



Test Report: LDH-25-700

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

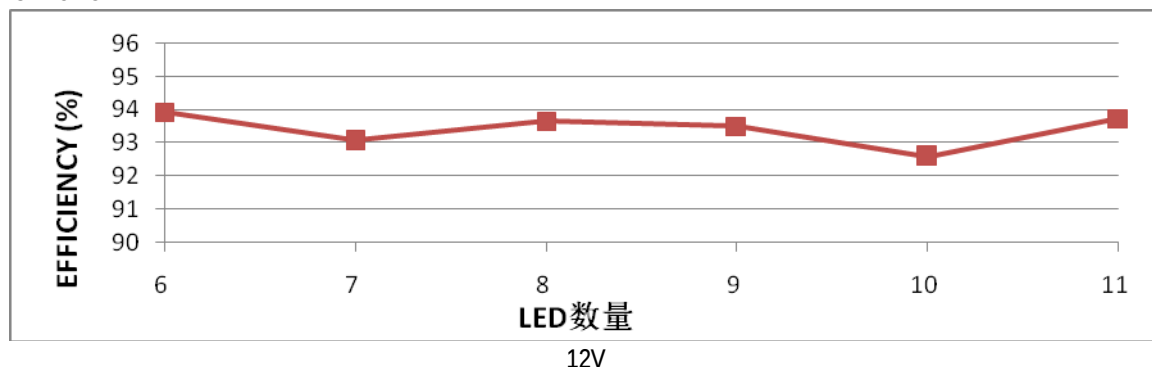
OUTPUT FUNCTION TEST

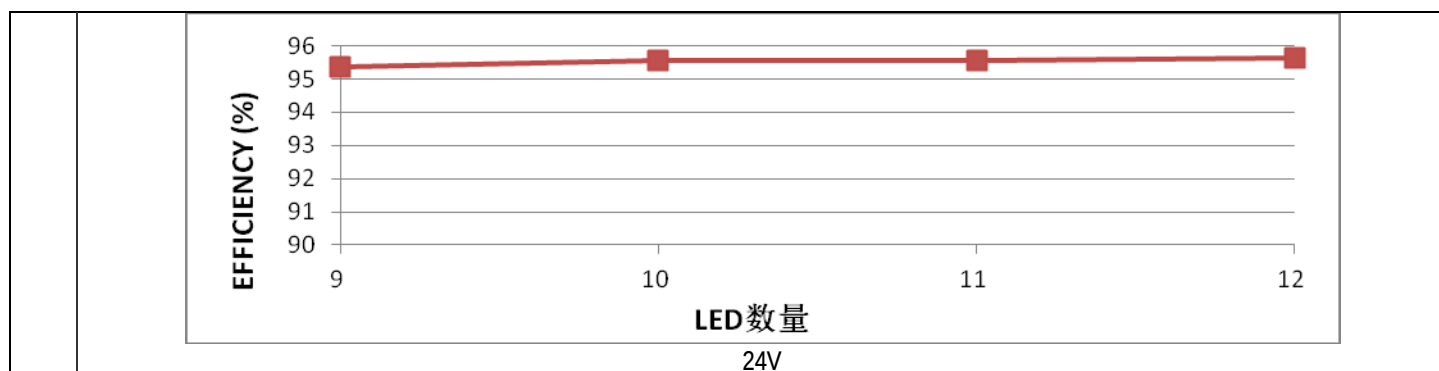
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	$\pm 5\%$	I/P: 12VDC/24VDC O/P: LED min/LED max Ta:25°C	-2.17%~-1.63%/12VDC -1.7%~-1.54%/24VDC
2	CURRENT RIPPLE	5%(@rated current)	I/P: 12VDC / 24VDC O/P: LED min~LED max Ta:25°C	2.66%/12VDC 1.78%/24VDC
3	SUGRE CURRENT	$< \pm 110\%$	I/P: 12VDC / 24VDC O/P:-LED min/LED max Ta:25°C	107.3%/12VDC 105.3%/24VDC
4	VOLTAGE RANGE	12.5V~36V	I/P: 12VDC/24VDC O/P:-250mA Ta:25°C	15V~47.5V/12VDC 27V~47.3V/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	9.3V~ 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=2.36A/VDC I=1.14A/VDC
3	DIMMING OFF	INPUT CURRENT <7mA Vo=Vi	I/P:12VDC O/P:FULL LOAD Ta:25°C	1.34mA Vo=12Vi
4	EFFICIENCY(TYP)	92.5% /12VDC 95.5% /24VDC	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	93.73% /12VDC 95.65% /24VDC

