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Jameco Part Number 1953938



200W Single Output DC-DC Converter

SD-200 series



■ Features :

- 2:1 wide input range
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 1500VDC I/O isolation
- Cooling by free air convection
- 100% full load burn-in test
- 24V and 48V input voltage design refer to LVD
- 2 years warranty

c us (for SD-200C-24 type only) **CB** (for D type only)

SPECIFICATION

MODEL		SD-200B				SD-200C				
OUTPUT	DC VOLTAGE	5V	12V	24V	48V	5V	12V	24V	48V	
	RATED CURRENT	34A	16.7A	8.4A	4.2A	40A	16.7A	8.4A	4.2A	
	CURRENT RANGE	0 ~ 34A	0 ~ 16.7A	0 ~ 8.4A	0 ~ 4.2A	0 ~ 40A	0 ~ 16.7A	0 ~ 8.4A	0 ~ 4.2A	
	RATED POWER	170W	200.4W	201.6W	201.6W	200W	200.4W	201.6W	201.6W	
	RIPPLE & NOISE (max.) Note.2	100mVp-p	120mVp-p	150mVp-p	200mVp-p	100mVp-p	120mVp-p	150mVp-p	200mVp-p	
	VOLTAGE ADJ. RANGE	4.5 ~ 5.5VDC	11 ~ 16VDC	23 ~ 30VDC	43 ~ 53VDC	4.5 ~ 5.5VDC	11 ~ 16VDC	23 ~ 30VDC	43 ~ 53VDC	
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%	±2.0%	±1.0%	±1.0%	±1.0%	
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
SETUP, RISE TIME	300ms, 50ms at full load									
INPUT	VOLTAGE RANGE	B:19 ~ 36VDC		C:36 ~ 72VDC		D:72 ~ 144VDC				
	EFFICIENCY (Typ.)	79%	82%	85%	86%	81%	84%	86%	86%	
	DC CURRENT (Typ.)	10.8A/24V	10.6A/24V	10.4A/24V	10.4A/24V	5.4A/48V	5.2A/48V	6.7A/48V	5A/48V	
	INRUSH CURRENT (Typ.)	C:45A/48VDC		D:45A/96VDC						
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Shut down o/p voltage, re-power on to recover								
	OVER VOLTAGE	5.75 ~ 6.75V	16.8 ~ 20V	31.5 ~ 37.5V	53 ~ 65V	5.75 ~ 6.75V	16.8 ~ 20V	31.5 ~ 37.5V	53 ~ 65V	
	OVER TEMPERATURE	95°C ±5°C (100°C ±5°C for SD-200B-12 only) TSW1 detect on main power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down								
ENVIRONMENT	WORKING TEMP.	-20 ~ +60°C (Refer to output load derating curve)								
	WORKING HUMIDITY	20 ~ 90% RH non-condensing								
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH								
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)								
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes								
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1 approved (for SD-200C-24 type only), IEC60950-1 CB approved by TUV (for D type only)								
	WITHSTAND VOLTAGE	I/P-O/P:1.5KVAC 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								
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,6,8; ENV50204, light industry level, criteria A								
OTHERS	MTBF	218.2K hrs min. MIL-HDBK-217F (25°C)								
	DIMENSION	215*115*50mm (L*W*H)								
	PACKING	1.1Kg; 12pcs/14.4Kg/0.92CUFT								
NOTE	<ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 24,48,96VDC input, rated load and 25°C 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. 									



■ Features :

- 2:1 wide input range
- Protections: Short circuit / Overload / Over voltage / Over temperature
- 1500VDC I/O isolation
- Cooling by free air convection
- 100% full load burn-in test
- 24V and 48V input voltage design refer to LVD
- 2 years warranty

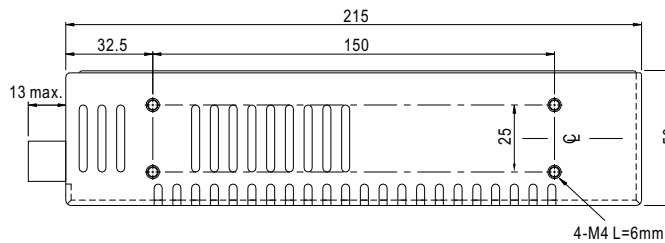
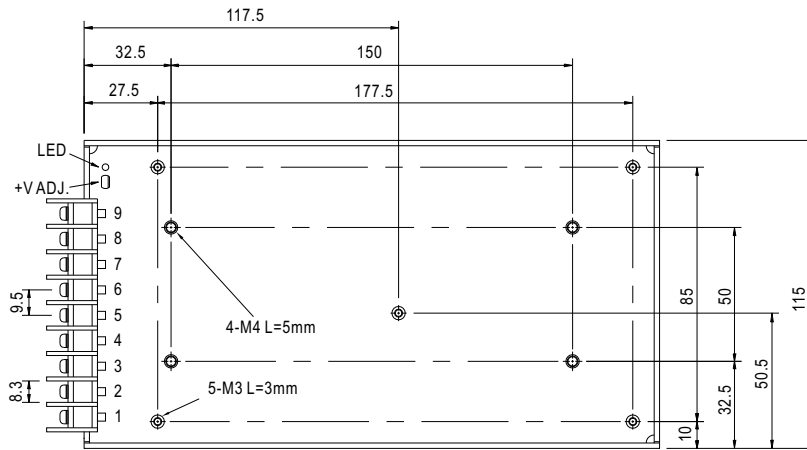
CB (for D type only) **CE**

