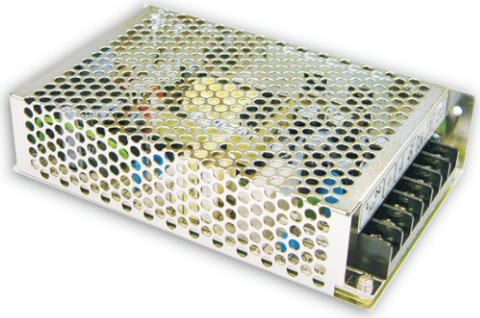
JAMECO ELECTRONICS

Jameco SKU Number: 693290

MEAN WELL

100W Single Output Switching Power Supply

RS-100 series



Features :

- Universal AC input / Full range
- Protections:Short circuit/Over load/Over voltage
- Cooling by free air convection
- LED indicator for power on
- 100% full load burn-in test
- All using 105℃ long life electrolytic capacitors
- Withstand 300VAC surge input for 5 second
- High operating temperature up to 70℃
- Withstand 5G vibration test
- High efficiency, long life and high reliability
- 3 years warranty

SPECIFICATION

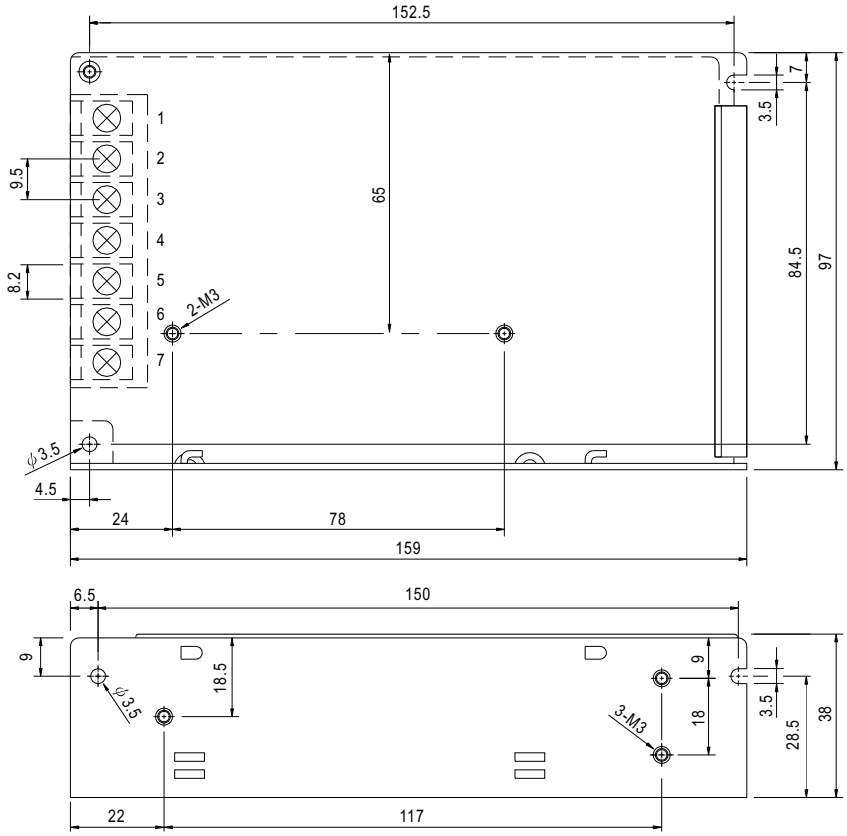
MODEL		RS-100-3.3	RS-100-5	RS-100-12	RS-100-15	RS-100-24	RS-100-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	20A	16A	8.5A	7A	4.5A	2.3A
	CURRENT RANGE	0 ~ 20A	0 ~ 16A	0 ~ 8.5A	0 ~ 7A	0 ~ 4.5A	0 ~ 2.3A
	RATED POWER	66W	80W	102W	105W	108W	110.4W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	120mVp-p	120mVp-p	120mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	3.2V ~ 3.5V	4.75 ~ 5.5V	11.4 ~ 13.2V	14.25 ~ 16.5V	22.8 ~ 26.4V	45.6 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION Note.4	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION Note.5	±2.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	500ms, 20ms/230VAC 1200ms, 30ms/115VAC at full load					
	HOLD TIME (Typ.)	100ms/230VAC 18ms/115VAC at full load					
INPUT	VOLTAGE RANGE	88 ~ 264VAC 125 ~ 373VDC (Withstand 300VAC surge for 5sec. Without damage)					
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY (Typ.)	74%	77%	81%	82%	84%	84%
	AC CURRENT (Typ.)	2.5A/115VAC 1.5A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START 40A/230VAC					
	LEAKAGE CURRENT	<2mA / 240VAC					
PROTECTION	OVER LOAD	110 ~ 150% rated output power					
		Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	3.8 ~ 4.45V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	55.2 ~ 64.8V
		Protection type : Hiccup mode, recovers automatically after fault condition is removed					
ENVIRONMENT	WORKING TEMP.	-25 ~ +70℃ (Refer to output load derating curve)					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)					
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes					
SAFETY & EMC (Note 6)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 Approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC					
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B					
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3					
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN61000-6-2 (EN50082-2) heavy industry level, criteria A					
OTHERS	MTBF	260.8Khrs min. MIL-HDBK-217F (25℃)					
	DIMENSION	159*97*38mm (L*W*H)					
	PACKING	0.6Kg; 24pcs/15.4Kg/0.7CUFT					

