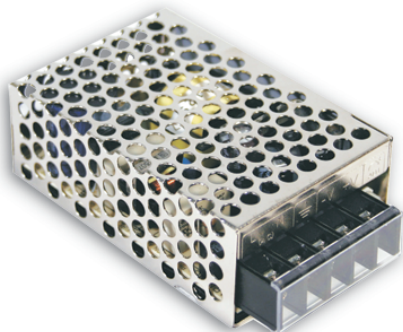




15W Single Output DC-DC Converter

SD-15 series



■ Features :

- 2:1 wide input range
- Protections: Short circuit/Over load /voltage
- Built-in EMI filter, low ripple noise
- 100% full load burn-in test
- Low cost
- High reliability
- 2 years warranty

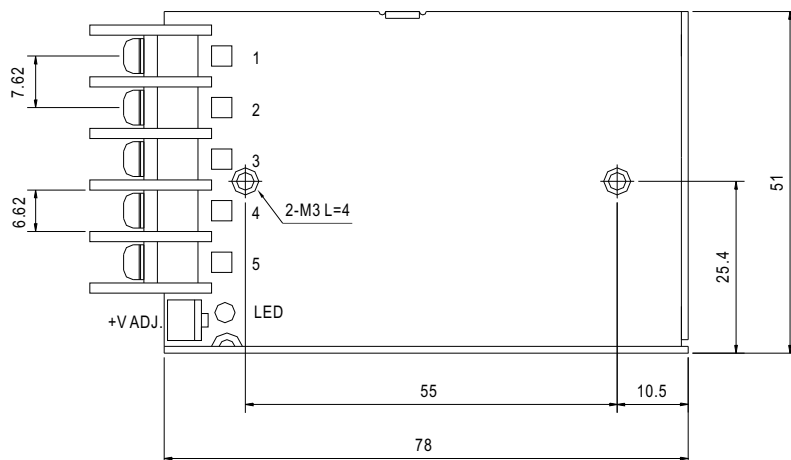
SPECIFICATION



MODEL		SD-15A-05	SD-15B-05	SD-15C-05	SD-15A-12	SD-15B-12	SD-15C-12	SD-15A-24	SD-15B-24	SD-15C-24
OUTPUT	DC VOLTAGE	5V			12V			24V		
	RATED CURRENT	3A			1.25A			0.625A		
	CURRENT RANGE	0 ~ 3A			0 ~ 1.25A			0 ~ 0.625A		
	RATED POWER	15W			15W			15W		
	RIPPLE & NOISE (max.) Note.2	100mVp-p			120mVp-p			150mVp-p		
	VOLTAGE ADJ.RANGE	4.75~5.5VDC			10.8~13.2VDC			21.6~26.4VDC		
	VOLTAGE TOLERANCE Note.3	±2.0%			±1.0%			±1.0%		
	LINE REGULATION	±0.5%			±0.3%			±0.2%		
	LOAD REGULATION	±0.5%			±0.3%			±0.2%		
	SETUP, RISE ,HOLD UP TIME	2.5s, 25ms,--- 12VDC/24VDC/48VDC at full load								
INPUT	VOLTAGE RANGE	A: 9.2 ~18VDC B:18 ~ 36VDC C:36~72VDC								
	EFFICIENCY(Typ.)	68%	76%	75%	72%	76%	79%	70%	77%	78%
	DC CURRENT(Typ.)	1.9A/12VDC		0.9A/24VDC		0.45A/48VDC				
PROTECTION	OVER LOAD	105 ~160% rated output power								
		Protection type : Hiccup mode, recovers automatically after fault condition is removed								
	OVER VOLTAGE	5.75 ~ 6.75V			13.8~ 16.2V			27.6 ~ 32.4V		
		Protection type : Shut down o/p voltage, re-power on to recover								
ENVIRONMENT	WORKING TEMP.	-10 ~ +60℃ (Refer to output load derating curve)								
	WORKING HUMIDITY	20 ~ 90% RH non-condensing								
	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH								
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)								
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min.each along X, Y, Z axes								
SAFETY & EMC	WITHSTAND VOLTAGE	I/P-O/P:2KVAC I/P-FG:1KVAC O/P-FG:0.5KVAC								
	ISOLATION RESISTANCE	I/P-O/P,I/P-FG,O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH								
	EMI CONDUCTION&RADIATION	Compliance to EN55022(CISPR22) CLASS B								
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,6,8;ENV50204,EN55024,light industry level,criteria A								
OTHERS	DIMENSION	78*51*28mm (L*W*H)								
	PACKING	0.18kg,60 PCS/11.8kg								
NOTE	1. All parameters NOT specially mentioned are measured at normal input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.									

