






■ Features :

- Constant current mode power supply
- Universal AC input / Full range
- Fully encapsulated with IP67 level
- Withstand 300VAC surge input for 5 seconds
- Protections: Short circuit / Over current / Over voltage
- Fully isolated plastic case
- Cooling by free air convection
- Small and compact size
- UL1310 Class 2 power unit
- Pass LPS
- 100% full load burn-in test
- Low cost, high reliability
- Suitable for LED lighting and moving sign applications
- 2 years warranty

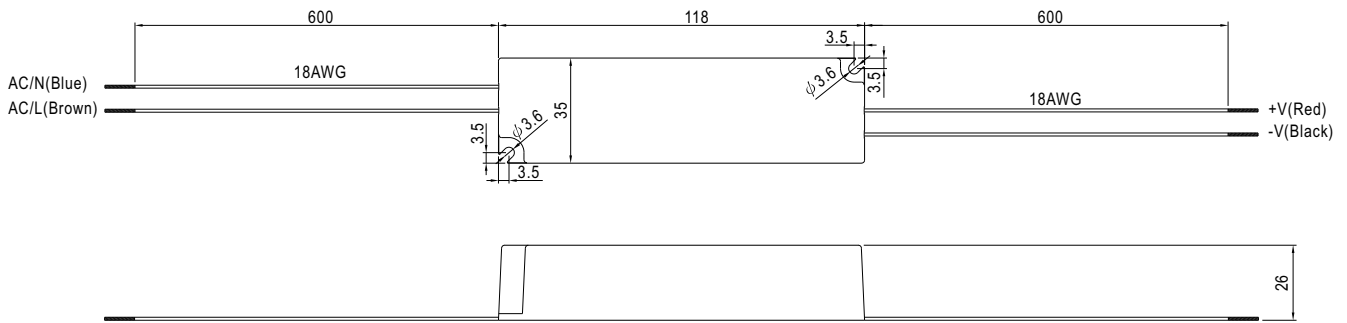
LPS IP67  (for 350mA only)  US (except for 350mA) 

SPECIFICATION

MODEL		LPC-20-350	LPC-20-700
OUTPUT	RATED CURRENT	350mA	700mA
	DC VOLTAGE RANGE	9 ~ 48V	9 ~ 30V
	RATED POWER	16.8W	21W
	RIPPLE & NOISE (max.) Note.2	200mVp-p	200mVp-p
	VOLTAGE TOLERANCE Note.3	±5.0%	
	LINE REGULATION	±1.0%	
	LOAD REGULATION	±2.0%	
	SETUP, RISE TIME Note.6	500ms, 250ms / 230VAC	500ms, 250ms / 115VAC at full load
HOLD UP TIME (Typ.)	50ms/230VAC	24ms/115VAC at full load	
INPUT	VOLTAGE RANGE Note.4	90 ~ 264VAC	127 ~ 370VDC
	FREQUENCY RANGE	47 ~ 63Hz	
	EFFICIENCY (Typ.)	83%	
	AC CURRENT	0.55A/115VAC	0.35A/230VAC
	INRUSH CURRENT(max.)	COLD START 35A/115VAC	70A/230VAC
LEAKAGE CURRENT	0.25mA / 240VAC		
PROTECTION	CURRENT LIMIT	±5% rated output current Protection type : Constant current limiting type	
	OVER VOLTAGE	50.4 ~ 60V	31.5 ~ 40.5V Protection type : Shut off o/p voltage, clamping by zener diode
ENVIRONMENT	WORKING TEMP.	-30~ +70°C (Refer to output load derating curve)	
	WORKING HUMIDITY	20 ~ 90% RH non-condensing	
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH	
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)	
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes	
SAFETY & EMC	SAFETY STANDARDS	UL879, UL1310 Class 2, CAN/CSA C22.2 No. 223-M91(except for LPC-20-350), IP67 approved ; design refer to TUV EN60950-1, EN61347-2-13	
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC	
	ISOLATION RESISTANCE	I/P-O/P:>100M Ohms / 500VDC / 25°C / 70% RH	
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B	
	HARMONIC CURRENT	Compliance to EN61000-3-2 Class A, EN61000-3-3	
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, light industry level, criteria A	
OTHERS	MTBF	786.5Khrs min. MIL-HDBK-217F (25°C)	
	DIMENSION	118*35*26mm (L*W*H)	
	PACKING	0.22Kg; 60pcs/14.2Kg/0.62CUFT	
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. Derating may be needed under low input voltage. Please check the static characteristics for more details.</p> <p>5. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.</p> <p>6. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time.</p>		