SPECIFICATION

MODEL		SD-200D			
OUTPUT	DC VOLTAGE	5V	12V	24V	48V
	RATED CURRENT	40A	16.7A	8.4A	4.2A
	CURRENT RANGE	0 ~ 40A	0 ~ 16.7A	0 ~ 8.4A	0 ~ 4.2A
	RATED POWER	200W	200.4W	201.6W	201.6W
	RIPPLE & NOISE (max.) Note.2	100mVp-p	120mVp-p	150mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	4.5 ~ 5.5VDC	11 ~ 16VDC	23 ~ 30VDC	43 ~ 53VDC
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%
SETUP, RISE TIME	300ms, 50ms at full load				
INPUT	VOLTAGE RANGE	B:19 ~ 36VDC C:36 ~ 72VDC D:72 ~ 144VDC			
	EFFICIENCY (Typ.)	82%	82%	84%	90%
	DC CURRENT (Typ.)	3.5A/96V	3.5A/96V	3.5A/96V	3.5A/96V
	INRUSH CURRENT (Typ.)	C:45A/48VDC D:45A/96VDC			
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Shut down o/p voltage, re-power on to recover			
	OVER VOLTAGE	5.75 ~ 6.75V	16.8 ~ 20V	31.5 ~ 37.5V	53 ~ 65V
	OVER TEMPERATURE	85°C ±5°C (TSW1) detect on main power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down			
ENVIRONMENT	WORKING TEMP.	-20 ~ +60°C (Refer to output load derating curve)			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH			
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)			
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes			
SAFETY & EMC (Note 4)	SAFETY STANDARDS	IEC60950-1 CB approved by TUV (for D type only)			
	WITHSTAND VOLTAGE	I/P-O/P:1.5KVAC 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			
OTHERS	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,6,8; ENV50204, light industry level, criteria A			
	MTBF	218.2K hrs min. MIL-HDBK-217F (25°C)			
	DIMENSION	215*115*50mm (L*W*H)			
NOTE	PACKING	1.1Kg; 12pcs/14.4Kg/0.92CUFT			
		1. All parameters NOT specially mentioned are measured at 24,48,96VDC input, rated load and 25°C 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

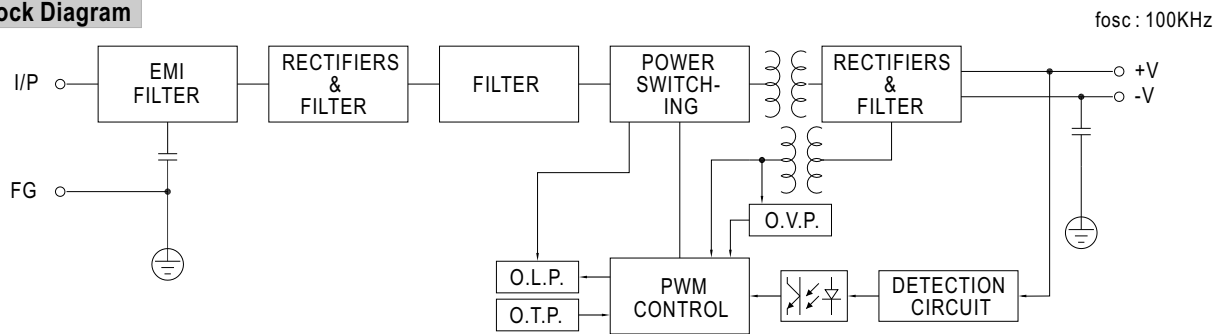
Case No. 912B Unit:mm



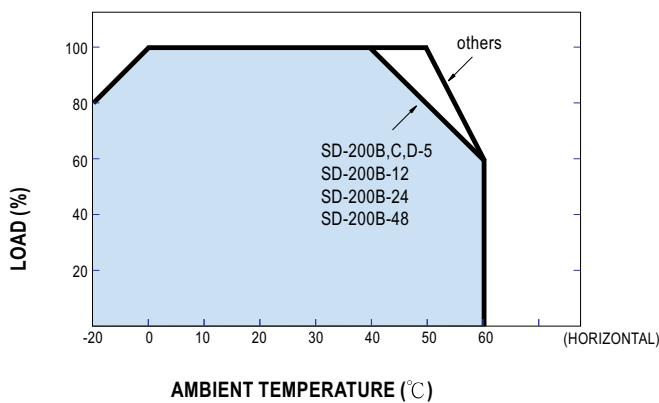
Terminal Pin No. Assignment :

