

■ Features :

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

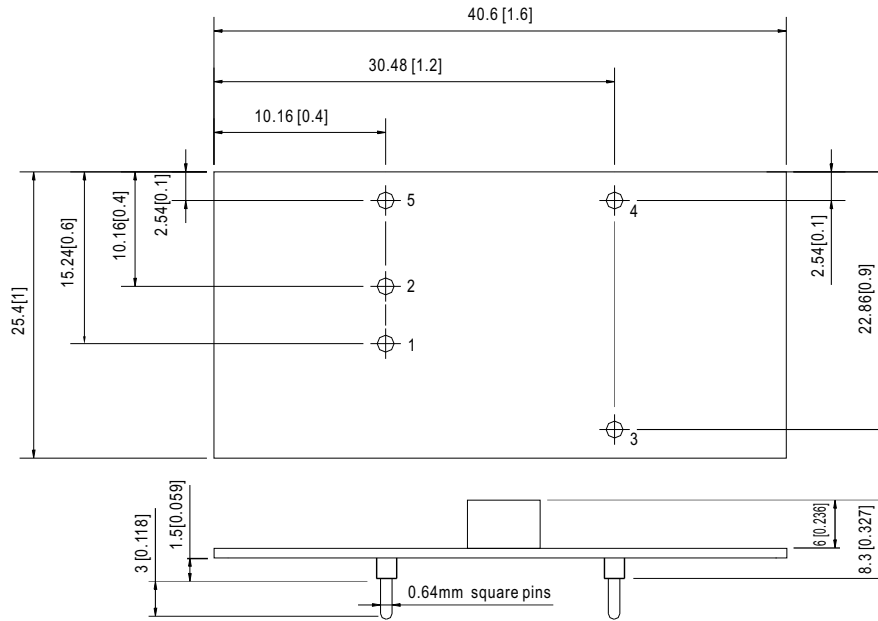


**SPECIFICATION**

MODEL	NSD05-12S3	NSD05-12S5	NSD05-12S12	NSD05-12S15	NSD05-48S3	NSD05-48S5	NSD05-48S12	NSD05-48S15		
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	3.3V	5V	12V	15V	
	RATED CURRENT	1.2A	1A	0.42A	0.33A	1.2A	1A	0.42A	0.33A	
	CURRENT RANGE	0 ~ 1.2A	0 ~ 1A	0 ~ 0.42A	0 ~ 0.33A	0 ~ 1.2A	0 ~ 1A	0 ~ 0.42A	0 ~ 0.33A	
	RATED POWER	3.96W	5W	5.04W	4.95W	3.96W	5W	5.04W	4.95W	
	CAPACITIVE LOAD (max.)	1000uF	1000uF	120uF	120uF	1000uF	1000uF	120uF	120uF	
	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%	±2.0%	±1.0%	±1.0%	±1.0%	
	RATED DC INPUT	12VDC				48VDC				
	VOLTAGE RANGE	9.2 ~ 36VDC				18 ~ 72VDC				
	EFFICIENCY (Typ.)	72%	76%	82%	83%	75%	78%	83%	85%	
	DC CURRENT	0.7A/12VDC				0.2A/48VDC				
PROTECTION	SHUTDOWN IDLE CURRENT	5mA/12VDC				5mA/48VDC				
	OVERLOAD	Above 105% rated output power Protection type : Over power limiting, recovers automatically after fault condition is removed								
	OVER VOLTAGE(CLAMP)	3.8 ~ 4.6V	5.6 ~ 6.8V	13.5 ~ 16.5V	16.2 ~ 19.8V	3.8 ~ 4.6V	5.6 ~ 6.8V	13.5 ~ 16.5V	16.2 ~ 19.8V	
FUNCTION	SHORT CIRCUIT	Recovers automatically after fault condition is removed								
	ON/OFF CONTROL	Logic "1" or open circuit : ON				Logic "0" or short to PIN2 : 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 4)	SAFETY STANDARDS	IEC60950-1 CB approved by TUV								
	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 EN61000-4-2,3,4,5,6,8; EN55024, light industry level, criteria A								
	MTBF	914.4K hrs min. MIL-HDBK-217F (25°C)								
	DIMENSION	40.6*25.4*8.3mm (1.6**1**0.327") (L*W*H)								
NOTE	PACKING	0.007Kg; 700pcs/5.9Kg/0.97CUFT								
	<p>1. All parameters NOT specially mentioned are measured at 12, 48VDC input, rated load and 25°C of ambient temperature.                  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.                  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.                  5. To insure proper operation, a 47uF/100V electrolytic capacitor with Esr &lt;1Ω must be added to the input line.                  6. EMC filter suggestion(TBD):</p>									

**Mechanical Specification**

Unit:mm[inch]

