



Jameco SKU Number: 2102001

10W DC-DC Regulated Single Output

NSD10-S series

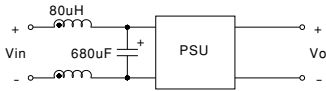


■ Features :

- Wide 4:1 DC input range
- Protections: Short circuit / Overload / Over voltage
- 1000VDC I/O isolation
- Built-in EMI filter
- Cooling by free air convection
- Built-in remote ON-OFF control
- 100% full load burn-in test
- Low cost
- High reliability
- 2 years warranty

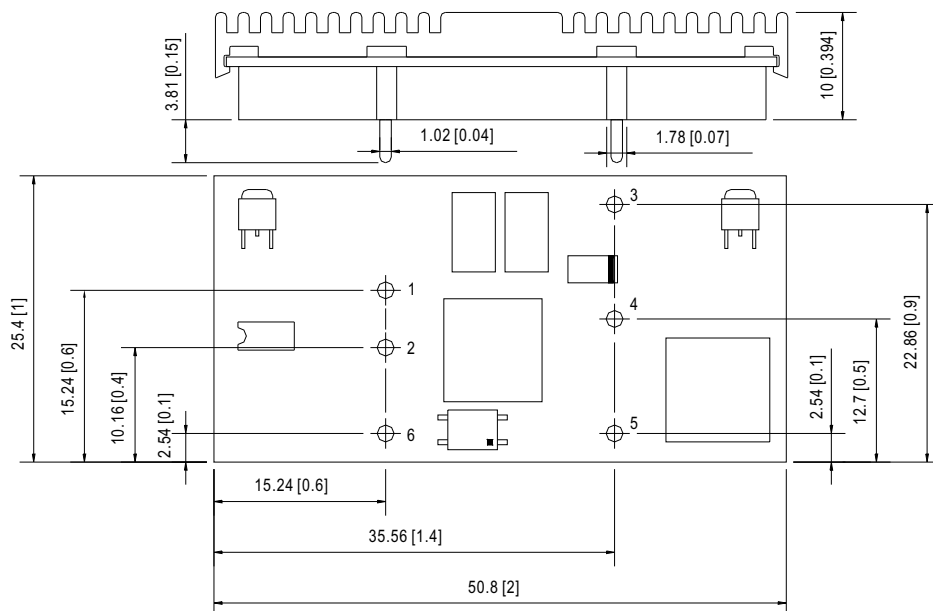


SPECIFICATION

MODEL		NSD10-12S3	NSD10-12S5	NSD10-12S9	NSD10-12S12	NSD10-12S15	NSD10-48S3	NSD10-48S5	NSD10-48S9	NSD10-48S12	NSD10-48S15
OUTPUT	DC VOLTAGE	3.3V	5V	9V	12V	15V	3.3V	5V	9V	12V	15V
	RATED CURRENT	2.5A	2A	1.1A	0.83A	0.67A	2.5A	2A	1.1A	0.83A	0.67A
	CURRENT RANGE	0.12 ~ 2.5A	0.1 ~ 2A	0.05 ~ 1.1A	0.04 ~ 0.83A	0.03 ~ 0.67A	0.12 ~ 2.5A	0.1 ~ 2A	0.05 ~ 1.1A	0.04 ~ 0.83A	0.03 ~ 0.67A
	RATED POWER	8.25W	10W	9.9W	9.96W	10.05W	8.25W	10W	9.9W	9.96W	10.05W
	CAPACITIVE LOAD (max.)	3300uF									
	RIPPLE & NOISE (max.) Note.2	75mVp-p									
	VOLTAGE TOLERANCE Note.3	±2.0% max.									
	LINE REGULATION	±1.0%									
INPUT	LOAD REGULATION	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	RATED DC INPUT	12VDC					48VDC				
	VOLTAGE RANGE	9.8 ~ 36VDC					22 ~ 72VDC				
	EFFICIENCY (Typ.)	72%	75%	78%	79%	80%	74%	77%	78%	79%	80%
	DC CURRENT	1.4A/12VDC					0.4A/48VDC				
SHUTDOWN IDLE CURRENT		20mA/12VDC									
PROTECTION	OVERLOAD	Above 105% rated output power Protection type : Over power limiting, recovers automatically after fault condition is removed									
	OVER VOLTAGE(CLAMP)	3.8 ~ 4.95V	5.75 ~ 7.5V	10.4 ~ 13.5V	13.8 ~ 18V	17.3 ~ 22.5V	3.8 ~ 4.95V	5.75 ~ 7.5V	10.4 ~ 13.5V	13.8 ~ 18V	17.3 ~ 22.5V
	SHORT CIRCUIT Note.4	Recovers automatically after fault condition is removed									
FUNCTION	ON/OFF CONTROL	Logic "1" OPEN: ON logic "0" GND: OFF									
ENVIRONMENT	WORKING TEMP.	-25 ~ +70℃									
	WORKING HUMIDITY	0% ~ 95% RH max.									
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 0 ~ 95% RH									
	TEMP. COEFFICIENT	±0.03%/℃ (0~60℃)									
SAFETY & EMC (Note 5)	SAFETY STANDARDS	UL60950-1 approved, Design refer to TUV EN60950-1									
	ISOLATION VOLTAGE	I/P-O/P:1KVDC									
	ISOLATION RESISTANCE	I/P-O/P: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; EN55024, light industry level, criteria A									
OTHERS	MTBF	2138.2K hrs min. MIL-HDBK-217F (25℃)									
	DIMENSION	50.8*25.4*10mm (2**1**0.394") (L*W*H)									
	PACKING	0.02Kg; 300pcs/7Kg/0.97CUFT									
NOTE		1. All parameters NOT specially mentioned are measured at 12, 48VDC 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. Short circuit not more than 60 seconds. 5. 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. 6. To insure proper operation, a 220uF/100V electrolytic capacitor with Esr <1Ω must be added to the input line. 7. EMC filter suggestion: 									

