



Test Report: SLD-150-12

150W Constant Voltage + Constant Current 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

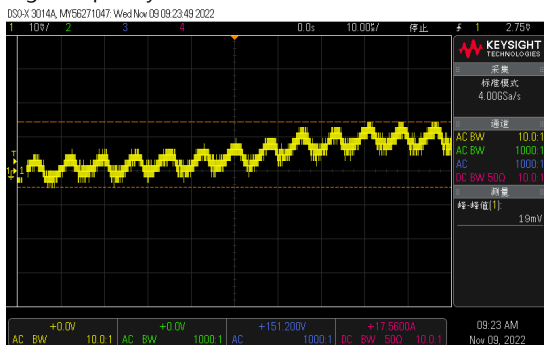
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

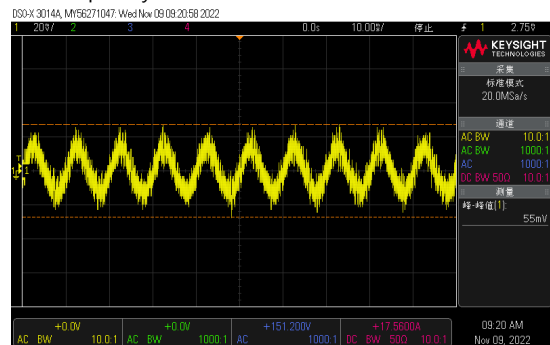
OUTPUT FUNCTION TEST

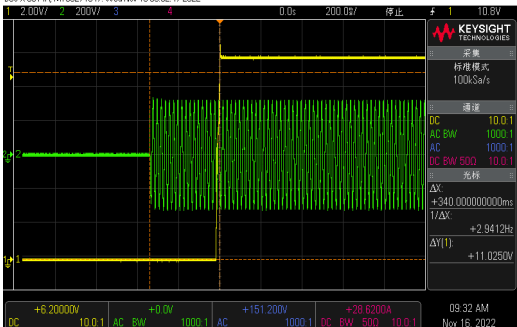
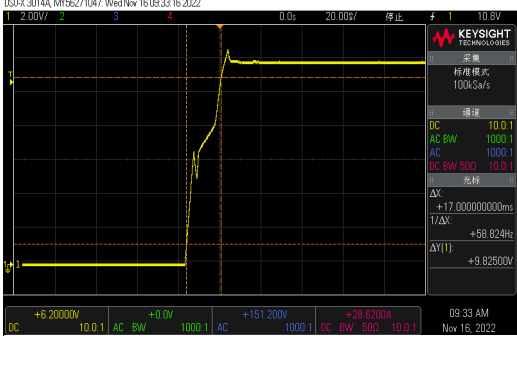
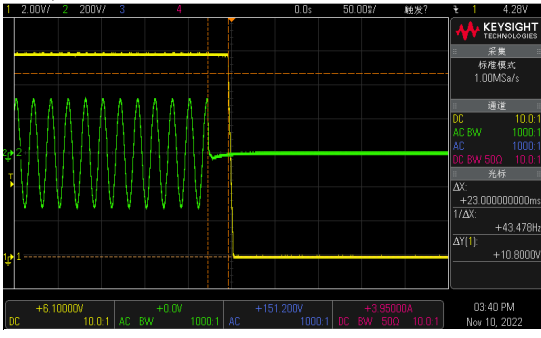
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	CURRENT ACCURACY	±5%	I/P: 230 VAC I/P:120VAC O/P:FULL LOAD Ta:25°C CV MODE TEST	12.02A /230VAC@CV MAX-1V 12.03A /230VAC@CV MIN 12.01A/120VAC@CV MAX-1V 12.04A/120VAC@CV MIN 0.33%
2	CONSTANT CURRENT REGION	CH1: 8.4 V~ 12 V	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CV MODE TEST	7.19V~ 11.97V /230VAC
3	OUTPUT VOLTAGE TOLERANCE (Max)	V1: -4% ~ +4%	I/P:120VAC /305AC O/P:FULL/ MIN LOAD Ta:25°C	V1: -1.67~ 0.33 %
4	LINE REGULATION (Max)	V1: -0.5 % ~ 0.5 %	I/P: 120VAC~305AC O/P:FULL LOAD Ta:25°C	V1: -0.00 %~ +0.00 %
5	LOAD REGULATION (Max)	V1: -1% ~ +1 %	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.17 %~ -0.17 %
6	RIPPLE & NOISE (Max)	V1: 180mVp-p	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	V1: 230VAC /55mVp-p

high frequency :



low frequency :



