



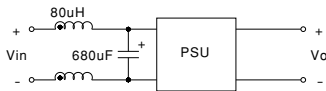
#### ■ Features :

- 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



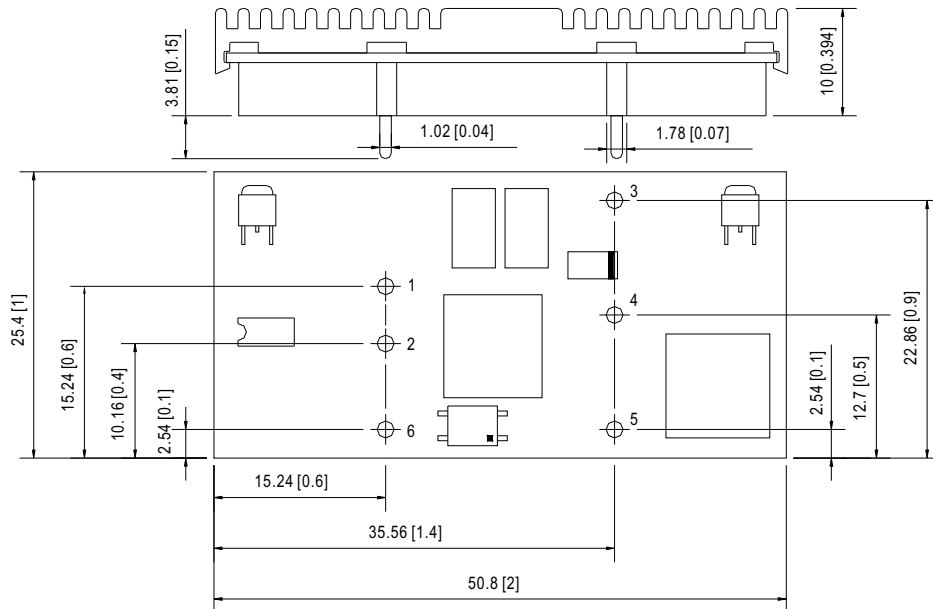
#### SPECIFICATION

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%	
	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				
PROTECTION	SHUTDOWN IDLE CURRENT	20mA/12VDC									
	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
FUNCTION	SHORT CIRCUIT Note.4	Recovers automatically after fault condition is removed									
	ON/OFF CONTROL	Logic "1" OPEN: ON logic "0" GND: OFF									
ENVIRONMENT	WORKING TEMP.	-25 ~ +70°C									
	WORKING HUMIDITY	0% ~ 95% RH max.									
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 0 ~ 95% RH									
	TEMP. COEFFICIENT	±0.03%/°C (0~60°C)									
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°C / 70% RH									
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B									
OTHERS	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,6,8; EN55024, light industry level, criteria A									
	MTBF	2138.2K hrs min. MIL-HDBK-217F (25°C)									
	DIMENSION	50.8*25.4*10mm (2**1**0.394") (L*W*H)									
NOTE	PACKING	0.02Kg; 300pcs/7Kg/0.97CUFT									
	NOTE	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 12, 48VDC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF &amp; 47uF parallel capacitor.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. Short circuit not more than 60 seconds.</li> <li>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.</li> <li>6. To insure proper operation, a 220uF/100V electrolytic capacitor with Esr &lt;1Ω must be added to the input line.</li> <li>7. EMC filter suggestion:</li> </ol>									



#### Mechanical Specification

Unit:mm[inch]

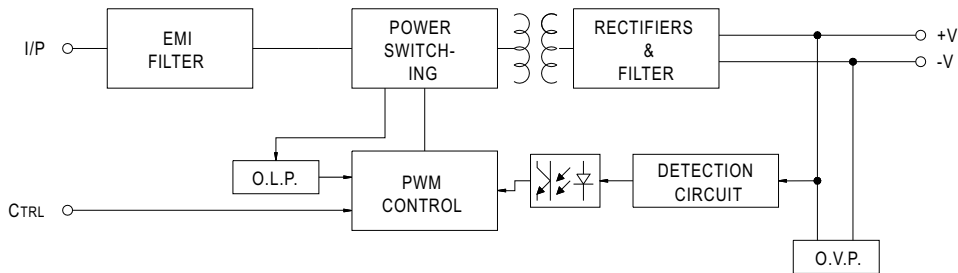


#### Pin. No Assignment

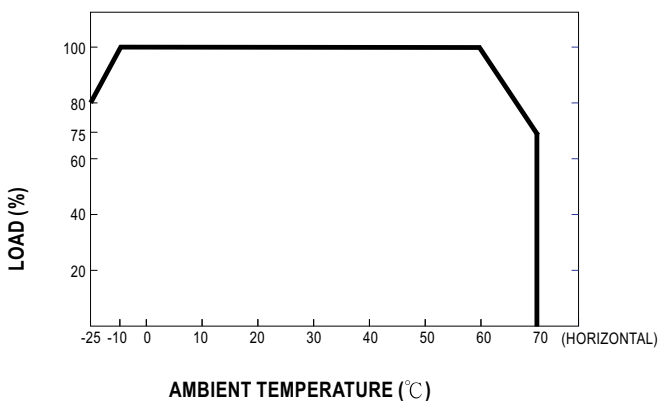
Pin No.	Assignment	Pin No.	Assignment
1	+INPUT	4	N/C
2	-INPUT(GND)	5	-OUT
3	+OUT	6	CONTROL

