SET UP TIME	230 VAC / 100 ms (Max) 115 VAC / 100 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	230 VAC / 66.5 ms 115 VAC / 76 ms	P
7	RISE TIME	230VAC / 35 ms (Max) 115VAC / 35 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	230 VAC / 3.5 ms 115 VAC / 3.3 ms	P
8	HOLD UP TIME	230VAC / 50 ms (TYP) 115VAC / 12 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	230 VAC / 69.5 ms 115 VAC / 13.7 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	TEST: < 5%	P
10	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 230 VAC O/P: FULL / Min LOAD 90% DUTY / 1KHZ Ta: 25°C	435 mVp-p	P
11	TRANSIENT RECOVERY TIME	V1: 300 mVp-p	I/P: 230 VAC O/P: 40% LOAD CHANGE 50% DUTY / 120HZ 1.25A/us	232 mVp-p	P

Quality Engineering Test Report

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	264VAC~ 90VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	62 V~ 264 V	P
			I/P: LOW-LINE-3V= 87 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	47 HZ ~ 63 HZ NO DAMAGE OSC	I/P: 264 VAC ~ 90 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	EFFICIENCY	77 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	78.4 %	P
4	INPUT CURRENT	230 V/ 1.1 A(TYP) <u>115</u> V/ 1.9 A(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.9 A/ 230VAC I =1.4 A/ 115VAC	P
5	INRUSH CURRENT	230 V/ 40 A (TYP) 115 V/ 24 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 35 A/ 230 VAC I = 21 A/ 115 VAC	P
6	LEAKAGE CURRENT	< 1 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.62 mA N-FG: 0.64 mA	P

Quality Engineering Test Report

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	115 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P: TESTING Ta:25°C	138 %/ 230 VAC 140%/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 5.75V~ 6.75 V	I/P: 230 VAC I/P: 115 VAC O/P: MIN LOAD Ta:25°C	6.2 V/ 230 VAC 6.2 V/ 115 VAC Hiccup Model	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 267 VAC O/P: 100% LOAD Ta:25°C	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°C	0V ~ 2.6 V POWER ON 2.8V ~10V POWER OFF	P

Quality Engineering Test Report

ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : LPS-75-5V 1. ROOM AMBIENT BURN-IN : 2.5 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 29.1 °C 2. HIGH AMBIENT BURN-IN : 12 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 46.5 °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 29.1°C</th><th>HIGH AMBIENT Ta= 46.5 °C</th></tr><tr><td>1</td><td>LF1</td><td>ET-24</td><td>44.7°C</td><td>56.7°C</td></tr><tr><td>2</td><td>BD1</td><td>D3SB60 4A/600V</td><td>59.2°C</td><td>71.9°C</td></tr><tr><td>3</td><td>C5</td><td>CAPXON 150U/400V 85°C</td><td>52.6°C</td><td>67.6°C</td></tr><tr><td>4</td><td>U1</td><td>NCP1203P60</td><td>56.8°C</td><td>72.9°C</td></tr><tr><td>5</td><td>Q1</td><td>2SK1507 9A/600V</td><td>81.3°C</td><td>93.9°C</td></tr><tr><td>6</td><td>D1</td><td>EPG20J 2A/600V</td><td>87.4°C</td><td>103.1°C</td></tr><tr><td>7</td><td>D2</td><td>FR104 1A/400V</td><td>69.6°C</td><td>89.6°C</td></tr><tr><td>8</td><td>T1CORE</td><td>TF925</td><td>83.4°C</td><td>96.1°C</td></tr><tr><td>9</td><td>T1COIL</td><td>TF925</td><td>62.6°C</td><td>76.5°C</td></tr><tr><td>10</td><td>D51</td><td>E83004 60A/40V</td><td>93.0°C</td><td>105.4°C</td></tr><tr><td>11</td><td>C52</td><td>3300U/10V GL 105°C</td><td>72.3°C</td><td>88.6°C</td></tr><tr><td>12</td><td>R52</td><td>33/2W</td><td>75.5°C</td><td>92.0°C</td></tr><tr><td>13</td><td>R6</td><td>82/2W</td><td>78.3°C</td><td>92.2°C</td></tr><tr><td>14</td><td>C12</td><td>22U/50V 105°C</td><td>61.3°C</td><td>81.5°C</td></tr><tr><td>15</td><td>R11</td><td>0.24/2W</td><td>62.2°C</td><td>79.7°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 29.1°C	HIGH AMBIENT Ta= 46.5 °C	1	LF1	ET-24	44.7°C	56.7°C	2	BD1	D3SB60 4A/600V	59.2°C	71.9°C	3	C5	CAPXON 150U/400V 85°C	52.6°C	67.6°C	4	U1	NCP1203P60	56.8°C	72.9°C	5	Q1	2SK1507 9A/600V	81.3°C	93.9°C	6	D1	EPG20J 2A/600V	87.4°C	103.1°C	7	D2	FR104 1A/400V	69.6°C	89.6°C	8	T1CORE	TF925	83.4°C	96.1°C	9	T1COIL	TF925	62.6°C	76.5°C	10	D51	E83004 60A/40V	93.0°C	105.4°C	11	C52	3300U/10V GL 105°C	72.3°C	88.6°C	12	R52	33/2W	75.5°C	92.0°C	13	R6	82/2W	78.3°C	92.2°C	14	C12	22U/50V 105°C	61.3°C	81.5°C	15	R11	0.24/2W	62.2°C	79.7°C	P
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15	R11	0.24/2W	62.2°C	79.7°C																																																																																	
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P:129% LOAD Ta:25°C	TEST : OK	P																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P:100% LOAD Ta= -21.0 °C	TEST : OK	P																																																																																
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	P																																																																																
5	TEMPERATURE COEFFICIENT	± 0.04 %(0~50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0~50°C)	P																																																																																
6	VIBRATION TEST	1 Carton & 1 Set Operating at I/P: 230 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°C		TEST : OK	P																																																																																

Quality Engineering Test Report

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°C	I/P-O/P: 6.4 mA I/P-FG: 4.97 mA O/P-FG: 1.7 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°C	I/P-O/P: 8.5 G Ω I/P-FG: 9.4 G Ω O/P-FG: 13G Ω NO DAMAGE	P

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
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	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	P
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	P
7	Test By Certificate Lab & Test Report Prepare				P

Quality Engineering Test Report

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 52 IS THE MOST CRITICAL COMPONENT I/P:230 VAC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 61407 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 40 °C LIFE TIME=23423 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 335000 HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated K2645 : 600 V 9 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 464 V (2) 568 V (3) 570 V	P
2	Diode Peak Voltage	D51 Rated D83004 : 40 V 30 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 32.4 V (2) 34.6 V (3) 33.8 V	P
3	Clamp Diode Peak Voltage	D 1 Rated EGP20J : 600 V 2 A	I/P:High-Line +3V =267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 554 V (2) 554 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2003/06/10	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2003/07/23	PRODUCT SAMPLE A306C14A	PASS	VINCENT TSENG	MAX LIN

2003/7/14 A50-F023