NCS01W8 SERIES
3.3-16.8 WATT
NON ISOLATED DC-DC CONVERTER

Features

- Efficiency Up to 95%
- Regulated Outputs
- Fully Protected (OCP/OTP/UVLO)
- Operating Ambient Temperature -40 to +105℃
- 0.48"x0.34"x0.69" Size Pin Compatible with LMxx Linear Regulators (SIP-3)
- EN 55032 Compliant with External Circuits
- Safety Meets IEC/EN/UL 62368-1



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.		CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD	24V VIN	48V VIN	
NCS01W8-48S033	6-72 VDC	3.3 VDC	0 mA	1000 mA	0.5 mA	56 mA	84	82	3300uF
NCS01W8-48S050	8-72 VDC	5 VDC	0 mA	1000 mA	0.5 mA	121 mA	88	86	3300uF
NCS01W8-48S090	12-72 VDC	9 VDC	0 mA	1000 mA	0.5 mA	208 mA	92	90	1500uF
NCS01W8-48S120	15-72 VDC	12 VDC	0 mA	1000 mA	0.5 mA	275 mA	93	91	1000uF
NCS01W8-48S150	18-72 VDC	15 VDC	0 mA	1000 mA	0.5 mA	340 mA	94	92	680uF
NCS01W8-48S240	28-72 VDC	24 VDC	0 mA	700 mA	0.5 mA	369 mA	--	95	330uF

PART NUMBER

Series	Nominal Input Voltage	Number of Outputs	Nominal Output Voltage
NCS01W8	II	O	XXX
NCS01W8	48：48 VDC	S：Single	033：3.3VDC 050：5.0VDC 090：9VDC 120：12VDC 150：15VDC 240：24VDC

Part Number Example:
NSC01W8-48S05: 5W, 9:1 8-72Vdc Input, Single 5Vdc Output

TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25℃ unless otherwise noted.)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Continuous	All	-0.3		72	V_{dc}
Input Surge Voltage	100ms max.	All			100	V_{dc}
Operating Ambient Temperature	With de-rating		-40		85	℃
Operating Case Temperature	At the center part of case plate	All			105	℃
Storage Temperature		All	-55		125	℃
Thermal Impedance	*Thermal test condition with vertical direction mounted on a PCB with 2oz copper and 1.6mm thickness	All		26		℃/W

INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Input Voltage		All	See Model Number Table			V_{dc}
Input Under Voltage Lockout						
Turn-On Voltage Threshold	100% Load	3.3V	4.8	5.2	5.8	V_{dc}
		5V	6.5	6.9	7.5	
		9V	10.2	10.9	11.7	
		12V	12.4	13.2	14.3	
		15V	15.5	16.4	17.7	
		24V	23.8	25.6	27.6	
Turn-Off Voltage Threshold	100% Load	3.3V	4.4	4.8	5.2	V_{dc}
		5V	5.8	6.4	6.9	
		9V	9.2	10.0	10.8	
		12V	11.1	12.1	13.1	
		15V	13.8	15.1	16.3	
		24V	21.3	23.2	25.1	
Maximum Input Current	V_{in}= V_{in} min., full load	All		0.9		A
No-Load Input Current	I_o=0A, V_{in}=Nominal	All		0.5		mA
Input Filter	Capacitive	All				
Inrush Current (I^2t)	As per ETS300 132-2	All			0.1	A^2s
Input Reflected Ripple Current	V_{in}=Nominal, L=12uH, C=47uF, Load=full load	All		30		mA

OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Voltage Set Point Accuracy	Full load, T_c=25℃	All	-2		+2	%
Output Voltage Regulation						
Load Regulation	Full load to no load	All			±0.6	%
Line Regulation	V_{in}=High line to low line, full load	All			±0.5	%
Temperature Coefficient	T_c=-40℃ to 85℃	All			±0.02	%/℃
Output Voltage Ripple and Noise (20MHz bandwidth)						
Peak-to-Peak	Full load, 1uF ceramic capacitors	All			75	mV
Output Current Range	V_{in}= 6V to 72V	See Model Number Table				A
Over Current Protection	% of I_{out} rated, hiccup mode. Auto recovery	Others		165		%
		24V		230		
Short Circuit Protection		All	Continuous, Auto Recovery			
External Load Capacitance	Full load (resistive)	See Model Number Table				uF

EFFICIENCY

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
100% Load	Full load, T_c=25℃	See Model Number Table				%

DYNAMIC CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Current Transient						
Error Band	50% to 100% of $I_{o\ max.}$ step load change d_i/d_t=0.1A/us (within 1%V_{out} nominal)	All			±3	%
Recovery Time		All			250	us
Turn-On Delay and Rise Time	Full load (constant resistive load)					
Turn-On Delay Time, From Input	$V_{in\ min.}$ to 10%$V_{o_set,}$ Power up	All		25		ms
Output Voltage Rise Time	10%V_{o_set} to 90%V_{o_set}	All		8		ms

FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pulse wide modulation	3.3V	125	185	245	KHZ
		5V	140	200	260	
		9V	168	250	333	
		12V	200	275	350	
		15V	224	320	416	
		24V	280	405	530	
Over Temperature Shutdown	Internal IC temperature, automatic recovery	All		150		℃
Over Temperature Recovery		All		135		℃

GENERAL SPECIFICATIONS

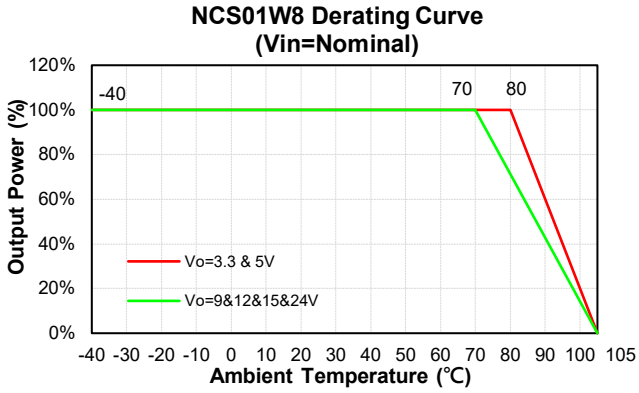
PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	I_o=100% of $I_{o_max.}$; MIL-HDBK - 217F_Notice 1, GB, 25°C	3.3V		10447		K hours
		5V		8217		
		9V		9226		
		12V		9946		
		15V		9326		
		24V		9853		
Weight		All		6.8		grams
Case Material	Metal					
Potting Material	UL 94V-0					
Pin Material	Base: Copper Plating: Matte Tin					
Shock/Vibration	MIL-STD-810F Compliant					
Humidity	95% RH max. Non condensing					
Altitude	4000m Operating altitude					
Thermal Shock	MIL-STD-810F					

EMC SPECIFICATIONS (External components required, please refer to application note.)

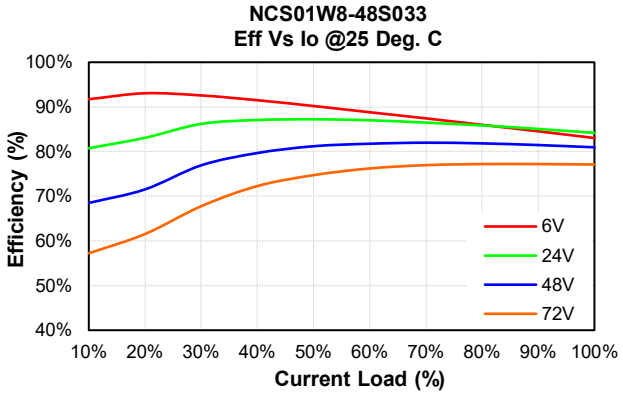
EMI	Meets EN 55032 Compliant (with external filter)	Class A&B
Application Note Link	NCS01W8 Series App Notes	
Packaging Information Link	Packaging Information	

