



Test Report: LDH-65-700

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

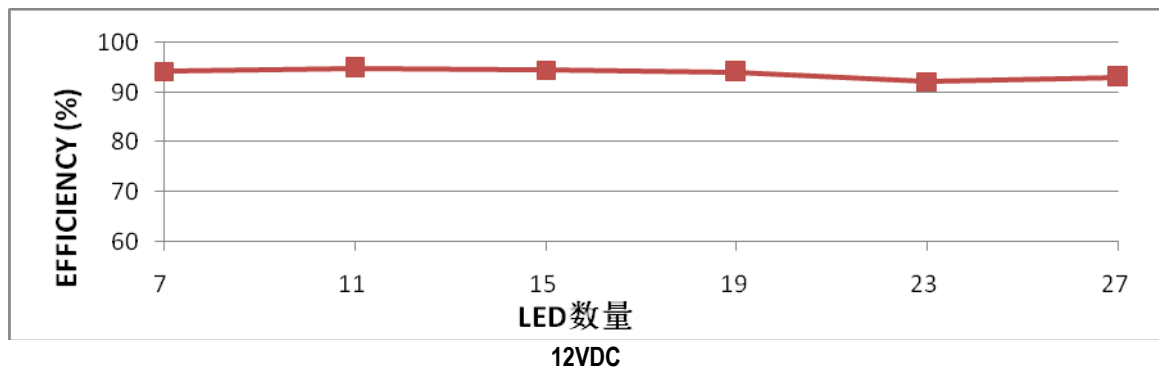
OUTPUT FUNCTION TEST

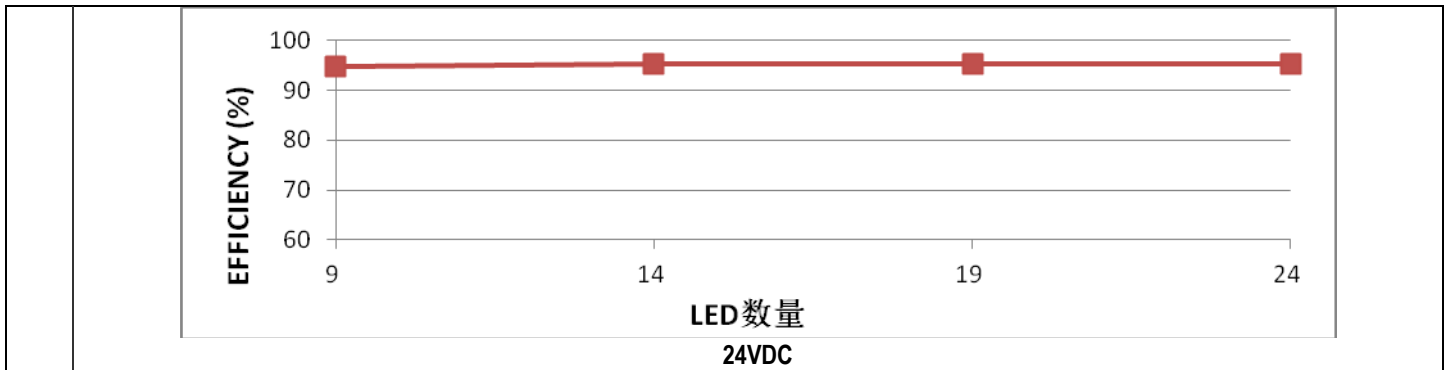
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	± 5%	I/P: 12VDC/24VDC O/P: LED min/LED max Ta:25°C	-0.84%~ -0.7%/12VDC -0.84%~ -0.75%/24VDC
2	CURRENT RIPPLE	5%(@rated current)	I/P: 12VDC / 24VDC O/P: LED min~LED max Ta:25°C	3.29%/12VDC 2.45%/24VDC
3	SUGRE CURRENT	< ±110 %	I/P: 12VDC / 24VDC O/P:-min/LED max Ta:25°C	103.9%/12VDC 102.7%/24VDC
4	VOLTAGE RANGE	12.5V~80V	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	15V~92.6V/12VDC 27V~92.6V/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: OK
2	INPUT CURRENT(TYP)	12VDC/ 6.2A 24VDC/ 3.1A	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	I=5.31A/12VDC I=2.46A/24VDC
3	DIMMING OFF	INPUT CURRENT <7mA Vo=Vi	I/P:12VDC O/P:FULL LOAD Ta:25°C	___1.43___ mA Vo=12Vi
4	EFFICIENCY(TYP)	91% /12VDC	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	93.05%/12VDC
		95% /24VDC		95.20%/24VDC