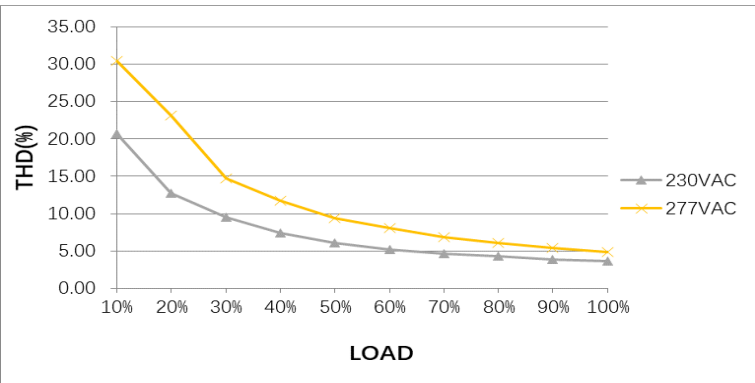
7	SET UP TIME (Max)	230VAC/500 ms	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	230VAC/340ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p> 				
8	RISE TIME (Max)	230VAC/80 ms	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	230VAC/17ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage</p> 				
9	HOLD UP TIME (Typ.)	230VAC/ 10 ms	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	230VAC/ 23.0ms
<p>INPUT=230VAC/50HZ @ FULL LOAD CH1 : Output Voltage CH2 : AC Input Voltage</p> 				

10	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 230VAC O/P: (1)FULL /50% LOAD 50%DUTY / 120HZ (2)FULL /50% LOAD 50%DUTY / 1KHZ Ta:25°C	366mVp-p 338mVp-p
	<p>FULL /50% LOAD 50%DUTY / 120HZ</p>		<p>FULL /50% LOAD 50%DUTY / 1KHZ</p>	

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	120VAC~305 VAC 170VDC~431VDC	(1) I/P:TESTING O/P:FULL LOAD (2) I/P:DC TESTING(L: + N:-) O/P: FULL / 50% LOAD (3) I/P:DC TESTING(L:- N:+) O/P: FULL / 50% LOAD (PLEASE CHECK DERATING CURVE) Ta:25°C	(1) 155 V~305V (2)283Vdc~431Vdc/FULL LOAD 170Vdc~431Vdc/50% LOAD (3) 283Vdc~431Vdc/FULL LOAD 170Vdc~431Vdc/50% LOAD
			I/P: LOW-LINE120-3V=117V HIGH-LINE+10V=315 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 FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 120VAC ~305VAC O/P:FULL~MIN LOAD Ta:25°C	OK
3	INPUT CURRENT (TYP)	277VAC/ 0.8 A 230 VAC/ 1.0A	I/P: 277VAC/230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	I= 0.57A/277VAC I =0.68A/ 230VAC
4	NO LOAD POWER CONSUMPTION	<0.5W	I/P : 230VAC O/P : NO LOAD Ta : 25°C	0.26W

5	POWER FACTOR(TYP)	0.95/230 VAC FULL LOAD 0.92/277 VAC FULL LOAD	I/P: 230 VAC/277VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	PF= 0.991 /230V/100%LOAD PF= 0.975/277V/100%LOAD																																	
<p>P.F vs LOAD</p> <table border="1"> <caption>P.F vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>230VAC PF</th> <th>277VAC PF</th> </tr> </thead> <tbody> <tr><td>10%</td><td>0.71</td><td>0.62</td></tr> <tr><td>20%</td><td>0.86</td><td>0.73</td></tr> <tr><td>30%</td><td>0.92</td><td>0.83</td></tr> <tr><td>40%</td><td>0.95</td><td>0.88</td></tr> <tr><td>50%</td><td>0.97</td><td>0.91</td></tr> <tr><td>60%</td><td>0.98</td><td>0.93</td></tr> <tr><td>70%</td><td>0.985</td><td>0.94</td></tr> <tr><td>80%</td><td>0.99</td><td>0.95</td></tr> <tr><td>90%</td><td>0.992</td><td>0.96</td></tr> <tr><td>100%</td><td>0.991</td><td>0.97</td></tr> </tbody> </table>					LOAD (%)	230VAC PF	277VAC PF	10%	0.71	0.62	20%	0.86	0.73	30%	0.92	0.83	40%	0.95	0.88	50%	0.97	0.91	60%	0.98	0.93	70%	0.985	0.94	80%	0.99	0.95	90%	0.992	0.96	100%	0.991	0.97
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6	EFFICIENCY (TYP)	92 %	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	92.42%																																	
<p>EFFICIENCY vs LOAD</p> <table border="1"> <caption>EFFICIENCY vs LOAD Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>230VAC Efficiency (%)</th> <th>277VAC Efficiency (%)</th> </tr> </thead> <tbody> <tr><td>10%</td><td>81</td><td>88</td></tr> <tr><td>20%</td><td>88</td><td>89</td></tr> <tr><td>30%</td><td>90</td><td>90</td></tr> <tr><td>40%</td><td>91</td><td>91</td></tr> <tr><td>50%</td><td>91.5</td><td>91.5</td></tr> <tr><td>60%</td><td>92</td><td>92</td></tr> <tr><td>70%</td><td>91.5</td><td>91.5</td></tr> <tr><td>80%</td><td>91</td><td>91</td></tr> <tr><td>90%</td><td>90.5</td><td>90.5</td></tr> <tr><td>100%</td><td>90</td><td>90</td></tr> </tbody> </table>					LOAD (%)	230VAC Efficiency (%)	277VAC Efficiency (%)	10%	81	88	20%	88	89	30%	90	90	40%	91	91	50%	91.5	91.5	60%	92	92	70%	91.5	91.5	80%	91	91	90%	90.5	90.5	100%	90	90
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7	INRUSH CURRENT (TYP)	230 V/65A COLD START (twidh=500us measured at 50% Ipeak) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C CCH MODE TEST	I = 47.8A/ 230VAC T50= 376us																																	
<p>INPUT=230VAC/50HZ @ FULL LOAD CH2 : AC Input Voltage CH4 : Input current (1V=1A)</p> <p>Ch1 最大 47.8 A</p> <p>10 11月 2022 17:58:49</p>																																					