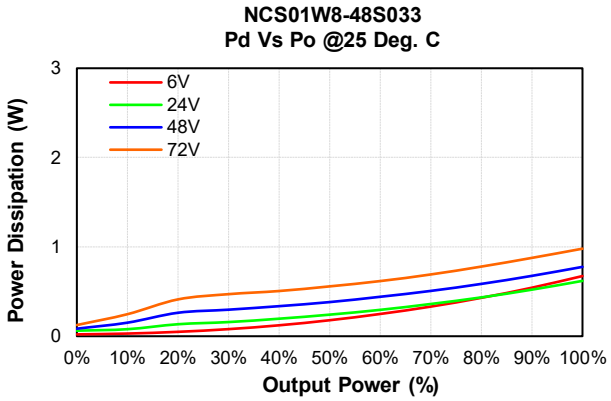
CHARACTERISTIC CURVE

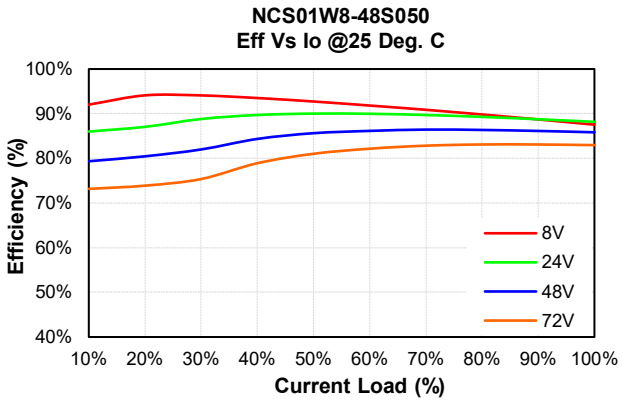
Power Derating Curve

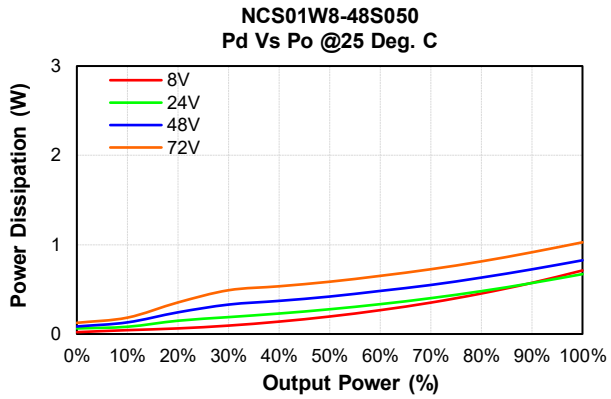


Performance Data

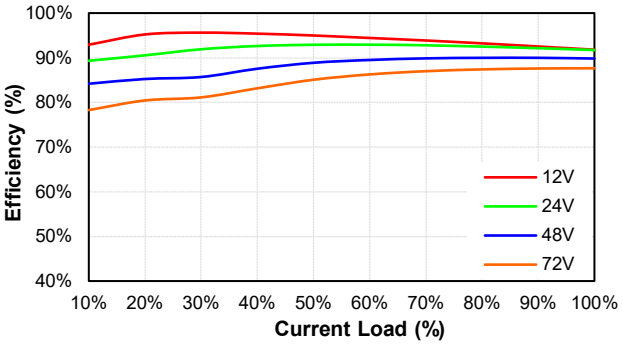




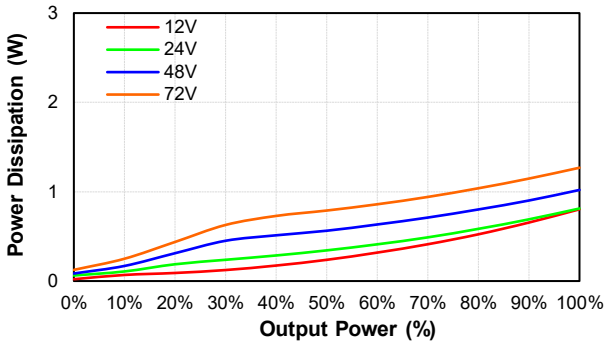




NCS01W8-48S090
Eff Vs Io @25 Deg. C



NCS01W8-48S090
Pd Vs Po @25 Deg. C



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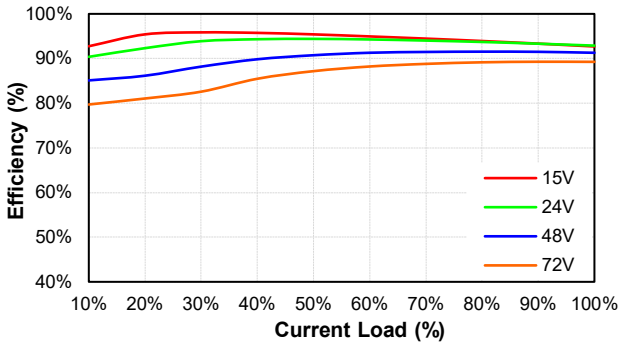

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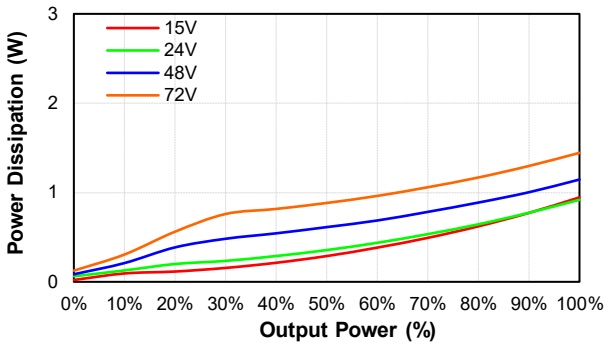