■ Mechanical Specification

Unit:mm[inch]

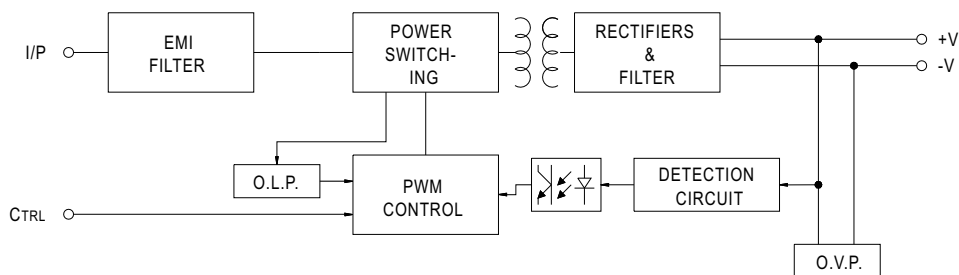


Pin. No Assignment

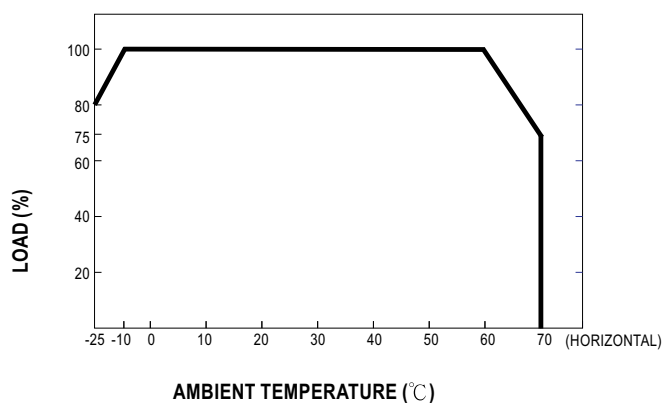
Pin No.	Assignment	Pin No.	Assignment
1	+INPUT	4	N/C
2	-INPUT(GND)	5	-OUT
3	+OUT	6	CONTROL

■ Block Diagram

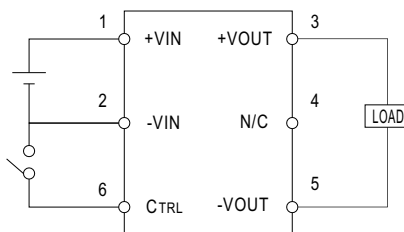
fosc : 350KHz



Derating Curve



■ ON/OFF Control



CONTROL INPUT.....PIN6
CONTROL COMMON.....PIN2
LOGIC COMPATIBILITY.....CMOS OR OPEN COLLECTOR TTL
CONTROL VOLTAGE
ON.....+5.5VDC min. OR OPEN CIRCUIT
OFF.....+2.5VDC max. OR SHORT TO PIN2

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 75 mVp-p (Max)	I/P: 12VDC O/P:FULL LOAD Ta:25°C	V1: 21 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1: 2 %~ -2 % (Max)	I/P: 9.8VDC / 36VDC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.3 %~ -0.3 %	P
3	LINE REGULATION	V1: 1%~ -1 % (Max)	I/P: 9.8VDC ~ 36VDC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %	P
4	LOAD REGULATION	V1: 1 %~ -1 % (Max)	I/P: 12VDC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.25 %~ -0.25 %	P
5	OVER/UNDERSHOOT TEST	< ±5%	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	TEST: < 5%	P
6	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 12VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	287mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	9.8VDC~ 36 VDC	I/P:TESTING O/P:FULL LOAD Ta:25°C	8.7 V~ 36 V	P
			I/P: LOW-LINE-0.2V= 9.6 V HIGH-LINE+5%= 37.8 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	EFFICIENCY	75 % (TYP)	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	79.2 %	P
3	INPUT CURRENT	12 VDC/ 1.4A(TYP)	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	I = 1.01 A	P
4	SHUTDOWN IDLE CURRENT	20 mA / 12VDC	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	17.4 mA / 12VDC	p

