



Test Report: LDH-25-350

DC-DC Step-Up Constant Current LED driver

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

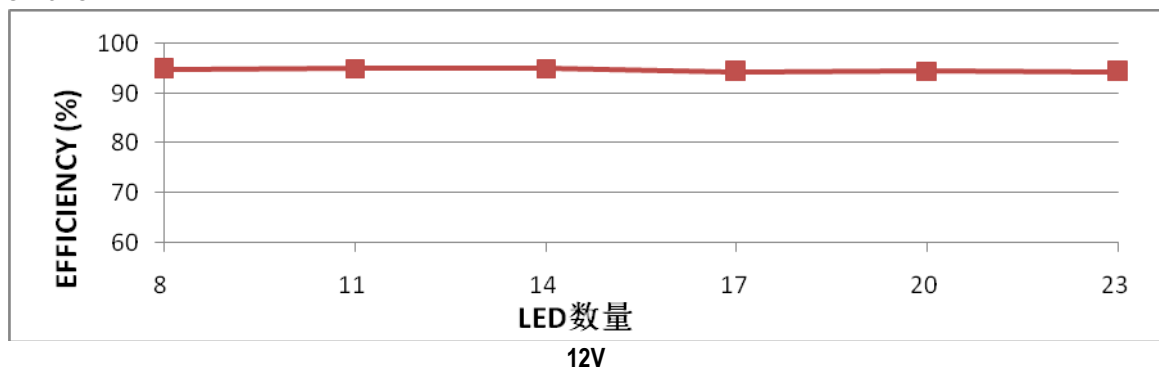
OUTPUT FUNCTION TEST

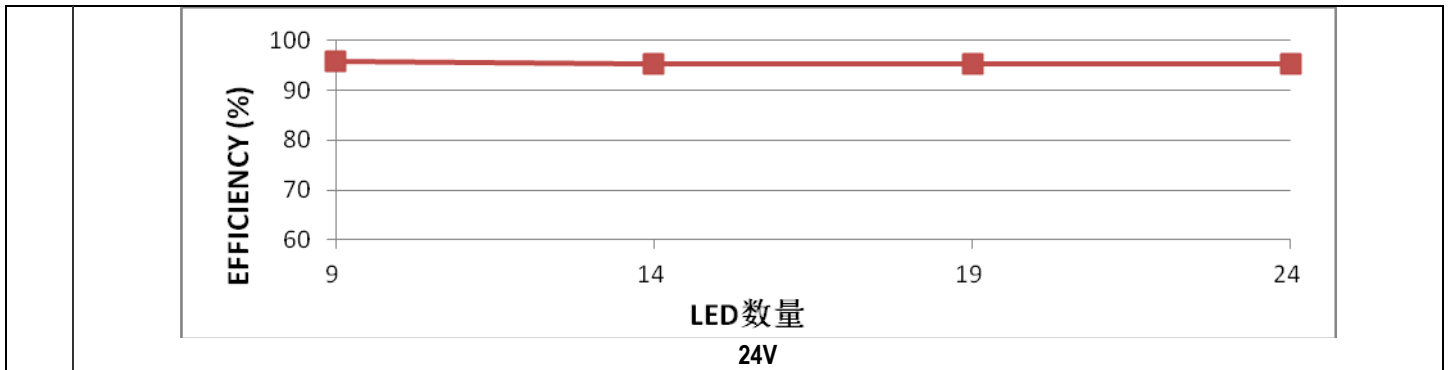
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	± 5%	I/P: 12VDC/24VDC O/P: LED min/LED max Ta:25°C	-1.75%~ -1.42%/12VDC -1.49%~ -1.28%/24VDC
2	CURRENT RIPPLE	5%(@rated current)	I/P: 12VDC / 24VDC O/P: LED min~LED max Ta:25°C	3.45% /12VDC 3.4%/24VDC
3	SUGRE CURRENT	< ±110 %	I/P: 12VDC / 24VDC O/P:-LED min/LED max Ta:25°C	103.2%/12VDC 102.6%/24VDC
4	VOLTAGE RANGE	12.5V~72V	I/P: 12VDC/24VDC O/P: LED min/LED max Ta:25°C	15V~72V/12VDC 27V~72V/24VDC

