



Test Report: LDH-25-500

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

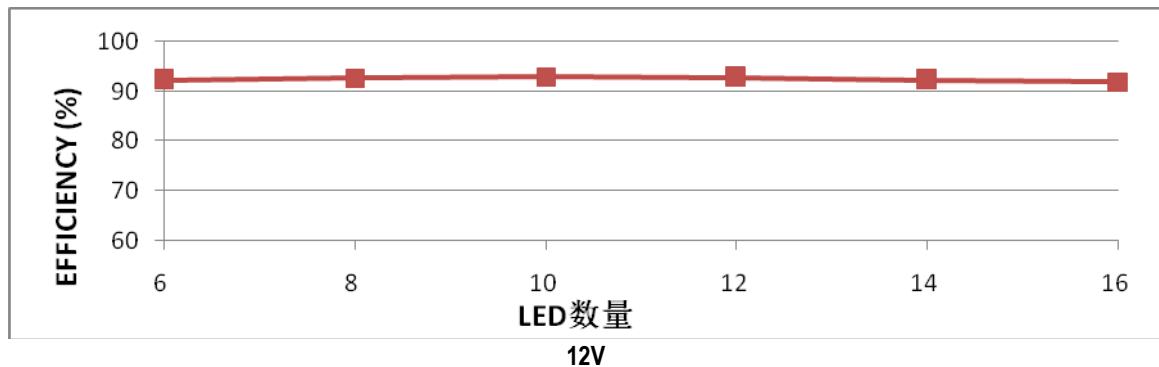
OUTPUT FUNCTION TEST

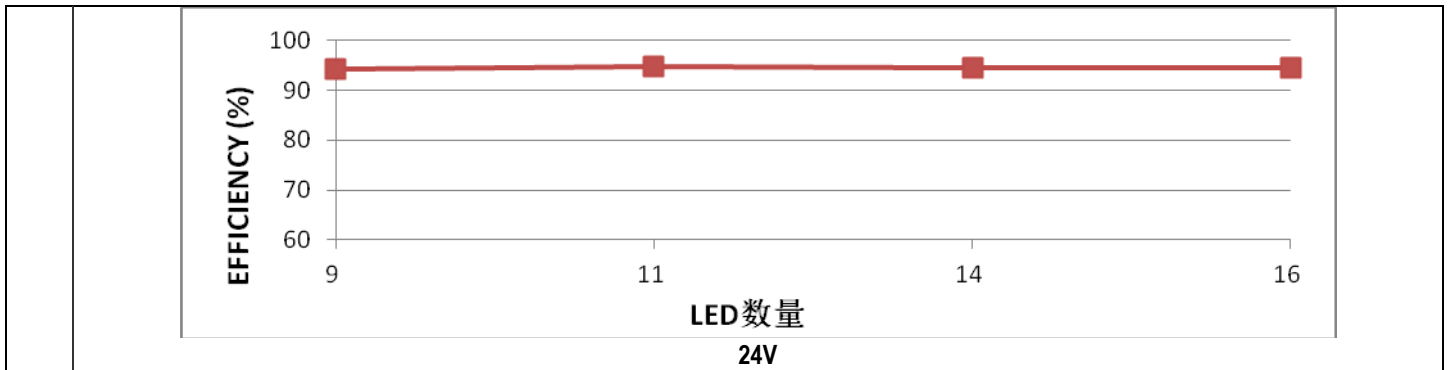
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	$\pm 5\%$	I/P: 12VDC/24VDC O/P: LED min/LED max Ta:25°C	-1.74%~ -1.16%/12VDC -1.36%~ -1.16%/24VDC
2	CURRENT RIPPLE	5%(@rated current)	I/P: 12VDC / 24VDC O/P: LED min~LED max Ta:25°C	3.62%/12VDC 3.64%/24VDC
3	SUGRE CURRENT	$< \pm 110\%$	I/P: 12VDC / 24VDC O/P:-LED min/LED max Ta:25°C	104.1%/12VDC 103.3%/24VDC
4	VOLTAGE RANGE	12.5V~50V	I/P: 12VDC/24VDC O/P:-250mA Ta:25°C	15V~63.2V/12VDC 27V~63.1V/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=2.240A/12VDC I=1.116A/24VDC
3	DIMMING OFF	INPUT CURRENT <7mA Vo=Vi	I/P:12VDC O/P:FULL LOAD Ta:25°C	1.42mA Vo=12Vi
4	EFFICIENCY(TYP)	91.5% /12VDC 94% /24VDC	I/P: 12VDC/24VDC O/P:FULL LOAD Ta:25°C	91.81% /12VDC 94.48% /24VDC

