Test Report: GSC18B-350

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: 4.6Vp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 1.78 Vp-p
2	CURRENT ACCURACY	±8%	I/P: 230 VAC I/P:115VAC O/P:FULL LOAD Ta:25℃	0.349 A /230VAC@CV MAX-1V 0.356 A /230VAC@CV MIN 0.333 A/115VAC@CV MAX-1V 0.341 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℃	230VAC/ 164ms 115 VAC/266 ms
4	OVER/UNDERSHOOT TEST	< ±15%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <-0.38 %
5	NO LOAD OUTPUT VOLTAGE (max.)	70V	I/P: 230 VAC O/P:NO LOAD Ta:25℃	66.5V

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℃	44.3V~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℃	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℃	PF=0.974/ 230V/100%LOAD PF=0.989/ 115V/100%LOAD PF=0.949/ 277V/100%LOAD
4	EFFICIENCY (TYP)	89 %	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	90.08 %
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℃	I=0.077 A / 277VAC I =0.087A/ 230VAC I =0.162 A/ 115VAC

6	INRUSH CURRENT (TYP)	230 V/ 17 A COLD START (twidth=110us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	`I = 7 A/ 230VAC T50= 65 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℃	THD： 15.65 % THD： 18.15 % THD： 12.87 %
8	NO LOAD POWER CONSUMPTION	< 0.15 W	I/P：240VAC O/P：NO LOAD Ta：25℃	< 0.0909 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℃	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℃	Q1 VDS (1)538 V (2)460 V
2	Diode Peak Voltage	D100 Rated 10A/400V	I/P:High-Line +3V = 280 V O/P: (1)Full Load input on/off (2)Output Short (3)NO LOAD Ta:25℃	(1)252V (2)203V (3)264V
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℃	(1)21.2V (2)16.3V (3)26.2V (4)26.2V

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℃	I/P-O/P:1.494 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25℃	I/P-O/P:>30 GΩ NO DAMAGE

3	LEAKAGE CURRENT	IEC60950-1 < 0.5mA / 240VAC	I/P: 240 VAC O/P:Min LOAD Ta:25℃	L-FG:0.005mA N-FG:0.005mA

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℃	PASS
2	CONDUCTION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab
3	RADIATION	EN55015 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	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℃	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A

■ RELIABILITY TEST

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：GSC18B-1400
1. ROOM AMBIENT BURN-IN：2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 35.1 ℃
2. HIGH AMBIENT BURN-IN： 1.5 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 48.2 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=35.1℃</th><th>HIGH AMBIENT Ta=48.2℃</th></tr>
<tr><td>1</td><td>Q1</td><td>69.1℃</td><td>78.9℃</td></tr>
<tr><td>2</td><td>T1</td><td>63.9℃</td><td>73.3℃</td></tr>
<tr><td>3</td><td>C101</td><td>56.8℃</td><td>67.0℃</td></tr>
<tr><td>4</td><td>C7</td><td>58.2℃</td><td>67.9℃</td></tr>
<tr><td>5</td><td>C11</td><td>57.7℃</td><td>67.4℃</td></tr>
<tr><td>6</td><td>D100</td><td>63.5℃</td><td>73.5℃</td></tr>
<tr><td>7</td><td>BD1</td><td>57.4℃</td><td>67.0℃</td></tr>
<tr><td>8</td><td>L2</td><td>60.5℃</td><td>70.3℃</td></tr>
<tr><td>9</td><td>D3</td><td>63.4℃</td><td>73.4℃</td></tr>
<tr><td>10</td><td>C40</td><td>59.4℃</td><td>69.5℃</td></tr>
<tr><td>11</td><td>U1</td><td>59.6℃</td><td>69.9℃</td></tr>
</table></td></tr>
<tr><td>2</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P： 230VAC/90VAC
O/P： 100 % LOAD
Ta= -35 ℃</td><td>TEST：OK</td></tr>
<tr><td>3</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： 305 VAC
O/P：FULL LOAD
Ta= 50 ℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td></tr>
<tr><td>4</td><td>TEMPERATURE
COEFFICIENT</td><td>±0.03%/℃(0~50℃)</td><td>I/P： 230 VAC
O/P：FULL LOAD</td><td>±0.0008 %/℃(0~50℃)</td></tr>
<tr><td>5</td><td>STORAGE TEMPERATURE TEST</td><td colspan="2">1. Thermal shock Temperature： -45℃~ +90℃
2. Temperature change rate ：25℃ / MIN
3. Dwell time low and high temperature ： 30 MIN/EACH
4. Total test cycle：5 CYCLE
5. Input/Output condition： STATIC</td><td>OK</td></tr>
<tr><td>6</td><td>THERMAL SHOCK TEST</td><td colspan="2">1. Thermal shock Temperature： -35℃~ +55℃
2. Temperature change rate ：25℃ / 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</td><td>OK</td></tr>
<tr><td>7</td><td>VIBRATION TEST</td><td colspan="2">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℃</td><td>TEST：OK</td></tr>
</table>

8	CAPACITOR LIFE CYCLE	SUPPOSE C101 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Ta= 25 ℃ LIFE TIME (2) I/P： 230VAC O/P：FULL LOAD Ta= 50 ℃ LIFE TIME (3) I/P： 230VAC O/P：75% LOAD Ta= 50 ℃ LIFE TIME (4) I/P： 230VAC O/P：50% LOAD Ta= 50 ℃ 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℃; 50,000 hours @ Tcase70℃	

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

12.10.30 A50-F031