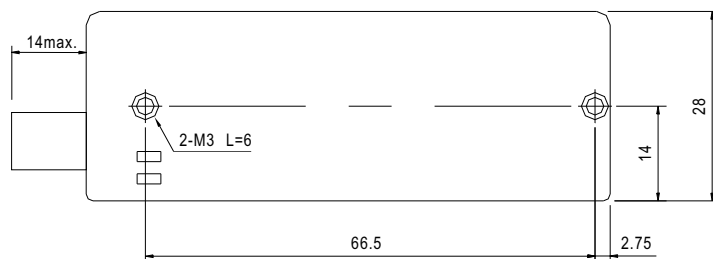
Mechanical Specification

Case No. 931A Unit:mm



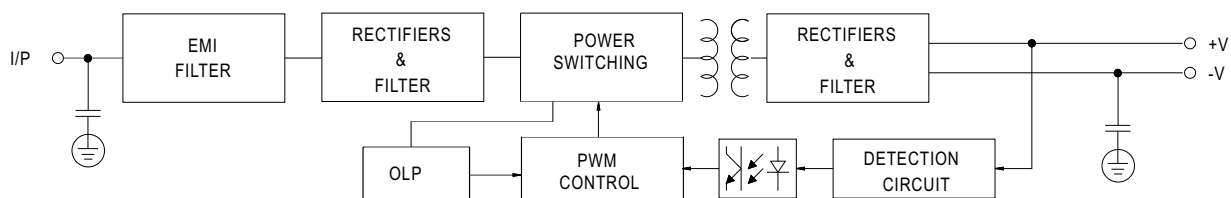
Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	DC INPUT V+	4	DC OUTPUT +V
2	DC INPUT V-	5	DC OUTPUT -V
3	FG $\equiv$		