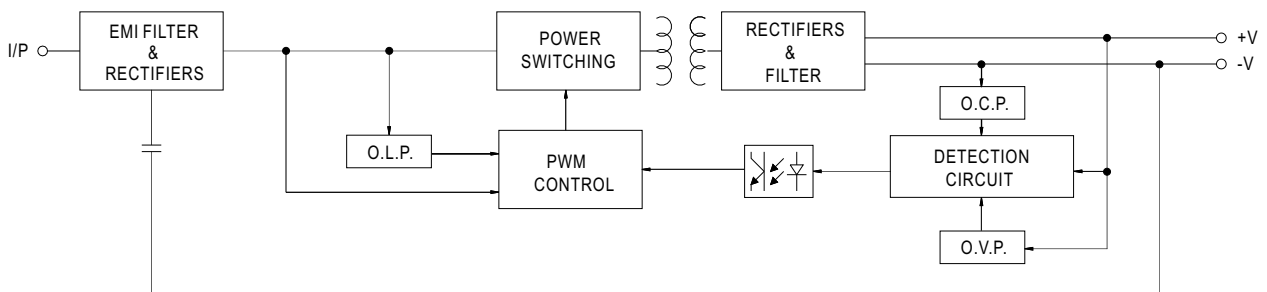
■ Mechanical Specification

Case No. 972A Unit:mm

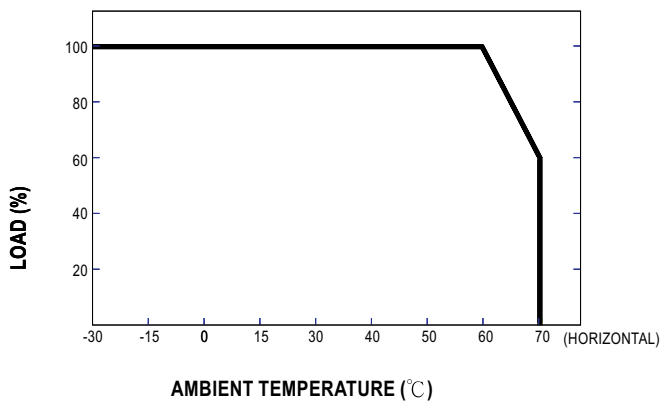


■ Block Diagram

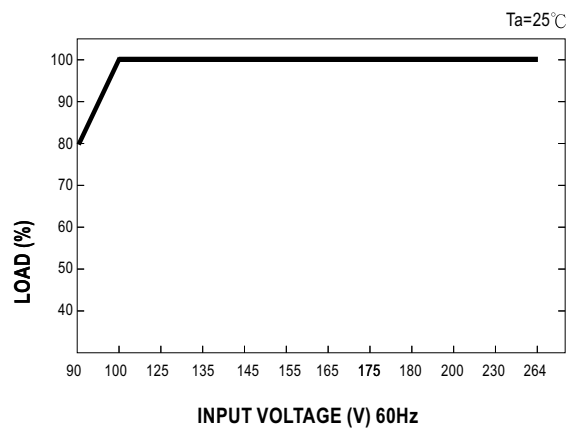
fosc : 60KHz



■ Derating Curve



■ Static Characteristics



MODEL : LPC-20-700

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 200 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 24 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 9V~ 30 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	2.4 V~ 30.39 V/ 230 VAC 1.35 V~ 30.35 V/ 115 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 5 %- -5 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.05 %- -0.05 %	P
4	LINE REGULATION	V1: 1 %- -1 % (Max)	I/P: 100VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.04 %- -0.04 %	P
5	LOAD REGULATION	V1: 2 %- -2 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.02 %- -0.02 %	P
6	SET UP TIME	230VAC: 500 ms (Max) 115 VAC: 500 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 140 ms 115VAC/ 280 ms	P
7	RISE TIME	230VAC: 250 ms (Max) 115VAC: 250 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 50 ms 115VAC/ 63 ms	P
8	HOLD UP TIME	230VAC: 50 ms (TYP) 115VAC: 16 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 100 ms 115VAC/ 22 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: 3000 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	208 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	43 V~264V	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	47HZ ~63 HZ NO DAMAGE OSC	I/P: 90 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	EFFICIENCY	83 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	83.6 %	P
4	INPUT CURRENT	230V/ 0.35 A (TYP) 115V/ 0.55 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.23 A/ 230 VAC I = 0.39 A/ 115 VAC	P
5	INRUSH CURRENT	230V/ 70 A (TYP) 115V/ 35 A (TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 63 A/ 230 VAC I = 32 A/ 115 VAC	P
6	LEAKAGE CURRENT	< 0.25 mA / 240 VAC	I/P: 240 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.01 mA N-FG: 0.01 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	95 % - 105 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	103 %/ 230 VAC 103 %/ 115 VAC Constant Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1:31.5 V- 40.5 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	36 V/ 230 VAC 36 V/ 115 VAC Shut off o/p voltage clamping by zener diode	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25°C	NO DAMAGE Constant Current Limiting	p