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	9.5VDC~ 32VDC	I/P:TESTING O/P:FULL LOAD Ta:25°C	9.2V~35V
			I/P: LOW-LINE-0.2= 9.3 V HIGH-LINE+3V= 35 V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec . OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST(1) <u>OK</u> (2) <u>OK</u> (3) <u>OK</u>
2	INPUT CURRENT(TYP)	12VDC/ 2.5A 24VDC/ 1.2A	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	I=2.17A/12VDC I=1.06A/24VDC
3	DIMMING OFF	INPUT CURRENT <7mA Vo=Vi	I/P:12VDC O/P:FULL LOAD Ta:25°C	1.3mA Vo=12Vi
4	EFFICIENCY(TYP)	92% /12VDC 95% /24VDC	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	94.28% /12VDC 95.33% /24VDC

EFFICIENCY vs LOAD





PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	CH: 73V~ 100V	I/P: 9.3VDC I/P: 35VDC O/P: MIN LOAD Ta:25°C	86.8V/9.5VDC 87.6V/35 VDC PROTECTION TYPE : voltage rise to OVP, and drop equal to input voltage, re-power to recovery
2	SHORT CIRCUIT PROTECTION	NO DAMAGE	I/P: 12VDC O/P: FULL LOAD Ta:25°C	PROTECTION TYPE : Power OFF and damaged
3	NO LOAD PROTECTION	NO LOAD	I/P: 12VDC/24VDC O/P: NO LOAD Ta:25°C	PROTECTION TYPE : Output voltage rise to OVP, and drop equal to input voltage, re-power to recovery

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated 60A/120V	DC ON/OFF I/P: High-Line +3V = 35V O/P: (1) CVmax (2) CVmax continue (3) CVmin (4) No Load (5) DIMMING off I/P: Low-Line -0.2V = 9.3V O/P: (1) CVmax (2) CVmax continue (3) CVmin (4) No Load (5) DIMMING off Ta:25°C	VDS: (1) 81.2V (2) 79.6V (3) 45.2V (4) 92.4V (5) 36.4V VDS: (1) 87.6V (2) 86.8V (3) 17.1V (4) 114V (5) 11.6V

2	Diode Peak Voltage	D5 Rated 15A/150V	<p>DC ON/OFF I/P:High-Line +3V = 35V VO: 設定 SPEC 輸出電壓上限 O/P: (1)CVmax (2) CVmax continue (3) CVmin (4) No Load (5) DIMMING off</p> <p>VO: 設定出貨輸出電壓 O/P: (1)CVmax (2) CVmax continue (3) CVmin (4) No Load (5) DIMMING off</p> <p>Ta:25°C</p>	<p>VO: 設定 SPEC 輸出電壓上限 (1) 78.8V (2) 78V (3) 46V (4) 98V (5) 37.2V</p> <p>VO: 設定出貨輸出電壓 (1) 78V (2) 78V (3) 15.3V (4) 96.4V (5) 28.4V</p>	
3	Input Capacitor Voltage	C5 Rated: 56 μ / 50V	<p>I/P:High-Line +3V = 35V O/P: (1)Full Load input on/off (2)Full load continue</p> <p>Ta:25°C</p>	<p>(1)36.2V (2)36.2V</p>	
4	Control IC Voltage Test	U1 Rated 9.0 V~ 40V U500 Rated 0.3V~ 60V	<p>DC ON/OFF I/P:High-Line +3V = 35V O/P: (1)CVmax– (2) CVmax continue (3) CVmin (4) No Load (5) DIMMING off (6)OVP</p> <p>Ta:25°C</p>	<p>U1: (1) 36.2V (2) 36.2V (3) 36.2V (4) 36.2V (5) 36.2V (6) 36.2V</p>	<p>U500: (1) 5.34V (2) 5.34V9 (3) 5.34V (4) 5.34V (5) 5.34V (6) 5.34V</p>