EFFICIENCY vs LOAD





PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	CH: 37V~60V	I/P: 9.3VDC I/P: 35VDC O/P: MIN LOAD Ta: 25°C	47.06V/93VDC 47.28V/32 VDC PROTECTION TYPE : Output 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 : Output short circuit, the power supply will be 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 75A/100V	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) 42.8V (2) 40.8V (3) 42.4V (4) 53.3V (5) 35.2V VDS: (1) 57.7V (2) 50.4V (3) 19.5V (4) 63.3V (5) 9.4V

2	Diode Peak Voltage	D5 Rated 10A/60V	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 VO: 設定出貨輸出電壓 O/P: (1)CVmax (2) CVmax continue (3) CVmin (4) No Load (5) DIMMING off Ta:25°C	VO: 設定 SPEC 輸出電壓上限 (1) 45.2V (2) 44.8V (3) 44V (4) 55.3V (5) 19.1V VO: 設定出貨輸出電壓 (1) 40.4V (2) 40.2V (3) 15.9V (4) 55.3V (5) 30.7V	
3	Input Capacitor Voltage	C5 Rated: 56 μ / 50V	I/P:High-Line +3V =35V O/P: (1)Full Load input on/off (2)Full load continue Ta:25°C	(1)36.8V (2)36.4V	
4	Control IC Voltage Test	U1 Rated 9.0 V~ 40V U500 Rated 0.3V~ 60V	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 Ta:25°C	U1: (1) 35.6V (2) 35.2V (3) 36.4V (4) 36V (5) 36V (6) 36V	U500: (7) 5.33V (8) 5.24V (9) 5.24V (10) 5.2V (11) 5.29V (12) 5.20V

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
5	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																								
1	TEMPERATURE RISE TEST	MODEL : LDH-25-700 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 12VDC O/P : FULL LOAD Ta=25.4 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 12VDC O/P : FULL LOAD Ta=60.7 °C <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=25.4 °C</th><th>HIGH AMBIENT Ta=60.7 °C</th></tr><tr><td>1</td><td>LF1</td><td>44.8°C</td><td>77.8°C</td></tr><tr><td>2</td><td>L1</td><td>49.6°C</td><td>83.1°C</td></tr><tr><td>3</td><td>C5</td><td>47.0°C</td><td>79.8°C</td></tr><tr><td>4</td><td>U1</td><td>47.7°C</td><td>80.9°C</td></tr><tr><td>5</td><td>Q1</td><td>52.9°C</td><td>85.9°C</td></tr><tr><td>6</td><td>D5</td><td>55.2°C</td><td>87.7°C</td></tr><tr><td>7</td><td>C13</td><td>50.8°C</td><td>83.5°C</td></tr><tr><td>8</td><td>R13</td><td>56.1°C</td><td>89.0°C</td></tr><tr><td>9</td><td>R22</td><td>52.8°C</td><td>85.6°C</td></tr><tr><td>10</td><td>U500</td><td>41.9°C</td><td>74.5°C</td></tr><tr><td>11</td><td>LF500</td><td>43.3°C</td><td>75.7°C</td></tr><tr><td>12</td><td>BC1</td><td>56.1°C</td><td>88.5°C</td></tr><tr><td>13</td><td>TC</td><td>46.2°C</td><td>76.7°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=25.4 °C	HIGH AMBIENT Ta=60.7 °C	1	LF1	44.8°C	77.8°C	2	L1	49.6°C	83.1°C	3	C5	47.0°C	79.8°C	4	U1	47.7°C	80.9°C	5	Q1	52.9°C	85.9°C	6	D5	55.2°C	87.7°C	7	C13	50.8°C	83.5°C	8	R13	56.1°C	89.0°C	9	R22	52.8°C	85.6°C	10	U500	41.9°C	74.5°C	11	LF500	43.3°C	75.7°C	12	BC1	56.1°C	88.5°C	13	TC	46.2°C	76.7°C
NO	Position	ROOM AMBIENT Ta=25.4 °C	HIGH AMBIENT Ta=60.7 °C																																																									
1	LF1	44.8°C	77.8°C																																																									
2	L1	49.6°C	83.1°C																																																									
3	C5	47.0°C	79.8°C																																																									
4	U1	47.7°C	80.9°C																																																									
5	Q1	52.9°C	85.9°C																																																									
6	D5	55.2°C	87.7°C																																																									
7	C13	50.8°C	83.5°C																																																									
8	R13	56.1°C	89.0°C																																																									
9	R22	52.8°C	85.6°C																																																									
10	U500	41.9°C	74.5°C																																																									
11	LF500	43.3°C	75.7°C																																																									
12	BC1	56.1°C	88.5°C																																																									
13	TC	46.2°C	76.7°C																																																									
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	± 0.0047 %/°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) 653167HRS (2) 69133HRS (3) 95142HRS (4) 121307HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 4161K 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