Pin No.	Assignment	Pin No.	Assignment
1	DC INPUT V+	4,5,6	DC OUTPUT V-
2	DC INPUT V-	7,8,9	DC OUTPUT V+
3	FG \perp		

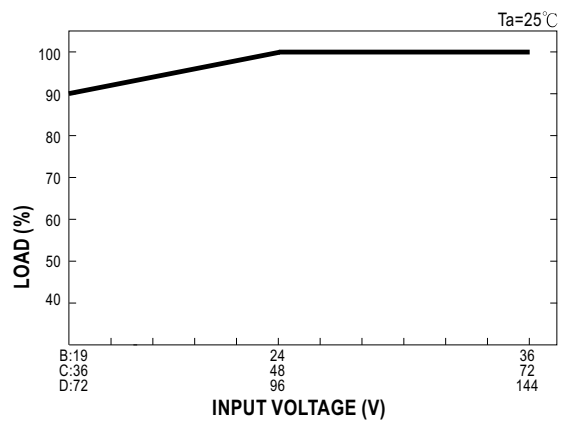
Block Diagram



Derating Curve



Static Characteristics





MODEL : SD-200C-48

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 200 mVp-p (Max)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	V1: 11 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1: 43 V- 53 V	I/P: 48 VDC O/P:MIN LOAD Ta:25°C	41.92 V- 56.55 V	P
3	OUTPUT VOLTAGE TOLERANCE	V1: 1 %- -1 % (Max)	I/P:48 VDC / 72 VDC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.05 %- -0.05 %	P
4	LINE REGULATION	V1: 0.5 %- -0.5 % (Max)	I/P:48 VDC / 72 VDC O/P:FULL LOAD Ta:25°C	V1: 0.02 %- -0.02 %	P
5	LOAD REGULATION	V1: 1 %- -1 % (Max)	I/P: 48 VDC O/P:FULL -MIN LOAD Ta:25°C	V1: 0.02 %- -0.02 %	P
6	SET UP TIME	300 ms (Max)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	50 ms	P
7	RISE TIME	50 ms (Max)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	29 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	TEST: < 5 %	P
9	DYNAMIC LOAD	V1: 4800 mVp-p	I/P: 48 VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	129 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	36VDC - 72 VDC	I/P: TESTING O/P: FULL LOAD Ta: 25°C	25 V - 72 V	P
			I/P: LOW-LINE-0.2V= 35.8 V HIGH-LINE+5%= 75.6 V O/P: FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	EFFICIENCY	86% (TYP)	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	88.7 %	P
3	INPUT CURRENT	5A (TYP)	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	I = 4.8 A	P
4	INRUSH CURRENT	45 A (TYP) COLD START	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	I = 25 A	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 % - 135 %	I/P: 48 VDC O/P: TESTING Ta: 25°C	119 % Shunt down Re-power ON	P
2	OVER VOLTAGE PROTECTION	CH1: 53 V - 65 V	I/P: 48 VDC O/P: MIN LOAD Ta: 25°C	60.5 V Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: 95 ± 5 °C O.T.P. NO DAMAGE	I/P: 48 VDC O/P: FULL LOAD	O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Shunt down Re-power ON	P



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: 1.8 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 4.44 mA I/P-FG: 4.67 mA O/P-FG: 6.38 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100M Ω I/P-FG: 500VDC>100M Ω O/P-FG:500VDC>100M Ω	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 2 G Ω I/P-FG: 2 G Ω O/P-FG: 2 G Ω NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 m Ω	40 A / 2min Ta:25°C	11 m Ω	P
4	APPROVAL	TUV: Certificate NO : UL: File NO :			N/A

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55022 CLASS B	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
2	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I / I/P: 48 VDC O/P:FULL LOAD Ta:25°C	CRITERIA A	P
3	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	CRITERIA A	P
4	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 111 IS THE MOST CRITICAL COMPONENT I/P: 48 VDC O/P:FULL LOAD Ta= 25 °C LIFE TIME= 287954 HRS I/P: 48 VDC O/P:FULL LOAD Ta= 50 °C LIFE TIME= 72019 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 218.2K 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	Q 1 Rated IRFP460A: 500V 20A	I/P:High-Line +3V =75 VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 134 V (2) 181 V (3) 181 V	P
2	Diode Peak Voltage	D 100 Rated PA095C6 : 600 V 20 A	I/P:High-Line +3V = 75 VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25°C	(1) 196 V (2) 494 V (3) 472 V	P
3	Input Capacitor Voltage	C 8 Rated : 1000 u / 100 V / 105°C	I/P:High-Line +3V = 75 VDC O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 77.2 V (2) 76.8 V (3) 76.8 V	P
4	Control IC Voltage Test	U 1 Rated SG3525 : 35 V	I/P:High-Line +3V = 75 VDC O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25°C	(1) 14.2 V (2) 14 V (3) 14 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2004/6/7	RD SMAPLE	PASS	VINCENT TSENG	MAX LIN
2004/8/20	PRODUCT SMAPLE A407A22	PASS	VINCENT TSENG	MAX LIN
2004/11/25	PRODUCT SMAPLE W0411A24	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023