NOTE

1. All parameters NOT specially mentioned are measured at 230VAC 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. Line regulation is measured from low line to high line at rated load.
5. Load regulation is measured from 0% to 100% rated load.
6. 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.
7. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time.

■ Mechanical Specification

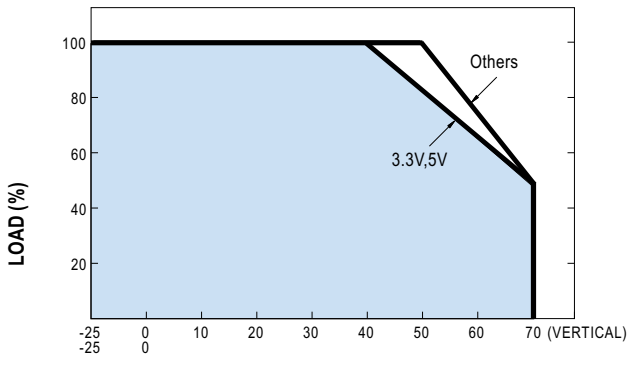
Case No. 901C Unit:mm



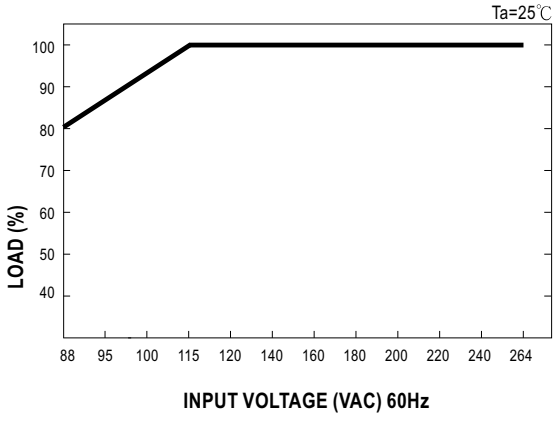
Terminal Pin. No Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4,5	DC OUTPUT -V
2	AC/N	6,7	DC OUTPUT +V
3	FG ⏚		

■ Output Derating



■ Static Characteristics



MODEL：RS-100-48

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 200 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	V1: 89 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 45.6V~ 52.8 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	43.2V~ 54 V/ 230VAC 43.2V~ 54 V/ 115VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1: -1 %~ 1% (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ 0 % LOAD Ta:25℃	V1: 0.05 %~ -0.05 %	P
4	LINE REGULATION	V1:-0.5 %~ 0.5 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0.05 %~ -0.05 %	P
5	LOAD REGULATION	V1: -0.5 %~0.5 % (Max)	I/P:230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.05 %~ -0.05 %	P
6	SET UP TIME	230 VAC/500 ms (Max) 115 VAC/1200 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 172 ms 115VAC/ 160 ms	P
7	RISE TIME	230 VAC/20 ms (Max) 115 VAC/30 ms (Max)	I/P:230 VAC I/P:115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 9 ms 115VAC/ 10 ms	P
8	HOLD UP TIME	230 VAC/ 50 ms (TYP) 115 VAC/ 10 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 99 ms 115VAC/ 18 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
10	DYNAMIC LOAD	V1: 4800 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	463 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	88VAC~ 264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	70 V~ 264 V	P
			I/P: LOW-LINE-3V= 85 V HIGH-LINE+15%= 300 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	47 HZ ~ 63 HZ NO DAMAGE OSC	I/P: 88 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	EFFICIENCY	84 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	84.3%	P
4	INPUT CURRENT	230 V/ 1.5 A(TYP) 115 V/ 2.5 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 1.3 A/ 230 VAC I = 2 A/ 115 VAC	P
5	INRUSH CURRENT	230 V/ 40 A (TYP) COLD START	I/P:230 VAC O/P:FULL LOAD Ta:25℃	I = 33 A/ 230 VAC	P
6	LEAKAGE CURRENT	< 2 mA / 240 VAC	I/P:254 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.5 mA N-FG: 0.5 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	125 %/ 230 VAC 124 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1: 55.2 V~ 64.8	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	63 V/ 230 VAC 63 V/ 115 VAC Hiccup Model	P
3	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: Full LOAD Ta:25℃	NO DAMAGE Hiccup Mode	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL： RS-100-24
1. ROOM AMBIENT BURN-IN： 2 HRS
I/P: 230 VAC O/P: FULL LOAD Ta=29.5℃
2. HIGH AMBIENT BURN-IN： 12 HRS
I/P: 230 VAC O/P: FULL LOAD Ta= 50.4 ℃