EFFICIENCY vs LOAD





PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	CH: 81V~ 120V	I/P: 9.3VDC I/P: 35VDC O/P: MIN LOAD Ta:25°C	93.8V/ 9.3VDC 93.4V/ 35VDC 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	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 90A/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) 91.8V (2) 91V (3) 43.5V (4) 100.6V (5) 34.7V VDS: (1) 102.2V (2) 100.6V (3) 17.8V (4) 110.3V (5) 9.3V
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	VDS: VO: 設定 SPEC 輸出電壓上限 (1) 89.4V (2) 89.4V

			(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	(3) 45.1V (4) 94.2V (5) 48.4V VO: 設定出貨輸出電壓 (1) 86.9V (2) 86.1V (3) 15.4V (4) 102.2V (5) 0.2V
3	Input Capacitor Voltage	C5 Rated: : 100u/50V	I/P:High-Line +3V =35V O/P: (1)Full Load input on/off (2)Full load continue Ta:25°C	(1)36.2V (2)34.6V
4	Control IC Voltage Test	U1 Rated -0.3V~ 43V U500 Rated -0.3V~ 65V	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) 36.2V (2) 34.6V (3) 36.2V (4) 35.8V (5) 35.8V U500: (6) 5.31V (7) 5.23V (8) 5.23V (9) 5.51V (10) 5.19V (11) 5.51V

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-65-700 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 12VDC O/P : FULL LOAD Ta= 24.2°C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 12VDC O/P : FULL LOAD Ta= 50.9°C																																																										
				<table border="1"> <thead> <tr> <th>NO</th> <th>Position</th> <th>ROOM AMBIENT Ta= 24.2°C</th> <th>HIGH AMBIENT Ta= 50.9°C</th> </tr> </thead> <tbody> <tr><td>1</td><td>LF1</td><td>57.0°C</td><td>80.8°C</td></tr> <tr><td>2</td><td>L1</td><td>69.0°C</td><td>94.6°C</td></tr> <tr><td>3</td><td>C5</td><td>59.4°C</td><td>81.1°C</td></tr> <tr><td>4</td><td>U1</td><td>62.7°C</td><td>87.4°C</td></tr> <tr><td>5</td><td>Q1</td><td>89.2°C</td><td>109.9°C</td></tr> <tr><td>6</td><td>D5</td><td>82.1°C</td><td>101.4°C</td></tr> <tr><td>7</td><td>D6</td><td>81.0°C</td><td>99.9°C</td></tr> <tr><td>8</td><td>C13</td><td>75.7°C</td><td>97.6°C</td></tr> <tr><td>9</td><td>C14</td><td>72.5°C</td><td>94.0°C</td></tr> <tr><td>10</td><td>R22</td><td>83.5°C</td><td>101.8°C</td></tr> <tr><td>11</td><td>U2</td><td>53.4°C</td><td>79.4°C</td></tr> <tr><td>12</td><td>LF20</td><td>45.1°C</td><td>72.2°C</td></tr> <tr><td>13</td><td>TC</td><td>67.6°C</td><td>88.1°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta= 24.2°C	HIGH AMBIENT Ta= 50.9°C	1	LF1	57.0°C	80.8°C	2	L1	69.0°C	94.6°C	3	C5	59.4°C	81.1°C	4	U1	62.7°C	87.4°C	5	Q1	89.2°C	109.9°C	6	D5	82.1°C	101.4°C	7	D6	81.0°C	99.9°C	8	C13	75.7°C	97.6°C	9	C14	72.5°C	94.0°C	10	R22	83.5°C	101.8°C	11	U2	53.4°C	79.4°C	12	LF20	45.1°C	72.2°C	13	TC	67.6°C	88.1°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 50 °C / 95 %R.H NO DAMAGE	I/P : 12VDC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK																																																								
4	TEMPERATURE COEFFICIENT	±0.03 %/°C (0~50°C)	I/P : 12VDC O/P : FULL LOAD	±0.0005 %/°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=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) 95676HRS (2) 16565HRS (3) 60567HRS (4) 131664HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 9118.4K hrs min. Telcordia SR-332 (Bellcore) ; 874.9K 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