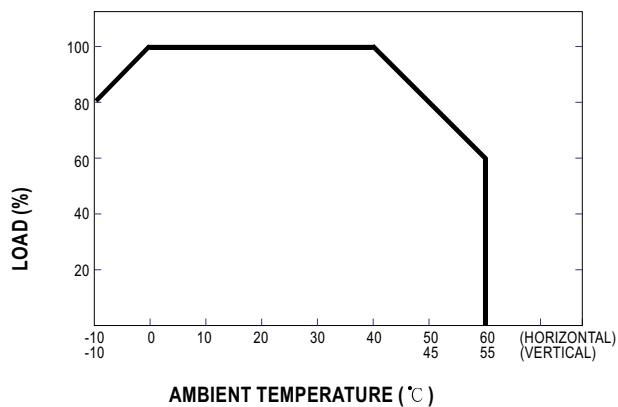


Block Diagram

fosc : 96KHz



Derating Curve



MODEL : SD-15B-5

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 100 mVp-p (Max) V2: mVp-p (Max) V3: mVp-p (Max) V4: mVp-p (Max)	I/P: 24 VDC O/P:FULL LOAD Ta:25°C	V1: 38 mVp-p (Max) V2: mVp-p (Max) V3: mVp-p (Max) V4: mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	4.75 V~ 5.5 V (TYP)	I/P: 24 VDC O/P:MIN LOAD Ta:25°C	5.813V~4.519 V/ 24VDC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -2%~ 2% (Max) V2: %~ % (Max) V3: %~ % (Max) V4: %~ % (Max)	I/P: 18 VDC/36 VDC O/P: FULL/ 0% LOAD Ta:25°C	V1: 0 %~ 0.38 % V2: %~ % V3: %~ % V4: %~ %	P
4	LINE REGULATION	V1: -0.5 %~ 0.5% (Max) V2: %~ % (Max) V3: %~ % (Max) V4: %~ % (Max)	I/P: 18 VDC/36 VDC O/P:FULL LOAD Ta:25°C	V1: 0 %~ -0.12 % V2: %~ % V3: %~ % V4: %~ %	P
5	LOAD REGULATION	V1: -0.5 %~ 0.5 % (Max) V2: %~ % (Max) V3: %~ % (Max) V4: %~ % (Max)	I/P: 24VDC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0 %~ 0.12 % V2: %~ % V3: %~ % V4: %~ %	P
6	CROSS REGULATION	V1: %~ % (Max) V2: %~ % (Max) V3: %~ % (Max) V4: %~ % (Max)	I/P: 24VDC O/P: Testing O/P 60%LOAD Other O/P 40%LOAD Change Ta:25°C	V1: %~ % V2: %~ % V3: %~ % V4: %~ %	N
7	SET UP TIME	24VDC / 2500 ms (Max)	I/P: 24VDC O/P:FULL LOAD Ta:25°C	24VDC / 1674 ms	P
8	RISE TIME	24VDC / 25 ms (Max)	I/P: 24VDC O/P:FULL LOAD Ta:25°C	24VDC / 3 ms	P
9	HOLD UP TIME	24VDC/ ms (Min)	I/P: 24VDC O/P:FULL LOAD Ta:25°C	24VDC / ms	N
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 24VDC O/P:FULL LOAD Ta:25°C	TEST: 2.4 %	P
11	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 24VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	151 mVp-p①	P
12	TRANSIENT RECOVERY TIME	V1: 1000 mVp-p	I/P: 24VDC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	93.6 mVp-p②	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	18VDC~ 36VDC (Typ)	I/P:TESTING O/P:FULL LOAD Ta:25°C	14.975 V~ 264 V	P
			I/P: LOW-LINE- 3V=17.8 V HIGH-LINE+ 15%= 37.8 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ (Typ) NO DAMAGE OSC	I/P: VDC ~ VDC O/P:FULL-MIN LOAD Ta:25°C	TEST:	N
3	POWER FACTOR	/ 24 VDC(TYP)	I/P: 24 VDC O/P:FULL LOAD Ta:25°C	PF= / 24 VDC	N
4	EFFICIENCY	76% (TYP)	I/P: 24 VDC O/P:FULL LOAD Ta:25°C	78.35 %	P
5	INPUT CURRENT	24 VDC / 1.1 A (Max)	I/P: 24 VDC O/P:FULL LOAD Ta:25°C	I =0.80 A/ 24 VDC	P
6	INRUSH CURRENT	24 VDC / A (Max) COLD START	I/P: 24 VDC O/P:FULL LOAD Ta:25°C	I = A/ 24 VDC	N
7.	GAIN-PHASE MARGIN TEST	GAIN MARGIN < -10dB PHASE MARGIN>=60	(1)FULL LOAD/ 36 VDC (2)FULL LOAD/ 24 VDC (3)FULL LOAD/ 18 VDC (4)HALF LOAD/ 36 VDC (5)HALF LOAD/ 24 VDC (6)HALF LOAD/ 18 VDC (7)MIN. LOAD/ 36 VDC (8)MIN LOAD/ 24 VDC (9)MIN LOAD/ 18 VDC Ta:25°C	(1) (2) (3) (4) (5) (6) (7) (8) (9)	N
8	COMONENT STRESS DERATING				P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105%~ 160 % (Typ)	I/P: 36 VDC 18 VDC I/P: 24 VDC O/P: TESTING Ta: 25°C	132.15 % / 36 VDC 140.97% / 18 VDC 135.18 % / 24 VDC ☒ Hiccup Mode ☐ Constant Current Limiting ☐ Shunt down Re-power ON ☐ Foldback Current Limiting	P
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 6.75 V (Typ)	I/P: ----- O/P: MIN LOAD Ta: 25°C	6.23 V / 180 mA ☐ Hiccup Model ☐ Hold ON ☐ Shunt down Re- power ON ☒ Other	P
3	OVER TEMPERATURE PROTECTION	SPEC: > °C O.T.P. NO DAMAGE	I/P: 24 VDC O/P: FULL LOAD	°C / 24 VDC O.T.P. Active ☐ Hiccup Mode ☐ Shunt down Re-power ON ☐ Other ☐ Shut down o/p volotage · recovers automatically after temperature goes down	N
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 36 VDC O/P: FULL LOAD Ta: 25°C	NO DAMAGE ☒ Hiccup Mode ☐ Constant Current Limiting ☐ Shunt down Re-power ON ☐ Other	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	FAN ON/OFF CONTROL	> °C FAN ON < °C FAN OFF	I/P: VDC O/P: FULL LOAD	°C FAN ON °C FAN OFF	N
2	FAN SPEED CONTROL	-----	I/P: VDC O/P: FULL LOAD Ta: 25°C	Fan Voltage= V	N
3	REMOTE CONTROL	Rc+ / Rc- V~ V POWER ON V~ V POWER OFF	I/P: VDC O/P: FULL LOAD Ta: 25°C	V ~ V POWER ON V ~ V POWER OFF	N
4	POWER GOOD SIGNAL	DELAY 10ms ~ 500ms	I/P: VDC I/P: VDC O/P: FULL LOAD Ta: 25°C	ms/ VDC ms/ VDC	N
5	POWER FAIL SIGNAL	> 1ms	I/P: VDC I/P: VDC O/P: FULL LOAD Ta: 25°C	ms/ VDC ms/ VDC	N
6	CURRENT SHARING	PSU1-PSU2 < 10%	I/P: VDC O/P: FULL/50% LOAD Ta: 25°C	O/P: 100% PSU1: W PSU2: W O/P: 50% PSU1: W PSU2: W	N