#### Block Diagram

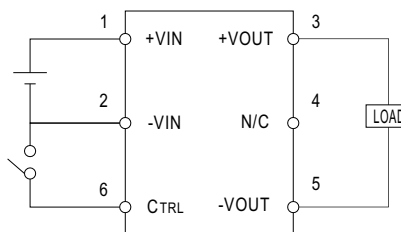
fosc : 350KHz



#### 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

MODEL : NSD10-48S12

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 75 mVp-p (Max)	I/P: 48VDC O/P:FULL LOAD Ta:25°C	V1: 11 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1: 2 %- -2 % (Max)	I/P: 22VDC / 72VDC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.1 %- -0.1 %	P
3	LINE REGULATION	V1: 1%- -1 % (Max)	I/P: 22VDC ~ 72VDC O/P:FULL LOAD Ta:25°C	V1: 0 %- 0 %	P
4	LOAD REGULATION	V1: 1 %- -1 % (Max)	I/P: 48VDC O/P:FULL -MIN LOAD Ta:25°C	V1: 0.05 %- -0.05 %	P
6	OVER/UNDERSHOOT TEST	< ±5%	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	TEST: < 5 %	P
7	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 48VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	33 mVp-p	P

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	22VDC~ 72 VDC	I/P:TESTING O/P:FULL LOAD Ta:25°C	14 V - 72 V	P
			I/P: LOW-LINE-0.2V= 21.8 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	79 % (TYP)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	80.8 %	P
3	INPUT CURRENT	48 VDC/ 0.4A(TYP)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	I = 0.26 A	P
4	SHUTDOWN IDLE CURRENT	20 mA / 48VDC	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	18.9 mA / 48VDC	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105%	I/P: 48VDC O/P: TESTING Ta:25°C	209% / 48V Over power Limiting, recovers automatically after fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH1: 13.8 V~ 18V	I/P: DC SOURCE O/P: MIN LOAD Ta:25°C	16.4 V / 0.1A Recovers automatically after fault condition is removed	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 60 SECOND NO DAMAGE	I/P: 72 VDC O/P: FULL LOAD Ta:25°C	NO DAMAGE Constant Current Limiting	P

### CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	Logic "1" OPEN : ON Logic "0" GON : OFF	I/P: 48VDC O/P: FULL LOAD Ta:25°C	Logic "1" : POWER ON Logic "0" : POWER OFF	P

### ENVIRONMENT TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	TEMPERATURE RISE TEST	MODEL : NSD10-48S5 1. ROOM AMBIENT BURN-IN : 1 HRS I/P: 48VDC O/P: FULL LOAD Ta= 25.9°C 2. HIGH AMBIENT BURN-IN : 1 HRS I/P: 48 VDC O/P: FULL LOAD Ta= 59.2°C			P
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR ( MIN )	I/P: 48VDC O/P: 120 % LOAD Ta:25°C	TEST : OK	P
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 48 VDC 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: 75 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: 48 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	SPECICATION	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 GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO : UL: File NO : E183223			P



## E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RADIATION	EN55022 CLASS B	I/P: 48VDC 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: 48 VDC O/P: FULL LOAD Ta: 25°C	CRITERIA A	P
3	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 48 VDC O/P: FULL LOAD Ta: 25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

## M.T.B.F &amp; LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	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	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) <b>Peak Voltage</b>	Q2 Rated IRFR220N 5A/200V	I/P: High-Line +3V = 75 V O/P: (1) Full Load Turn on (2) Output Short Ta: 25°C	(1) 139 V (2) 146 V	P
2	Diode <b>Peak Voltage</b>	D100 Rated STPS10170CB : 10A/170V	I/P: High-Line +3V = 75 V O/P: (1) Full Load Turn on (2) Output Short Ta: 25°C	(1) 142 V (2) 48 V	P
3	<b>Input Capacitor Voltage</b>	C5 Rated : 474 / 100V	I/P: High-Line +3V = 75 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) 74.85 V (2) 74.94 V (3) 74.94 V	P
4	<b>Control IC Voltage Test</b>	U1 Rated TL3843D : 20 V	I/P: High-Line +3V = 75 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) 13.5 V (2) 9.87 V (3) 13.5 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

2003/12/12 A50-F023