8	TOTAL HARMONIC DISTORTION	THD < 10% (@ load ≥ 60% at 230VAC, @ load ≥ 75% at 277VAC	I/P : 230VAC/277VAC O/P : 60% LOAD 75%LOAD Ta : 25°C	THD : 5.23%230V /60% THD : 6.83%277V /75%																																
	<p>THD&LOAD</p>  <table border="1"> <caption>THD (%) vs LOAD (%) Data</caption> <thead> <tr> <th>LOAD (%)</th> <th>THD (%) - 230VAC</th> <th>THD (%) - 277VAC</th> </tr> </thead> <tbody> <tr><td>10</td><td>20.00</td><td>30.00</td></tr> <tr><td>20</td><td>13.00</td><td>22.00</td></tr> <tr><td>30</td><td>10.00</td><td>15.00</td></tr> <tr><td>40</td><td>8.00</td><td>12.00</td></tr> <tr><td>50</td><td>6.50</td><td>10.00</td></tr> <tr><td>60</td><td>5.50</td><td>8.50</td></tr> <tr><td>70</td><td>5.00</td><td>7.50</td></tr> <tr><td>80</td><td>4.50</td><td>6.50</td></tr> <tr><td>90</td><td>4.20</td><td>6.00</td></tr> <tr><td>100</td><td>4.00</td><td>5.50</td></tr> </tbody> </table>				LOAD (%)	THD (%) - 230VAC	THD (%) - 277VAC	10	20.00	30.00	20	13.00	22.00	30	10.00	15.00	40	8.00	12.00	50	6.50	10.00	60	5.50	8.50	70	5.00	7.50	80	4.50	6.50	90	4.20	6.00	100	4.00
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100	4.00	5.50																																		
9	LEAKAGE CURRENT	IEC/EN60335-1: < 0.35mA peak/ 294VAC, 60Hz	I/P: 295VAC O/P:Min LOAD Ta:25°C	L-FG:0.017 mA N-FG: 0.018mA																																

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	95%~ 108%	I/P: 305VAC I/P: 230VAC I/P: 120VAC O/P:TESTING Ta:25°C	106.67%/ 305VAC 106.66%/ 230VAC 105.89%/120VAC PROTECTION TYPE : Constant current limiting continous increase of load will be hiccup protection, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	V1: 14 V~ 17 V	I/P: 305VAC I/P: 230VAC I/P: 120VAC O/P:MIN LOAD Ta:25°C	15.9V/ 305VAC 15.5V/ 230VAC 15.5V/ 120VAC PROTECTION TYPE : Shut down output voltage, repower on to recovery
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P: 305 VAC I/P: 200VAC O/P:FULL LOAD	O.T.P Active OK PROTECTION TYPE : Shut down output voltage, repower on to recovery

4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 308VAC I/P: 200 VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE PROTECTION TYPE : Hiccup mode, recovers automatically after fault condition is removed
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COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q3 Rated: 11A/ 600V	AC ON/OFF I/P:High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8)NO LOAD I/P:Low-Line -3V = 117V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8)NO LOAD Ta:25°C	VDS: (1) 457V (2) 473V (3) 457V (4) 449V (5) 453V (6) 457V (7) 477V (8) 441V VDS: (1) 445V (2) 473V (3) 445V (4) 445V (5) 445V (6) 445V (7) 469V (8) 437V

