



# Test Report: IDLC-25-350

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25W Constant Current Mode LED Driver

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

## ■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

## ■ RELIABILITY TEST

Environment Test

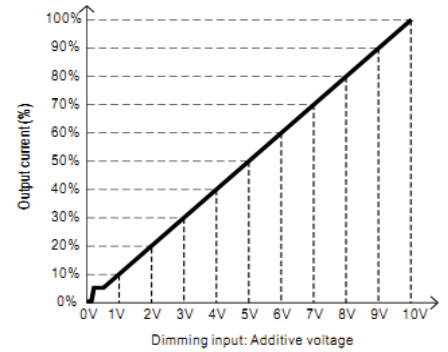
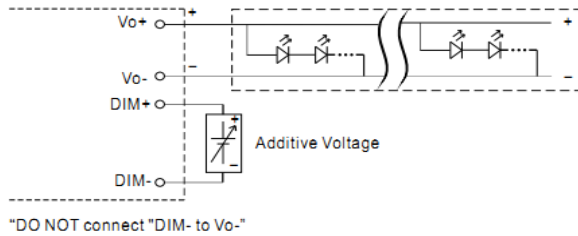
■ DESIGN VERIFY TEST

**OUTPUT FUNCTION TEST**

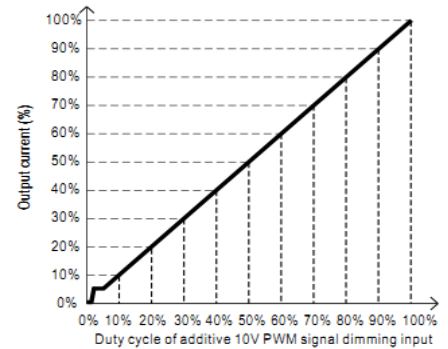
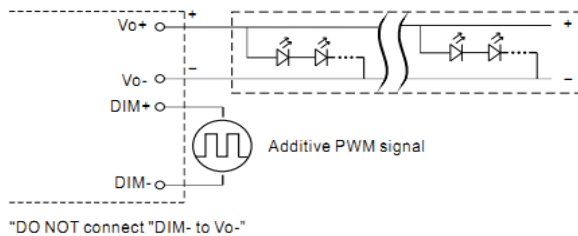
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CONSTANT CURRENT REGION	49V~70V	I/P: 230VAC O/P: LED MODE Ta: 25°C	14V~70V
2	CURRENT RIPPLE	5% max@rated current	I/P: 230VAC O/P: FULL/MIN LOAD Ta: 25°C	2.5%
3	CURRENT TOLERANCE	±7%	I/P: 230VAC O/P: FULL/MIN LOAD Ta: 25°C	4.2%
4	OPEN CIRCUIT VOLTAGE (max)	100V	I/P: 230VAC O/P: NO LOAD Ta: 25°C	73.47V
5	OVER/UNDERSHOOT TEST	<±5 %	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	±1.173%
6	SET UP TIME	500ms/230VAC 1200ms/115VAC	I/P: 230 VAC I/P: 115 VAC O/P: FULL LOAD Ta: 25°C	404ms/230VAC 336ms/115VAC
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p> <p>Δ: 275 V @: 0.00 V Δ: 404ms @: -386ms</p> <p>Ch1 14.0 V Ch2 250 V 100ms A Ch1 56.0 V</p> <p>70.00 %</p>		<p>INPUT=115VAC/60HZ @ FULL LOAD</p> <p>CH1: Output Voltage CH2: AC Input Voltage</p> <p>Δ: 120 V @: 0.00 V Δ: 336ms @: -320ms</p> <p>Ch1 14.0 V Ch2 250 V 100ms A Ch1 56.0 V</p> <p>70.00 %</p>		
7	AUXILIARY DC OUTPUT (For A-Type only)	Nominal 12V (deviation 11.4~12.6) @50mA	I/P: 230 VAC O/P: FULL LOAD	11.990V

8 DIMMING TEST

- Output constant current level can be adjusted by applying one of the two methodologies between DIM+ and DIM-: 0 ~ 10Vdc, or 10V PWM signal.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- © Applying additive 0 ~ 10VDC



- © Applying additive 10V PWM signal (frequency range 300Hz ~ 3KHz):



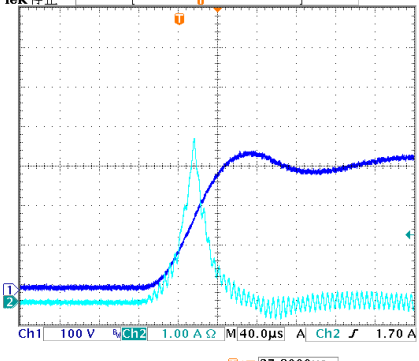
Note : 1. Min. dimming level is about 8% and the output current is not defined when 0% < Iout < 8%.  
 2. The output current could drop down to 0% when dimming input is about 0Vdc or 10V PWM signal with 0% duty cycle.