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	RADIATION	EN55015 CLASS B	I/P: 12VDC O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
2	CONDUCTION	EN55015 CLASS B	I/P: 12VDC O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
3	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR : 8KV / Contact : 4KV	I/P: 12VDC O/P:FULL LOAD Ta:25°C	CRITERIA A
4	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 0.5KV	I/P: 12VDC O/P:FULL LOAD Ta:25°C	CRITERIA A
<p>5 Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report</p>				

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																								
1	TEMPERATURE RISE TEST	MODEL : LDH-25-350 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 12VDC O/P : FULL LOAD Ta=35.1 °C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 12VDC O/P : FULL LOAD Ta=60.9 °C																																																										
		<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta=35.1 °C</th> <th>HIGH AMBIENT Ta=60.9 °C</th> </tr> </thead> <tbody> <tr><td>1</td><td>L1</td><td>66.3°C</td><td>91.9°C</td></tr> <tr><td>2</td><td>LF1</td><td>61.1°C</td><td>86.6°C</td></tr> <tr><td>3</td><td>C5</td><td>59.5°C</td><td>84.4°C</td></tr> <tr><td>4</td><td>U1</td><td>60.3°C</td><td>85.6°C</td></tr> <tr><td>5</td><td>Q1</td><td>68.5°C</td><td>93.7°C</td></tr> <tr><td>6</td><td>D5</td><td>67.8°C</td><td>93.5°C</td></tr> <tr><td>7</td><td>C13</td><td>62.9°C</td><td>87.4°C</td></tr> <tr><td>8</td><td>R13</td><td>64.7°C</td><td>89.9°C</td></tr> <tr><td>9</td><td>R22</td><td>67.0°C</td><td>91.3°C</td></tr> <tr><td>10</td><td>U500</td><td>52.8°C</td><td>77.5°C</td></tr> <tr><td>11</td><td>LF500</td><td>56.6°C</td><td>61.8°C</td></tr> <tr><td>12</td><td>BC1</td><td>70.5°C</td><td>94.8°C</td></tr> <tr><td>13</td><td>TC</td><td>62.3°C</td><td>87.3°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=35.1 °C	HIGH AMBIENT Ta=60.9 °C	1	L1	66.3°C	91.9°C	2	LF1	61.1°C	86.6°C	3	C5	59.5°C	84.4°C	4	U1	60.3°C	85.6°C	5	Q1	68.5°C	93.7°C	6	D5	67.8°C	93.5°C	7	C13	62.9°C	87.4°C	8	R13	64.7°C	89.9°C	9	R22	67.0°C	91.3°C	10	U500	52.8°C	77.5°C	11	LF500	56.6°C	61.8°C	12	BC1	70.5°C	94.8°C	13	TC	62.3°C	87.3°C		
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 12VDC / 32VDC O/P : 100 % LOAD Ta= -45°C	TEST : OK																																																								
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C / 95 %R.H NO DAMAGE	I/P : 12VDC O/P : FULL LOAD Ta= 60 °C HUMIDITY= 95 %R.H	TEST : OK																																																								
4	TEMPERATURE COEFFICIENT	±0.03 %/°C (0~50°C)	I/P : 12VDC O/P : FULL LOAD	±0.007 %/°C (0~50°C)																																																								
5	STORAGE TEMPERATURE TEST	-40~85°C	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 : 10 CYCLE 5. Input/Output condition : STATIC																																																									
6	THERMAL SHOCK TEST	-40~60°C	1. Thermal shock Temperature : -45°C~+65°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle: 24VDC / FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle: 24VDC / FULL LOAD Burn In Test																																																									



7	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C
8	CAPACITOR LIFE CYCLE	SUPPOSE C13 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=60 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta=60 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta=60 °C LIFE TIME	(1) 556376HRS (2) 48165HRS (3) 95033HRS (4) 126296HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 12369.5K hrs min. Telcordia SR-332 (Bellcore); 896.4K hrs min. MIL-HDBK-217F (25°C)	
10	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 30000 hours	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/HUANGMK	WENF	LIUWY

2018.4.30 GP-A50-F010