<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 29.5 ℃</th><th>HIGH AMBIENT Ta= 50.4 ℃</th></tr>
<tr><td>1</td><td>BD1</td><td>D3SB80 4A/800V SHI</td><td>75.9℃</td><td>93.0℃</td></tr>
<tr><td>2</td><td>LF1</td><td>LF-058</td><td>75.2℃</td><td>90.9℃</td></tr>
<tr><td>3</td><td>C5</td><td>150U/400V HU4 105℃</td><td>61.2℃</td><td>78.6℃</td></tr>
<tr><td>4</td><td>R2</td><td>330Ω /2W R/MO</td><td>106.4℃</td><td>118.7℃</td></tr>
<tr><td>5</td><td>ZD1</td><td>P6KE300A PAN JIT</td><td>80.5℃</td><td>96.3℃</td></tr>
<tr><td>6</td><td>D1</td><td>HER208 2A/1KV REC</td><td>87.9℃</td><td>104.1℃</td></tr>
<tr><td>7</td><td>Q1</td><td>2SK2082 9A/800V FUJI</td><td>83.7℃</td><td>104.1℃</td></tr>
<tr><td>8</td><td>U1</td><td>1203 ON</td><td>83.8℃</td><td>101.3℃</td></tr>
<tr><td>9</td><td>C10</td><td>100U/35V RUB 105℃ YXF</td><td>76.1℃</td><td>92.8℃</td></tr>
<tr><td>10</td><td>T1 CORE</td><td>TF-1043 LS</td><td>89.9℃</td><td>107.4℃</td></tr>
<tr><td>11</td><td>T1 COIL</td><td>TF-1043 LS</td><td>89.2℃</td><td>105.8℃</td></tr>
<tr><td>12</td><td>L60</td><td>TR-405</td><td>108.6℃</td><td>120.3℃</td></tr>
<tr><td>13</td><td>C64</td><td>1000U/35V NCC 105℃ KY</td><td>76.1℃</td><td>93.5℃</td></tr>
<tr><td>14</td><td>D60</td><td>S20LC20U 20A/200V SHI</td><td>83.9℃</td><td>101.1℃</td></tr>
<tr><td>15</td><td></td><td></td><td></td><td></td></tr>
</table>
</td><td>P</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P: 122% LOAD
Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>I/P: 230 VAC
O/P: 100 % LOAD
Ta=-25 ℃</td><td>TEST： OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12 HOURS
IN CHAMBER ON
CONTROL 50 ℃
NO DAMAGE</td><td>I/P: 272 VAC
O/P:FULL LOAD
Ta= 50℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230 VAC
O/P:FULL LOAD</td><td>± 0.01 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">1 Set Operating at I/P: 230 VAC NO LOAD
(1) Waveform: Sine Wave
(2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle
(4) Acceleration:5G
(5) Test Time:1 hour in each axis (X.Y.Z)
(6) Ta:25℃</td><td>TEST： OK</td><td>P</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25℃	I/P-O/P: 4.92 mA I/P-FG: 4.59 mA O/P-FG: 2.46 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℃	I/P-O/P: 9G Ω I/P-FG: 6 G Ω O/P-FG: 15 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	4 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R50045826 UL: File NO ：E183223			P

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SUPPOSE C 64 IS THE MOST CRITICAL COMPONENT I/P: 230 VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 123687 HRS I/P: 230 VAC O/P:FULL LOAD Ta= 50 ℃ LIFE TIME= 27838 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 260.8K HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) **Peak Voltage**	Q1 Rated 2SK2082 :800 V/9 A	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 408 V (2) 568 V (3) 700 V	P
2	Diode Peak **Voltage**	D61 Rated FCF16A6B : 600 V/ 16	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 466 V (2) 548 V (3) 518 V	P
3	Clamp Diode Peak **Voltage**	D1 Rated HER208: 1K V/2 A	I/P:High-Line +3V =267 V O/P: (1)Full Load (2) Dynamic Load 90%Duty/1KHz Ta:25℃	(1) 562 V (2) 504 V	P
4	**Input Capacitor Voltage**	C 5 Rated :150u / 400 V	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	(1) 390 V (2) 370 V (3) 370 V	P
5	**Control IC Voltage Test**	U 1 Rated 1203 : 16 V	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	(1) 14.6 V (2) 14.6 V (3) 14.1 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/1/19	RD SMAPLE	PASS	VICENT TSENG	MAX LIN
2004/7/7	PRODUCT SAMPLE A404B33	PASS	VICENT TSENG	MAX LIN
2004/8/16	PRODUCT SAMPLE A407C27	PASS	VICENT TSENG	MAX LIN

2003/12/12 A50-F023