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : LPC-20-700 1. ROOM AMBIENT BURN-IN : 45 HRS I/P: 230VAC O/P: FULL LOAD Ta=32.4℃ 2. HIGH AMBIENT BURN-IN : 12 HRS I/P: 230VAC O/P: FULL LOAD Ta=65.4 ℃			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P:96.3% LOAD Ta:30.5℃	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P:95 % LOAD Ta=-30℃	TEST : OK	P
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60℃ NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta=60 ℃ HUMIDITY= 95 %R.H	TEST : OK	P
5	TEMPERATURE COEFFICIENT	± 0.03 %(0-50℃)	I/P: 230 VAC O/P:FULL LOAD	± 0.004 %(0-50℃)	P
6	VIBRATION TEST	1 Carton & 1 Set (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℃		TEST : OK	P

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min	I/P-O/P: 3.6 KVAC/min Ta:25°C	I/P-O/P: 1.346 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C /70%RH	I/P-O/P: 20.3 GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO : UL: File NO :			N

E.M.C TEST

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

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	LPC-20-700:SUPPOSE C105 I/P: 230VAC O/P:FULL LOAD Ta=25 °C LIFE TIME=80797 HRS I/P: 230VAC O/P:FULL LOAD Ta= 60 °C LIFE TIME=12451 HRS	IS THE MOST CRITICAL COMPONENT		P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 786.5KHRS			P
3	ORT (Ongoing Reliability test)	LPC-20-700:I/P : 230VAC O/P : 95% LOAD TA=50°C Sample=10pcs	TEST TIME=1464HRS		P



COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated STD4NK60Z-1 4A/600V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 488 V (2) 514 V	P
2	Diode Peak Voltage	D100 Rated UF3004 3A/400V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 228 V (2) 200 V	P
3	Clamp Diode Peak Voltage	D1 Rated EGP20J 2A/600V	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 480 V	P
4	Input Capacitor Voltage	C5 Rated 47u/400V 105°C KM	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 374 V (2) 376 V (3) 376 V	P
5	Control IC Voltage Test	U1Rated NCP1200D60R2G 18V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 13.3 V (2) 11.41 V (3) 13.3 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/4/1	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2008/6/20	PRODUCT SAMPLE W0804D14	PASS	SANFORD SU	VINCENT TSENG
2008/8/1	PRODUCT SAMPLE W0806D09	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023