



Test Report: PSD-30A-5

30W Single Output Switching Power Supply

■ 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	VERDICT
1	RIPPLE & NOISE	V1 : 100 mVp-p (Max)	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	V1 : 30 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 4.5V ~5.5 V	I/P : 12VDC I/P : 9VDC O/P : MIN LOAD Ta : 25°C	4.3 V~ 6.2 V/ 12VDC 4.3 V~ 6.2 V/ 9VDC	P
3	OUTPUT VOLTAGE TOLERANCE	V1 : -2.0 % ~+2.0% (Max)	I/P : 9VDC /18VDC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : -0.01 %~ +0.01 %	P
4	LINE REGULATION	V1 : -1.0 % ~ +1.0% (Max)	I/P : 9VDC ~18VDC O/P : FULL LOAD Ta : 25°C	V1 : -0.01 %~ +0.01 %	P
5	LOAD REGULATION	V1 : -1.0 % ~ +1.0% (Max)	I/P : 12VDC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : -0.01 %~ +0.01 %	P
6	SET UP TIME	12VDC : 2000 ms (Max)	I/P : 12VDC I/P : 9VDC O/P : FULL LOAD Ta : 25°C	12VDC/ 336 ms	P
7	RISE TIME	12VDC : 50 ms (Max)	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	12VDC/ 16 ms	P
8	DYNAMIC LOAD	V1 : 1000 mVp-p	I/P : 12VDC O/P : FULL /Min LOAD 90%DUTY/ 1KHZ Ta : 25°C	900 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	9VDC ~ 18VDC	I/P : TESTING O/P : FULL LOAD Ta : 25°C I/P : LOW-LINE= 9V HIGH-LINE= 18V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	9V ~ 18VDC TEST : OK	P
2	EFFICIENCY	77 % (TYP)	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	77.4 %	P
3	INPUT CURRENT	12V/ 4.5 A (TYP)	I/P : 12VDC I/P : 9VDC O/P : FULL LOAD Ta : 25°C	I = 2.72 A/ 12VDC	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105% ~ 150%	I/P : 12VDC I/P : 9VDC O/P : TESTING Ta : 25°C	133%/ 12VDC 133.5%/ 9VDC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1 : 6V ~ 7.5V	I/P : 12VDC I/P : 9VDC O/P : MIN LOAD Ta : 25°C	6.6V/ 12VDC 6.7V/ 9VDC Hiccup Mode	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 18VDC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Hiccup Mode	P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated : 60V 50A	I/P : High-Line +3V =21 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 38.4 V (2) 41.2 V (3) 38.4 V	P
2	Diode Peak Voltage	D100 Rated : 45 V 30 A	I/P : High-Line +3V =21 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 37.2 V (2) 30.0 V (3) 37.2 V	P
3	Clamp Diode Peak Voltage	D6 Rated : 200V 1A	I/P : High-Line +3V =21 V O/P : (1) Dynamic Load 90%Duty/1KHz (2)Full load continue Ta : 25°C	(1) 21.2 V (2) 21.2 V	P
4	Input Capacitor Voltage	C5 Rated : 1000u / 35V / 105°C	I/P : High-Line +3V =21 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 20.7 V (2) 21.4 V (3) 20.7 V	P
5	Control IC Voltage Test	U1 Rated : 30V	I/P : High-Line +3V =21 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 15.1 V (2) 9.5 V (3) 15.1 V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 1.5 KVAC/min I/P-FG : 1.5 KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P : 1.8KVAC/min I/P-FG : 1.8 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 0.16 mA I/P-FG : 0.61 mA O/P-FG : 3.21 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ I/P-FG : 500VDC>100MΩ O/P-FG : 500VDC>100MΩ	I/P-O/P : 500 VDC I/P-FG : 500 VDC O/P-FG : 500 VDC Ta : 25°C/70%RH	I/P-O/P : >9.99 GΩ I/P-FG : >9.99 GΩ O/P-FG : 4.23 GΩ NO DAMAGE	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55022 CLASS B	I/P: 12VDC O/P: FULL LOAD Ta: 25°C	ok	p
2	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR : 8KV / Contact : 4KV	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	ok	p
3	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	ok	p
4	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N : 1KV L,N-PE : 2KV	I/P : 12VDC O/P : FULL LOAD Ta : 25°C	ok	p
5	Test by certified Lab & Test Report Prepare				

RELIABILITY TEST
ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : PSD-30A-5 1. ROOM AMBIENT BURN-IN : 1 HRS I/P : 12VDC O/P : FULL LOAD Ta=25.1°C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P : 12VDC O/P : FULL LOAD Ta=42.8°C			P
3	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 12VDC O/P : 128% LOAD Ta : 25°C	TEST : ok	P
4	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 18VDCAC/100VAC O/P : 100 % LOAD Ta= -20°C	TEST : ok	P
5	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40°C NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta=40°C HUMIDITY= 95 %R.H	TEST : ok	P
6	TEMPERATURE COEFFICIENT	±0.03%(0~50°C)	I/P : 12VDC O/P : FULL LOAD	±0.02%(0~50°C)	P
7	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -20°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 : STATIC		ok	P
8.	THERMAL SHOCK TEST	1. Thermal shock Temperature : -20°C~ +60°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 : 12VDC/Full Load		ok	P

9	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C	TEST : ok	P
10	CAPACITOR LIFE CYCLE	SUPPOSE C100 IS THE MOST CRITICAL COMPONENT (1) I/P : 12VDC O/P : FULL LOAD Ta=25°C LIFE TIME (2) I/P : 12VDC O/P : FULL LOAD Ta=40°C LIFE TIME	(1) 104969HRS (2) 49321HRS	P
11	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 902.4 HRS		p

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/9/8	RD SAMPLE	PASS	何马超、葛双根	王德昭

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