EFFICIENCY vs LOAD





PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER VOLTAGE PROTECTION	CH: 51V~ 80V	I/P: 9.3VDC I/P: 35VDC O/P: MIN LOAD Ta:25°C	64.2V/9.3VDC 64.6V/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 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) 55.7V (2) 54.9V (3) 44.4V (4) 70.8V (5) 38V VDS: (1) 59.6V (2) 59.2V (3) 17.4V (4) 78.8V (5) 12.4V

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) 61.2V (2) 61.2V (3) 47.6V (4) 74.4V (5) 36V VO: 設定出貨輸出電壓 (1) 56V (2) 56V (3) 16.4V (4) 69.6V (5) 12V	
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)36.6V (2)36.6V	
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) 36.2V (2) 36.2V (3) 36.2V (4) 36.2V (5) 36.2V (6) 36.2V	U500: (1) 5.3V (2) 5.3V (3) 5.3V (4) 5.3V (5) 5.3V (6) 5.3V

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-25-500 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 12VDC O/P : FULL LOAD Ta=35.1 °C 2. HIGH AMBIENT BURN-IN : 2 HRS 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>64.3°C</td><td>89.5°C</td></tr> <tr><td>2</td><td>LF1</td><td>58.2°C</td><td>83.1°C</td></tr> <tr><td>3</td><td>C5</td><td>57.0°C</td><td>81.7°C</td></tr> <tr><td>4</td><td>U1</td><td>58.9°C</td><td>84.0°C</td></tr> <tr><td>5</td><td>Q1</td><td>66.1°C</td><td>91.1°C</td></tr> <tr><td>6</td><td>D5</td><td>66.7°C</td><td>91.2°C</td></tr> <tr><td>7</td><td>C13</td><td>62.6°C</td><td>87.1°C</td></tr> <tr><td>8</td><td>R13</td><td>64.0°C</td><td>88.9°C</td></tr> <tr><td>9</td><td>R22</td><td>64.6°C</td><td>89.2°C</td></tr> <tr><td>10</td><td>U500</td><td>52.5°C</td><td>76.9°C</td></tr> <tr><td>11</td><td>LF500</td><td>55.1°C</td><td>79.6°C</td></tr> <tr><td>12</td><td>BC1</td><td>70.3°C</td><td>95.0°C</td></tr> <tr><td>13</td><td>TC</td><td>58.5°C</td><td>82.4°C</td></tr> </tbody> </table>	NO	Position	ROOM AMBIENT Ta=35.1 °C	HIGH AMBIENT Ta=60.9 °C	1	L1	64.3°C	89.5°C	2	LF1	58.2°C	83.1°C	3	C5	57.0°C	81.7°C	4	U1	58.9°C	84.0°C	5	Q1	66.1°C	91.1°C	6	D5	66.7°C	91.2°C	7	C13	62.6°C	87.1°C	8	R13	64.0°C	88.9°C	9	R22	64.6°C	89.2°C	10	U500	52.5°C	76.9°C	11	LF500	55.1°C	79.6°C	12	BC1	70.3°C	95.0°C	13	TC	58.5°C	82.4°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	±0.014 %/°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) 556523HRS (2) 49190HRS (3) 84482HRS (4) 105475HRS
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