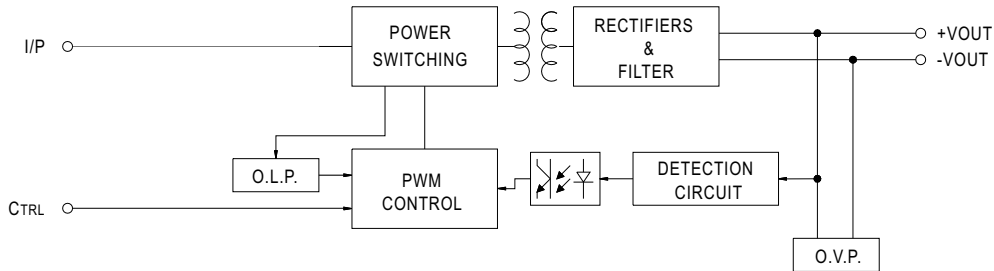


Pin No. Assignment

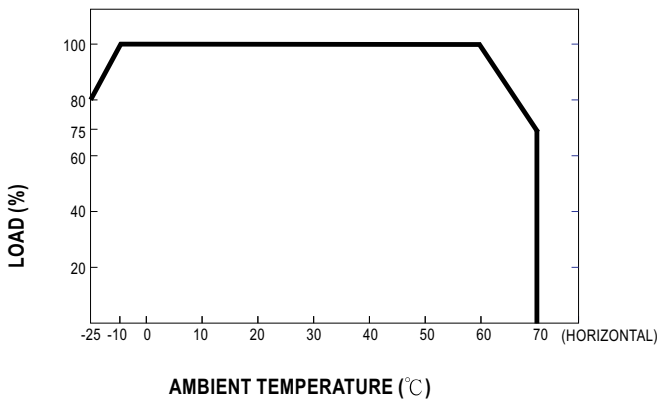
Pin No.	Assignment	Pin No.	Assignment
1	+INPUT	4	-VOUT
2	-INPUT(GND)	5	CONTROL
3	+VOUT		

**Block Diagram**

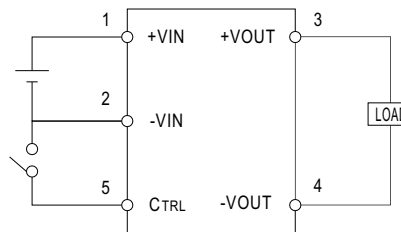
fosc : 350KHz



**Derating Curve**



**ON/OFF Control**



- CONTROL INPUT.....PIN5
- 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 : NSD05-48S5

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 75 mVp-p (Max)	I/P: 48VDC O/P:FULL LOAD Ta:25°C	V1: 39 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1: 2 %- -2 % (Max)	I/P: 18VDC / 72VDC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.2 %- -0.2 %	P
3	LINE REGULATION	V1: 1%- -1 % (Max)	I/P: 18VDC ~ 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: 0.2 %- -0.2 %	P
6	OVER/UNDERSHOOT TEST	< ±5%	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	TEST: < 5%	P
7	DYNAMIC LOAD	V1: 1000 mVp-p	I/P: 48VDC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	158 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	18VDC~ 72 VDC	I/P:TESTING O/P:FULL LOAD Ta:25°C	7.6V - 72 V	P
			I/P: LOW-LINE-0.2V= 17.8 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	78 % (TYP)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	79.6 %	P
3	INPUT CURRENT	48 VDC/ 0.2A(TYP)	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	I = 0.131 A	P
4	SHUTDOWN IDLE CURRENT	5 mA / 48VDC	I/P: 48 VDC O/P:FULL LOAD Ta:25°C	3.5mA / 48VDC	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	Above 105%	I/P: 48VDC O/P: TESTING Ta:25°C	241% / 48V Over power Limiting, recovers automatically after fault condition is removed	p
2	OVER VOLTAGE PROTECTION	CH1: 5.6 V~ 6.8V	I/P: DC SOURCE O/P: MIN LOAD Ta:25°C	6.1V / 0.038A Recovers automatically after fault condition is removed	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1hour NO DAMAGE	I/P: 72 VDC O/P: FULL LOAD Ta:25°C	NO DAMAGE Hiccup	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: 48VDC 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 : NSD05-48S5 1. ROOM AMBIENT BURN-IN : 44HRS I/P: 48VDC O/P: FULL LOAD Ta= 31.4°C 2. HIGH AMBIENT BURN-IN : 1.5 HRS I/P: 48 VDC O/P: FULL LOAD Ta= 59.5 °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: 80 % 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	± 0.008 %(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: 1KVDC/min	I/P-O/P: 1.2KVDC/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: 11.6 GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO : UL: File NO :			N



## 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
4	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: 914.4K 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>	Q6 Rated IRFR-220N : 5A/200V	I/P: High-Line +3V = 75 V O/P: (1) Full Load Turn on (2) Output Short Ta: 25°C	(1) 129 V (2) 121 V	P
2	Diode <b>Peak Voltage</b>	D100 Rated EA60QC04-F 7A/40V	I/P: High-Line +3V = 75 V O/P: (1) Full Load Turn on (2) Output Short Ta: 25°C	(1) 31 V (2) 25 V	P
3	<b>Input Capacitor Voltage</b>	C5 Rated : 224 / 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) 75 V (2) 75 V (3) 75 V	P
4	<b>Control IC Voltage Test</b>	U1 Rated TL3843D : 30 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) 13.0 V (2) 8.82 V (3) 13.0 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007/6/20	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2007/8/3	PRODUCT SAMPLE W0707B35	PASS	VINCENT TSENG	MAX LIN
2008/4/17	PRODUCT SAMPLE W0803A44	PASS	Sanford Su	VINCENT TSENG

2003/12/12 A50-F023