



Test Report: GSC18E-700

18W Single Output LED Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	RIPPLE & NOISE(Max)	V1: 2.5Vp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1:1.17 Vp-p
2	CURRENT ACCURACY	±8%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25°C	0.709 A /230VAC@CV MAX-1V 0.711 A /230VAC@CV MIN 0.675 A/115VAC@CV MAX-1V 0.680 A/115VAC@CV MIN
3	SET UP TIME	230VAC/ 500 ms (Max) 115VAC/ 1000ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/146ms 115 VAC/256ms
4	OVER/UNDERSHOOT TEST	< ±15%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: < 3.07 %
5	NO LOAD OUTPUT VOLTAGE (max.)	35V	I/P: 230 VAC O/P:NO LOAD Ta:25°C	33.7V

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~277 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	40.1V~277 V
			I/P: (1)LOW-LINE=3V=87 V HIGH-LINE=300 V O/P:FULL/MIN LOAD ON: 30 Sec. OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE) (2) I/P:230Vac ON: 0.5 Sec. OFF: 0.5 Sec 20MIN	(1).TEST: OK (2).TEST : OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 90 VAC ~277VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	POWER FACTOR(TYP)	0.92/230 VAC FULL LOAD 0.98/115 VAC FULL LOAD 0.91/277 VAC FULL LOAD	I/P: 230 VAC/115VAC/277VAC O/P:FULL LOAD Ta:25°C	PF=0.976/230V/100%LOAD PF=0.990 /115V/100%LOAD PF=0.952/277V/100%LOAD
4	EFFICIENCY (TYP)	88.5 %	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	89.61%
5	INPUT CURRENT (TYP)	277VAC/ 0.2 A 230 VAC/ 0.3 A 115 VAC/ 0.6 A	I/P: 277VAC/230 VAC/115 VAC O/P:FULL LOAD Ta:25°C	I=0.0797 A / 277VAC I =0.090A/ 230VAC I =0.169A/ 115VAC
6	INRUSH CURRENT (TYP)	230 V/ 17 A COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I =7.65 A/ 230VAC
		(twidh=110us measured at 50% Ipeak) COLD START		T50= 68 us

7	TOTAL HARMONIC DISTORTION	Total harmonic distortion will be lower than 20% when output loading is 75% or higher	I/P : 230VAC I/P : 277VAC I/P : 115VAC O/P : 75% LOAD Ta : 25°C	THD : 15.205 % THD : 17.152 % THD : 13.543 %
8	NO LOAD POWER CONSUMPTION	< 0.15 W	I/P : 240VAC O/P : NO LOAD Ta : 25°C	< 0.0839 W

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 277VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE Hiccup Mode

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 6A/650V	I/P:High-Line +3V =280V O/P: (1)Full Load input on/off (2)Output Short Ta:25°C	Q1 VDS (1)546V (2)454V
2	Diode Peak Voltage	D100 Rated 10A/200V	I/P:High-Line +3V = 280 V O/P: (1)Full Load input on/off (2)Output Short (3)NO LOAD Ta:25°C	(1)124V (2)99.2V (3)128V
3	Control IC Voltage Test	U 1 Rated 9V~30V	I/P:High-Line +3V =280 V O/P:(1) FULL LOAD (2)SHORT (3)NO LOAD (4)NO LOAD(LOW LINE) Ta:25°C	(1)21.6V (2)16.4V (3)26.6V (4)26.3 V

SAFETY & EMC TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	IEC60950-1 I/P-O/P: 3.75KVAC/min	I/P-O/P: 4 KVAC/min Ta:25°C	I/P-O/P: 1.499 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P:20.5 GΩ NO DAMAGE
3	LEAKAGE CURRENT	IEC60950-1 < 0.5mA / 240VAC	I/P: 240 VAC O/P:Min LOAD Ta:25°C	L-FG:0.005 mA N-FG:0.005 mA

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS A CLASS C	I/P: 230VAC/50HZ O/P:100%/50% LED LOAD I/P :277VAC 60HZ O/P:100/75% LED LOAD Ta:25°C	PASS
2	CONDUCTION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
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
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
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																
1	TEMPERATURE RISE TEST	MODEL : GSC18E-1400 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 35.1 °C 2. HIGH AMBIENT BURN-IN : 1.5 HRS I/P : 230VAC O/P : FULL LOAD Ta= 48.2 °C																																																		
			<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=35.1°C</th> <th>HIGH AMBIENT Ta=48.2°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>Q1</td><td>69.1°C</td><td>78.9°C</td></tr> <tr><td>2</td><td>T1</td><td>63.9°C</td><td>73.3°C</td></tr> <tr><td>3</td><td>C101</td><td>56.8°C</td><td>67.0°C</td></tr> <tr><td>4</td><td>C7</td><td>58.2°C</td><td>67.9°C</td></tr> <tr><td>5</td><td>C11</td><td>57.7°C</td><td>67.4°C</td></tr> <tr><td>6</td><td>D100</td><td>63.5°C</td><td>73.5°C</td></tr> <tr><td>7</td><td>BD1</td><td>57.4°C</td><td>67.0°C</td></tr> <tr><td>8</td><td>L2</td><td>60.5°C</td><td>70.3°C</td></tr> <tr><td>9</td><td>D3</td><td>63.4°C</td><td>73.4°C</td></tr> <tr><td>10</td><td>C40</td><td>59.4°C</td><td>69.5°C</td></tr> <tr><td>11</td><td>U1</td><td>59.6°C</td><td>69.9°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=35.1°C	HIGH AMBIENT Ta=48.2°C	1	Q1	69.1°C	78.9°C	2	T1	63.9°C	73.3°C	3	C101	56.8°C	67.0°C	4	C7	58.2°C	67.9°C	5	C11	57.7°C	67.4°C	6	D100	63.5°C	73.5°C	7	BD1	57.4°C	67.0°C	8	L2	60.5°C	70.3°C	9	D3	63.4°C	73.4°C	10	C40	59.4°C	69.5°C	11	U1	59.6°C	69.9°C	
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 230VAC/90VAC O/P : 100 % LOAD Ta= -35 °C	TEST : OK																																																

3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 305 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK
4	TEMPERATURE COEFFICIENT	±0.03%/°C (0-50°C)	I/P : 230 VAC O/P : FULL LOAD	±0.0008 %/°C (0-50°C)
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C ~ +90°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		OK
6	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C ~ +55°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 AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK
7	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 : 72min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK
8	CAPACITOR LIFE CYCLE	SUPPOSE C101 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME		(1) 530036HRS (2) 107692HRS (3) 125396HRS (4) 151159HRS
9	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE : 338.3 KHRS		
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 30,000 hours @ Tcase 75°C ; 50,000 hours @ Tcase 70°C		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	DANIEL GAO	SANFORD SU	VINCENT ZENG

12.10.30 A50-F031