

**Wide Input Voltage Range 60 Watt Dc-Dc Converter**



**FEATURES:**

- 2:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY UP TO 90%
- Under Voltage Lockout
- Over Temperature Protection
- Remote Control ON/OFF
- UL94V-0 Package Material



Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage	Input Current		Output Voltage	Output Current	Efficiency	Capacitor Load
	Vdc	No-Load (mA TYP)	Full Load (mA TYP)	Vdc	mA	%TYP	uF max.
93D-24S03R2NL	18-36	150	2162	3.3	14000	89	28800
93D-24S05R2NL	18-36	150	2777	5	12000	90	15000
93D-24S12R2NL	18-36	30	2777	12	5000	90	2800
93D-24S15R2NL	18-36	30	2777	15	4000	90	1800
93D-48S03R2NL	36-72	75	1081	3.3	14000	89	28800
93D-48S05R2NL	36-72	75	1388	5	12000	90	15000
93D-48S12R2NL	36-72	30	1388	12	5000	90	2800
93D-48S15R2NL	36-72	30	1388	15	4000	90	1800

**Input Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types				2:1	
Filter	Pi Network				
Protection	Fuse Recommended				

**Output Specifications** (Temperature Coefficient : ±0.05%/°C)

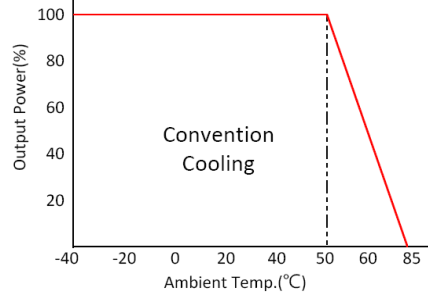
Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Full load @Vin(nom.)			±2	%
Short Circuit/ Restart Protection	Hiccup, automatic recovery				
Over load protection			150		%
Line Regulation				±0.5	%
Load Regulation	10% to 100% load			±0.5	%
Ripple & Noise	BW=DC To 20MHz			100	mVp-p
Transient response setting time	25% Step Load Change		300		us
Thermal Shutdown			110		°C
External Trim Adj. Range				±10	%

**General Specifications**

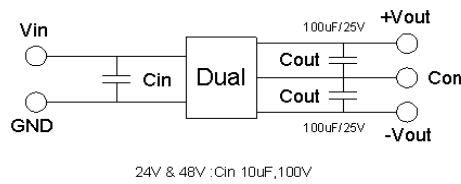
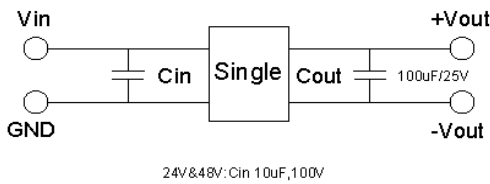
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency			300		KHz
Operating Temperature	With derating	-40		85	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case material		Nickel Coated with Non-Conductive Base			
Weight		70g			
Dimensions		51.0X51.0X10.3			mm
Potting Material		Epoxy (UL94V-0 rated)			
Remote ON/OFF	ON	Open			
	OFF	Short to -Vin			
Isolation Voltage				1500	VDC
MTBF	MIL-HDBK-217F @25°C , Ground Benign	110000			Hours
Storage Temperature		-55		+125	°C
Case Temperature				+105	°C
Isolation Capacitance				2500	pF

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**Temperature Derating Graph**



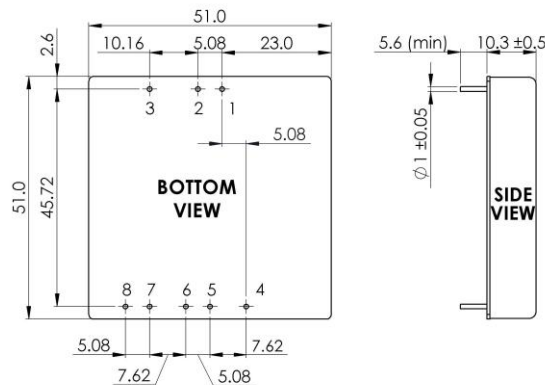
**Recommended Test Circuit**



**Part Number**

93D - 24 S 05 R 2 NL  
 A B C D E F G  
 A : Series  
 B : Input Voltage  
 C : Single Output(S),DUAL(D)  
 D : Output Voltage  
 E : Regulated(R)  
 F : Package  
 G : RoHs Version

**Markings and dimensions**



Unit : mm  
 Tolerance : XX.X ± 0.5 , XX.XX ± 0.25

**PIN Assignment**

PIN	1	2	3	4	5	6	7	8
Function	+Vin	-Vin	Ctrl	-Sense	+Sense	+Vout	-Vout	Trim