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																
1	TEMPERATURE RISE TEST	MODEL : 1. ROOM AMBIENT BURN-IN : HRS I/P: VDC O/P: LOAD Ta= °C 2. HIGH AMBIENT BURN-IN : HRS I/P: VDC O/P: LOAD Ta= °C <table><thead><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= °C</th><th>HIGH AMBIENT Ta= °C</th></tr></thead><tbody><tr><td>1</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>2</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>3</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>4</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>5</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>6</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>7</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>8</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>9</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>10</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>11</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>12</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>13</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>14</td><td></td><td></td><td>°C</td><td>°C</td></tr><tr><td>15</td><td></td><td></td><td>°C</td><td>°C</td></tr></tbody></table>			NO	Position	P/N	ROOM AMBIENT Ta= °C	HIGH AMBIENT Ta= °C	1			°C	°C	2			°C	°C	3			°C	°C	4			°C	°C	5			°C	°C	6			°C	°C	7			°C	°C	8			°C	°C	9			°C	°C	10			°C	°C	11			°C	°C	12			°C	°C	13			°C	°C	14			°C	°C	15			°C	°C	同环测
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: VDC O/P: A Ta:25°C	TEST :	同环测																																																																																
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: VDC O/P: % LOAD Ta= °C	TEST :	同环测																																																																																
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL °C NO DAMAGE	I/P: VDC O/P:FULL LOAD Ta= °C HUMIDITY= 95 %R.H	TEST :	同环测																																																																																
5	TEMPERATURE COEFFICIENT	± %(0~50°C)	I/P: VDC O/P:FULL LOAD	± %(0~50°C)	同环测																																																																																
6	VIBRATION TEST	(1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST :	P																																																																																

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 2 KVAC/min I/P-FG:1 KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 2.4 KVAC/min I/P-FG: 1.2 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 0.66 mA I/P-FG: 3.33 mA O/P-FG: 0.27 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	I/P-O/P: 24.7G Ω I/P-FG: 24 G Ω O/P-FG: 18.2 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	mΩ	N
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 ☐ CLASS A ☐ CLASS D	I/P: 24 VDC /50HZ O/P:FULL LOAD Ta:25°C	☐ PASS ☐ FAIL	N
2	CONDUCTION	☐ EN55022 ☐ EN55011 ☐ CLASS A ☐ CLASS B	I/P: 24 VDC (50HZ) O/P:FULL/50% LOAD Ta:25°C	☐ PASS ☐ FAIL Test by certified Lab	N
3	RADIATION	☒ EN55022 ☐ EN55011 ☐ CLASS A ☒ CLASS B	I/P: 24 VDC (50HZ) O/P:FULL LOAD Ta:25°C	☒ PASS ☐ FAIL Test by certified Lab	P
4	E.S.D	EN61000-4-2 ☒ LIGHT INDUSTRY ☐ INDUSTRY AIR:8KV / Contact:4KV	I/P: 24 VDC /50HZ O/P:FULL LOAD Ta:25°C	☐ CRITERIA A ☐ CRITERIA B	N
5	E.F.T	EN61000-4-4 ☒ LIGHT INDUSTRY INPUT: 1KV ☐ INDUSTRY INPUT: 2KV	I/P: 24 VDC /50HZ O/P:FULL LOAD Ta:25°C	☐ CRITERIA A ☐ CRITERIA B	N
6	SURGE	IEC61000-4-5 ☐ LIGHT INDUSTRY L-N :1KV L,N-PE:2KV ☐ INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 24 VDC /50HZ O/P:FULL LOAD Ta:25°C	☐ CRITERIA A ☐ CRITERIA B	N
7	Test by certified Lab & Test Report Prepare				

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