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105%	I/P: 12VDC O/P: TESTING Ta: 25°C	159 % Over power Limiting, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH1: 5.75 V~ 7.5V	I/P: DC SOURCE O/P: MIN LOAD Ta: 25°C	6.3 V / CH1 0.1A Recovers automatically after fault condition is removed	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 60 SECOND NO DAMAGE	I/P: 36 VDC O/P: FULL LOAD Ta: 25°C	NO DAMAGE Constant Current Limiting	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	Logic "1" OPEN : ON Logic "0" GON : OFF	I/P: 12VDC O/P: FULL LOAD Ta: 25°C	Logic "1" : POWER ON Logic "0" : POWER OFF	p

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																		
1	TEMPERATURE RISE TEST	MODEL : NSD10-12S5 1. ROOM AMBIENT BURN-IN : 1.5 HRS I/P: 12 VDC O/P: FULL LOAD Ta= 25.1 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 12 VDC O/P: FULL LOAD Ta= 58.2 °C <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 25.1°C</th><th>HIGH AMBIENT Ta= 58.2°C</th></tr><tr><td>1</td><td>D100</td><td>STPS15L45CB-TR 15A/45V</td><td>72.4°C</td><td>103.5°C</td></tr><tr><td>2</td><td>L100</td><td>TS-021</td><td>69.7°C</td><td>101.2°C</td></tr><tr><td>3</td><td>C106</td><td>100U/10V 125°C</td><td>66.6°C</td><td>98.0°C</td></tr><tr><td>4</td><td>T1 COIL</td><td>TS-015</td><td>76.3°C</td><td>108.5°C</td></tr><tr><td>5</td><td>Q1</td><td>BCX56 1A/80V</td><td>67.8°C</td><td>99.6°C</td></tr><tr><td>6</td><td>Q2</td><td>CET1012 10A/120V</td><td>71.2°C</td><td>103.9°C</td></tr><tr><td>7</td><td>L1</td><td>1UH</td><td>67.3°C</td><td>99.0°C</td></tr><tr><td>8</td><td>U1</td><td>TL3843</td><td>73.1°C</td><td>104.8°C</td></tr><tr><td>9</td><td>CASE</td><td>上方中間處</td><td>65.3°C</td><td>97.4°C</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 25.1°C	HIGH AMBIENT Ta= 58.2°C	1	D100	STPS15L45CB-TR 15A/45V	72.4°C	103.5°C	2	L100	TS-021	69.7°C	101.2°C	3	C106	100U/10V 125°C	66.6°C	98.0°C	4	T1 COIL	TS-015	76.3°C	108.5°C	5	Q1	BCX56 1A/80V	67.8°C	99.6°C	6	Q2	CET1012 10A/120V	71.2°C	103.9°C	7	L1	1UH	67.3°C	99.0°C	8	U1	TL3843	73.1°C	104.8°C	9	CASE	上方中間處	65.3°C	97.4°C	P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 12 VDC O/P: 120 % LOAD Ta:25°C	TEST : OK	P																																																		
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 12VDC O/P: 100% LOAD Ta= -25°C	TEST : OK	P																																																		
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 °C NO DAMAGE	I/P: 39 VDC O/P:FULL LOAD Ta= 60 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																		
5	TEMPERATURE COEFFICIENT	± 0.03 %(0~60°C)	I/P: 12 VDC O/P:FULL LOAD	± 0.005 %(0~60°C)	P																																																		
6	VIBRATION TEST	1 Carton & 1 Set (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 : OK	P																																																		

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 1.5KVDC/min	I/P-O/P: 1.8KVDC/min Ta:25°C	I/P-O/P: 0.002 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C / 70% RH	I/P-O/P: 30 G Ω NO DAMAGE	p
3	APPROVAL	TUV: Certificate NO : UL: File NO : E183223			P



10W DC-DC Regulated Single Output

NSD10-S series

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55022 CLASS B	I/P: 12VDC O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	P
2	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	CRITERIA A	P
3	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 12 VDC O/P:FULL LOAD Ta:25°C	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	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 2138.2K 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	Q2 Rated CUE1012 : 120 V 10 A	I/P:High-Line +3V = 39 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 73.2 V (2) 82.4 V	P
2	Diode Peak Voltage	D100 Rated STPS15L45CB 15A/45V	I/P:High-Line +3V = 39 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 31 V (2) 11 V	P
3	Input Capacitor Voltage	C5 Rated : 105 / 50V	I/P:High-Line +3V = 39 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) 38.71 V (2) 38.75 V (3) 38.75 V	P
4	Control IC Voltage Test	U1 Rated TL3843D : 20 V	I/P:High-Line +3V = 39 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) 14.66 V (2) 13.45 V (3) 14.66 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007/1/11	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2007/3/5	PRODUCT SAMPLE W0702A47	PASS	VINCENT TSENG	MAX LIN
2007/5/24	PRODUCT SAMPLE W0705B71	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023