



Test Report: LDH-25-250

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

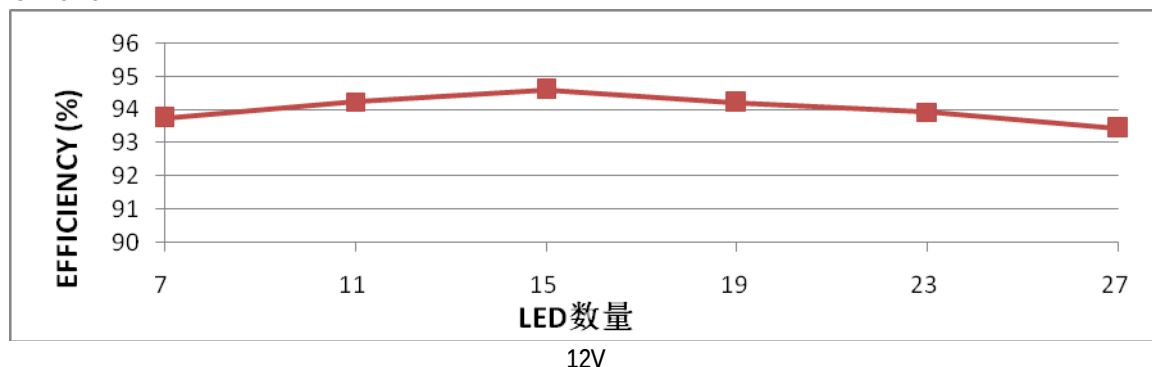
OUTPUT FUNCTION TEST

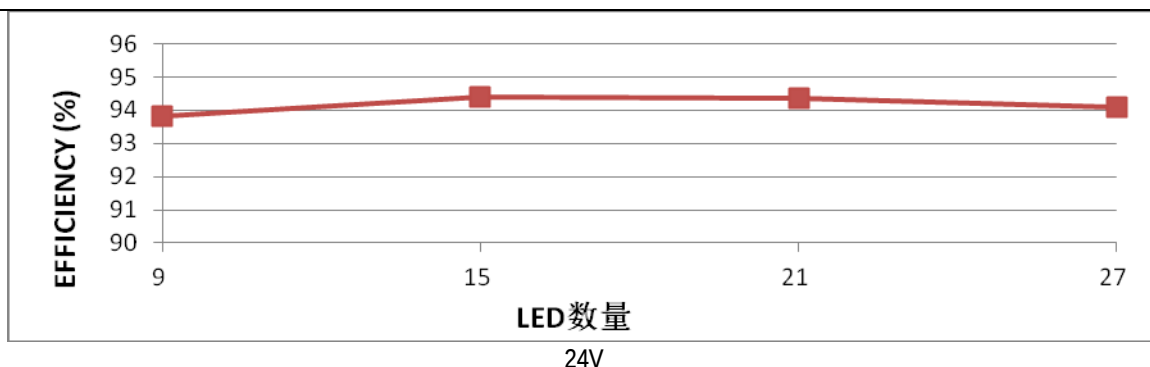
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	$\pm 5\%$	I/P: 12VDC/24VDC O/P: LED min/LED max Ta:25°C	-1.36%~ -0.76 %/12VDC -1%~ -0.76%/24VDC
2	CURRENT RIPPLE	5%(@rated current)	I/P: 12VDC / 24VDC O/P: LED min~LED max Ta:25°C	4.06%/12VDC 3.35%/24VDC
3	SUGRE CURRENT	$< \pm 110\%$	I/P: 12VDC / 24VDC O/P:-LED min/LED max Ta:25°C	105.7%/12VDC 103.8%/24VDC
4	VOLTAGE RANGE	12.5V~84V	I/P: 12VDC/24VDC O/P:-250mA Ta:25°C	15V~94.8V/12VDC 27 V~94.9V/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=1.89A/VDC/12VDC I=0.93A/VDC/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)	91.5% /12VDC 94% /24VDC	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	93.44 %/12VDC 94.09% /24VDC

EFFICIENCY vs LOAD





PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	CH: 85V~ 120V	I/P: 9.3VDC I/P: 35VDC O/P: MIN LOAD Ta: 25°C	96V/9.3VDC 96.8V/35VDC 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: 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 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) 96V (2) 96V (3) 45.6V (4) 105V (5) 37.6V VDS: (1) 102V (2) 101V (3) 49.6V (4) 115V (5) 12V

2	Diode Peak Voltage	D5 Rated 15A/ 150V	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) 97.6V (2) 97.6V (3) 47.2V (4) 110V (5) 39.2V VO: 設定出貨輸出電壓 (1) 97.6V (2) 96.8V (3) 17.6V (4) 109V (5) 12.8V	
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)36V (2)36V	
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) 36V (2) 36V (3) 36V (4) 36V (5) 36V (6) 36V	U500: (1) 5.28V (2) 5.28V (3) 5.28V (4) 5.28V (5) 5.28V (6) 5.28V

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-25-250 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 12VDC O/P : FULL LOAD Ta=25.4 °C 2. HIGH AMBIENT BURN-IN : 2HRS 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>46.2°C</td><td>85.6°C</td></tr><tr><td>2</td><td>L1</td><td>51.5°C</td><td>82.2°C</td></tr><tr><td>3</td><td>C5</td><td>48.2°C</td><td>82.7°C</td></tr><tr><td>4</td><td>U1</td><td>48.8°C</td><td>90.5°C</td></tr><tr><td>5</td><td>Q1</td><td>56.1°C</td><td>88.7°C</td></tr><tr><td>6</td><td>D5</td><td>54.2°C</td><td>85.3°C</td></tr><tr><td>7</td><td>C13</td><td>51.6°C</td><td>85.5°C</td></tr><tr><td>8</td><td>R13</td><td>51.6°C</td><td>87.4°C</td></tr><tr><td>9</td><td>R22</td><td>53.5°C</td><td>76.1°C</td></tr><tr><td>10</td><td>U500</td><td>43.0°C</td><td>78.4°C</td></tr><tr><td>11</td><td>LF500</td><td>45.3°C</td><td>95.0°C</td></tr><tr><td>12</td><td>BC1</td><td>60.8°C</td><td>81.4°C</td></tr><tr><td>13</td><td>TC</td><td>49.5°C</td><td>85.6°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=25.4 °C	HIGH AMBIENT Ta=60.7 °C	1	LF1	46.2°C	85.6°C	2	L1	51.5°C	82.2°C	3	C5	48.2°C	82.7°C	4	U1	48.8°C	90.5°C	5	Q1	56.1°C	88.7°C	6	D5	54.2°C	85.3°C	7	C13	51.6°C	85.5°C	8	R13	51.6°C	87.4°C	9	R22	53.5°C	76.1°C	10	U500	43.0°C	78.4°C	11	LF500	45.3°C	95.0°C	12	BC1	60.8°C	81.4°C	13	TC	49.5°C	85.6°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	± 0.0034 %/°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) 556585HRS (2) 54965HRS (3) 95053HRS (4) 132588HRS
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