I/P: 230 VAC  
 O/P: DIMMING TEST  
 Ta: 25°C

	Dimming voltage	0V	1V	2V	3V	4V	5V	6V	7V	8V	9V	10V
1	Output Current	0A	0.035A	0.069A	0.103A	0.140A	0.175A	0.212A	0.248A	0.283A	0.318A	0.353A
	Percentage of rated current	0.00%	10.00%	19.71%	29.43%	40.00%	50.00%	60.57%	70.86%	80.86%	90.86%	100.86%
	Dimming Duty cycle	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	Output Current	0A	0.033A	0.068A	0.104A	0.140A	0.176A	0.211A	0.248A	0.283A	0.319A	0.354A
	Percentage of rated current	0.00%	9.43%	19.43%	29.71%	40.00%	50.29%	60.29%	70.86%	80.86%	91.14%	101.14%

TEST RESULT: OK

**INPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	90VAC~295VAC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	87V~295V
			I/P: (1)LOW-LINE-3V=87 V HIGH-LINE+10V=305 V O/P: FULL/MIN LOAD ON: 30 Sec OFF: 30 Sec 10MIN (2)230VAC ON: 0.5 Sec OFF: 0.5 Sec 20MIN ( POWER ON/OFF NO DAMAGE )	TEST: OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 90 VAC ~295 VAC O/P: FULL~MIN LOAD Ta: 25°C	TEST: OK
3	AC CURRENT	0.4A/115VAC 0.16A/230VAC 0.13A/277VAC	I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C	I =0.227A/ 115VAC I =0.133A/ 230VAC I =0.116A/ 277VAC
4	LEAKAGE CURRENT	< 0.75mA / 277VAC	I/P: 277 VAC O/P: NO LOAD Ta: 25°C	L-CASE: 0.0034 mA N-CASE: 0.0037 mA
5	NO LOAD POWER CONSUMPTION	< 0.5W for Blank-Type < 1.2W for A-Type	I/P: 230VAC O/P: NO LOAD Ta: 25°C	0.378W for Blank-Type 0.554W for A-Type
6	INRUSH CURRENT(Typ)	230V/ 30A Twidth =100 us measured at 50% Ipeak COLD START	I/P: 230 VAC O/P: FULL LOAD Ta: 25°C	I =4.14A/ 230VAC Twidth =31.2us
<p>INPUT=230VAC/50HZ @ FULL LOAD</p> <p>CH1: AC Input Voltage CH2: Input current</p>  <p>Ch2 最大 4.14 A</p> <p>37.8000µs</p>				
7	EFFICIENCY(Typ)	82%	I/P: 230VAC O/P: FULL LOAD Ta: 25°C	84.44%

	<p><b>EFFICIENCY vs LOAD</b></p> <table border="1"> <caption>Efficiency vs Load Data</caption> <thead> <tr> <th>Load (%)</th> <th>277V (%)</th> <th>230V (%)</th> <th>115V (%)</th> </tr> </thead> <tbody> <tr> <td>70%</td> <td>77</td> <td>80</td> <td>83</td> </tr> <tr> <td>80%</td> <td>79.5</td> <td>82</td> <td>84.5</td> </tr> <tr> <td>90%</td> <td>81.5</td> <td>83.5</td> <td>85.5</td> </tr> <tr> <td>100%</td> <td>82.5</td> <td>84.5</td> <td>86</td> </tr> </tbody> </table>			Load (%)	277V (%)	230V (%)	115V (%)	70%	77	80	83	80%	79.5	82	84.5	90%	81.5	83.5	85.5	100%	82.5	84.5	86
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8	<p><b>POWER FACTOR</b></p>	<p>0.95/ 115VAC 0.92/ 230VAC 0.90/ 277VAC</p>	<p>I/P: 115 VAC I/P: 230 VAC I/P: 277 VAC O/P: FULL LOAD Ta: 25°C</p>	<p>PF=0.992/ 115VAC PF=0.974/ 230VAC PF=0.945/ 277VAC</p>																			
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9	<p><b>TOTAL HARMONIC DISTORTION</b></p>	<p>THD &lt; 20% ( @load ≥ 70% / 115VAC, 230VAC; @load ≥ 75% / 277VAC )</p>	<p>I/P: 115 VAC / 70% LOAD I/P: 230 VAC / 70% LOAD I/P: 277 VAC / 75% LOAD Ta: 25°C</p>	<p>THD=7.39% @70% load / 115VAC THD=11.60% @70% load / 230VAC THD=15.50% @75% load / 277VAC</p>																			
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**PROTECTION FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	SHORT CIRCUIT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 90VAC I/P: 295VAC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed

**COMPONENT STRESS TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Power Transistor	Q 1 Rated 7A/800V	I/P: High-Line +3V =298V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 550V (2) 532V (3) 546V
2	O/P Diode (MOSFET)	D100 Rated 5A/600V	I/P: High-Line +3V =298V O/P: (1) Full Load Turn on (2) Output Short (3) Full load continue Ta: 25°C	(1) 514V (2) 510V (3) 512V
3	Control IC	U1 Rated 35V	I/P: High-Line +3V =298V O/P: (1) FULL LOAD (2) Output Short (3) Low Line No Load Ta: 25°C	(1) 14V (2) 11.1V (3) 14.1V
4	Clamp Diode	D 1 Rated 1A/1KV	I/P: High-Line +3V = 298V O/P: (1) Full Load input on/off (2) Output Short Ta: 25°C	(1) 518V (2) 524V

**SAFETY TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.75KVAC/min	I/P-O/P: 4.2 KVAC/min Ta: 25°C	I/P-O/P: 1.744mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500VDC>100MΩ	I/P-O/P: 500 VDC Ta: 25°C/70% RH	I/P-O/P: >9999MΩ

**E.M.C TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	EN61000-3-2 CLASS C	I/P: 230 VAC/50HZ O/P: FULL/70% LOAD Ta: 25°C	PASS
2	CONDUCTION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
3	RADIATION	EN55015	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR: 8KV Contact: 4KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
6	SURGE	EN61000-4-5 LIGHT INDUSTRY L-N: 1KV	I/P: 230VAC/50HZ O/P: FULL LOAD Ta: 25°C	PASS
7	Test by certified Lab & Test Report Prepare			

■ **RELIABILITY TEST**

**ENVIRONMENT TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																								
1	TEMPERATURE RISE TEST	MODEL: IDLC-25-350 1. ROOM AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 30.7°C 2. HIGH AMBIENT BURN-IN: 2 HRS I/P: 230VAC O/P: FULL LOAD Ta= 51.6°C																																																																										
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2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 295VAC/90VAC O/P: FULL/80% LOAD Ta= -25°C	TEST: OK																																																																								
3	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 45°C NO DAMAGE	I/P: 305VAC O/P: FULL LOAD Ta=45 °C HUMIDITY= 95 %R.H	TEST: OK																																																																								
4	TEMPERATURE COEFFICIENT	±0.03 %/°C(0~45°C)	I/P: 230 VAC O/P: FULL LOAD	±0.0095%/°C																																																																								
5	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature: -45°C~ +85°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle: 5 CYCLE 5. Input/Output condition: AC OFF STATIC		TEST: OK																																																																								
6	THERMAL SHOCK TEST	1. Thermal shock Temperature: Tcase=-25°C~ +50°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: 230VAC/Full Load AC ON/OFF TEST AC on 3 sec/AC off 1 sec TEST		TEST: OK																																																																								





7	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency: 10~500Hz (3) Sweep Time: 10min/sweep cycle (4) Acceleration: 2G (5) Test Time: 60min in each axis (X.Y.Z) (6) Ta: 25°C	TEST: OK
8	CAPACITOR LIFE CYCLE	IDLC-25-350: SUPPOSE C106 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= 45 °C LIFE TIME (3) I/P: 230VAC O/P: 75% LOAD Ta= 45 °C LIFE TIME	(1) 169910 HRS (2) 48419.3 HRS (3) 49228.4 HRS
9	MTBF	Conducted by Parts Stress Analysis Prediction 4398.1K hrs min. Telcordia SR-332 (Bellcore) ; 1093.3K hrs min. MIL-HDBK-217F (25°C)	
10	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure(Expected Life) : 30000 hours @ Tcase 80°C ; 50000 hours @ Tcase 70°C	

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	CHENZH/ZHUOKB	SKY	LIUWY