NCS01W8-48S150
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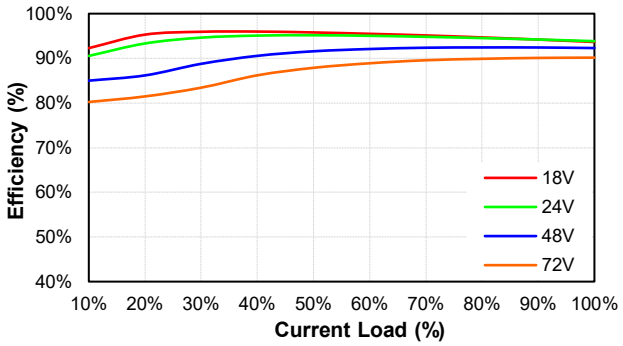
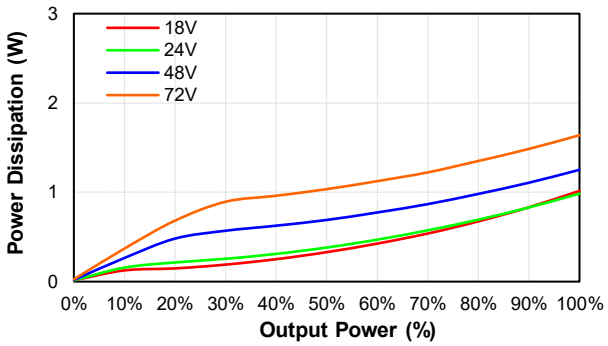
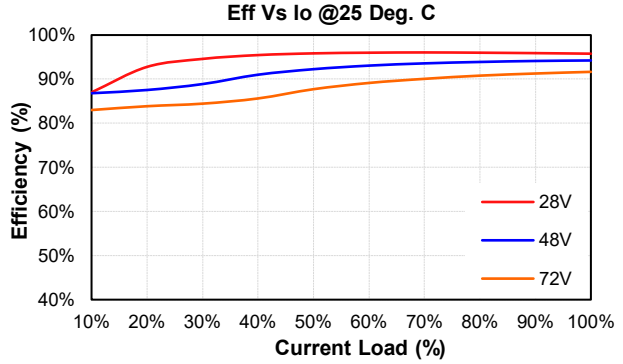


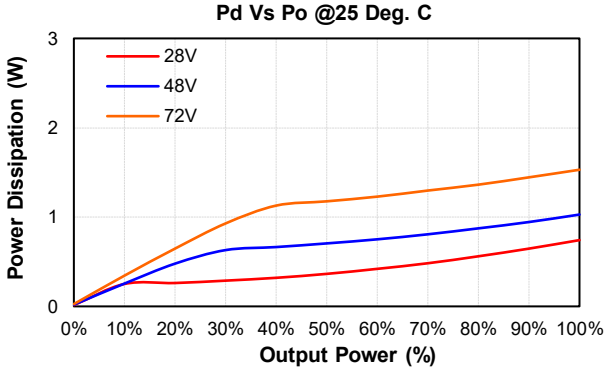
NCS01W8-48S150
Pd Vs Po @25 Deg. C



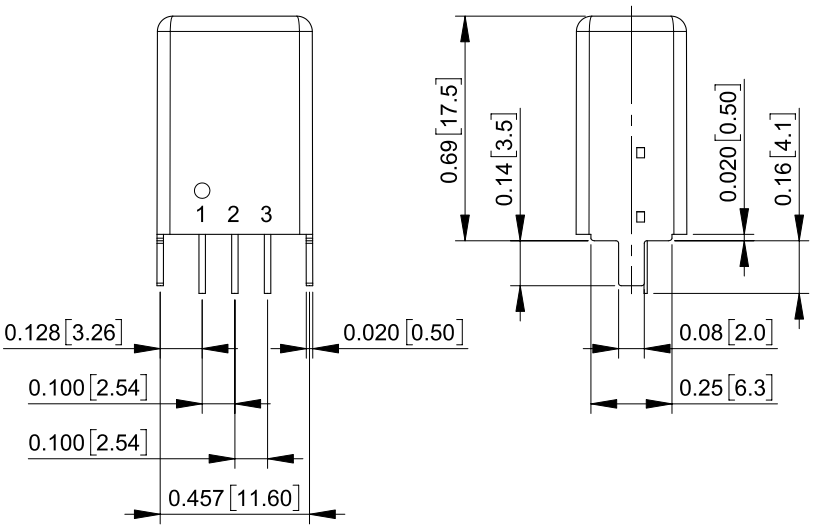
NCS01W8-48S240
Eff Vs Io @25 Deg. C

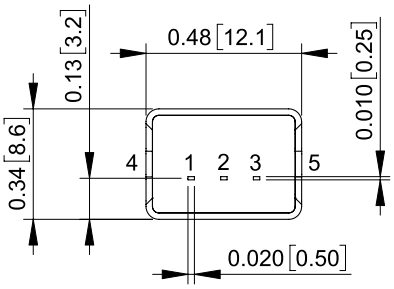


NCS01W8-48S240
Pd Vs Po @25 Deg. C



MECHANICAL SPECIFICATION





BOTTOM VIEW

All Dimensions in Inches[mm]
Tolerance Inches: x.xx=±0.02, x.xxx=±0.010
Millimeters: x.x=±0.5, x.xx=±0.25

Pin Connection

Pin	Function
1	+Vin
2	GND
3	+Vout
4	Case Pin
5	Case Pin

Note:Pin Size is x.xxx±0.004 Inch [x.xx±0.10 mm]

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