2	<p>P.F.C Transistor (D to S) or (C to E) Peak Voltage</p>	<p>Q1 Rated: 15A/ 650V</p>	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =308 V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8)NO LOAD</p> <p>I/P:Low-Line -3V = 117V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8)NO LOAD</p> <p>Ta:25°C</p>	<p>VDS:</p> <p>(1) 505V (2) 513V (3) 501V (4) 505V (5) 505V (6) 497V (7) 481V (8) 453V</p> <p>VDS:</p> <p>(1) 529V (2) 497V (3) 513V (4) 517V (5) 517V (6) 505V (7) 497V (8) 461V</p>
3	<p>P.F.C DIODE</p>	<p>D5 Rated: 600V/9A</p>	<p>AC ON/OFF</p> <p>I/P:High-Line +3V =308 V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>I/P:Low-Line -3V = 117V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz</p> <p>Ta:25°C</p>	<p>308VAC (1)453V (2)441V (3)445V (4)441V</p> <p>117VAC (1)453V (2)445V (3)449V (4)445V</p>

4	Diode Peak Voltage	Q101 Rated: 40V/80A	AC ON/OFF I/P:High-Line +3V =308 V O/P: (1)Full Load (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5)Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6)Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD Ta:25°C	Q101: VDS: (1) 30.9V (2) 9.16V (3) 30.9V (4) 31.3V (5) 31.7V (6) 33.3V (7) 29.7V (8) 29.7V
5	Input Capacitor Voltage	C5 Rated: 33μ / 450 V Surge voltage: 500V	I/P:High-Line +3V =308V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25°C	(1)477V (2)481V (3)448V (4)444V
6	Control IC Voltage Test	PFC/PWM IC U1 Rated -0.3V~19V O/P IC U101 Rated -0.3V~26V	AC ON/OFF I/P:High-Line +3V =308 V FOR C.V MODE TYPE O/P(1)FULL LOAD (2) Output Short (3)O.L.P (4)O.V.P. (5)NO LOAD VRmin.LOW LINE FOR C.C MODE TYPE O/P(6)LEDmax (7)LEDmin Ta:25°C	U1: (1) 17.0V (2) 17.0V (3) 17.0V (4) 17.0V (5) 11.6V U101: (1) 11.0V (2) 4.8V (3) 8.6V (4) 11.0V (5) 11.0V (6) 11.0V (7) 11.0V

SAFETY & EMC TEST REPORT

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	IEC/EN61347-1: I/P-O/P: 3.86KVAC/min	I/P-O/P: 4.246 KVAC/min Ta:25°C	I/P-O/P: 1.25mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P:>9999MΩ NO DAMAGE

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 LOAD Ta:25°C	PASS
2	CONDUCTION	EN55015/ EN55014 CLASS B	I/P: 230 VAC /50HZ O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab
3	RADIATION	EN55015/ EN55014 CLASS B	I/P: 230 VAC /50HZ O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab
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	CRITERIA A
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A
7	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 : SLD-150-12 1. ROOM AMBIENT BURN-IN : HRS I/P : 230VAC O/P : FULL LOAD Ta=30.9 °C 2. HIGH AMBIENT BURN-IN : HRS I/P : 230VAC O/P : FULL LOAD Ta=41.9 °C																																																																																																		
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 106 % LOAD Ta : 25°C	TEST : OK																																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/120VAC O/P : 100 % LOAD Ta= -30 °C	TEST : OK																																																																																																
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C NO DAMAGE	I/P : 315 VAC O/P : FULL LOAD Ta=40 °C HUMIDITY= 95 %R.H	TEST : OK																																																																																																

5	TEMPERATURE COEFFICIENT	+ 0.03 % (0°C~60°C)	I/P : 230 VAC O/P : FULL LOAD	+ 0.008 % (0~60°C)
6	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 : 10CYCLE 5. Input/Output condition : AC OFF STATIC TEST : OK	
7	THERMAL SHOCK TEST	-25~40°C	1. Thermal shock Temperature : -30°C~ +45°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:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test	
8	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	
9	CAPACITOR LIFE CYCLE	SLD-150-12 SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Tc=75 °C LIFE TIME (2) I/P : 230VAC O/P : 75% LOAD Tc=75 °C LIFE TIME (3) I/P : 230VAC O/P : 50% LOAD Tc=75 °C LIFE TIME	(1) 21042HRS (2) 50824HRS (3) 90794HRS	
10	MTBF	Conducted by Parts Stress Analysis Prediction 2883.5K hrs min. Telcordia SR-332 (Bellcore) ; 298.8K hrs min. MIL-HDBK-217F (25°C)		
11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=40°C Demonstration Mean Time Between Failure : 50,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	WUWQ/HUANGMK	WENF	LINKX

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