PICO Electronics

Series DC3

Input Voltage Range: 300 - 900 VDC
Output Voltages: 3.3 to 300 VDC
Hi Reliability-Mil Options Available
Single/Dual Isolated Outputs
Fully Regulated - Up to 50 Watts
Short Circuit Protection
Thru Hole or Terminal Strip

New: 300-900 VDC Input Range.
Output Voltages: 3.3 to 300 VDC

This series of switching High Voltage Input DC-DC pwer supplies are available in 44 different models. All single and dual outputs are isolated and offer excellent line and load regulation. These units have continuous short circuit protection and will operate from 0°C to +85°C baseplate. the hi reliability DC3 Series, up to 50 watts, is the design choice for your most stringent industrial applications.

TYPICAL CHARACTERISTICS

Test Conditions:25°C Ambient

Input Voltages: 300 - 900 VDC

Converter Frequency: 66KHz

Operating Temperature:
0°C to +85°C Baseplate

Storage Temperature: -55°C to +105°C

Output VoltageTemperature Coefficient: 0.02% per °C

Isolation: 2121VDC

External Electrolytic Capacitor: Not Required

FEATURES:

Excellent Line Regulation: ±1% (300-900 VDC)

Excellent Load Regulation: 10% - 100%, ±2%

Continuous Short Circuit Protection

Encapsulated

Semiconductors: Conservatively rated

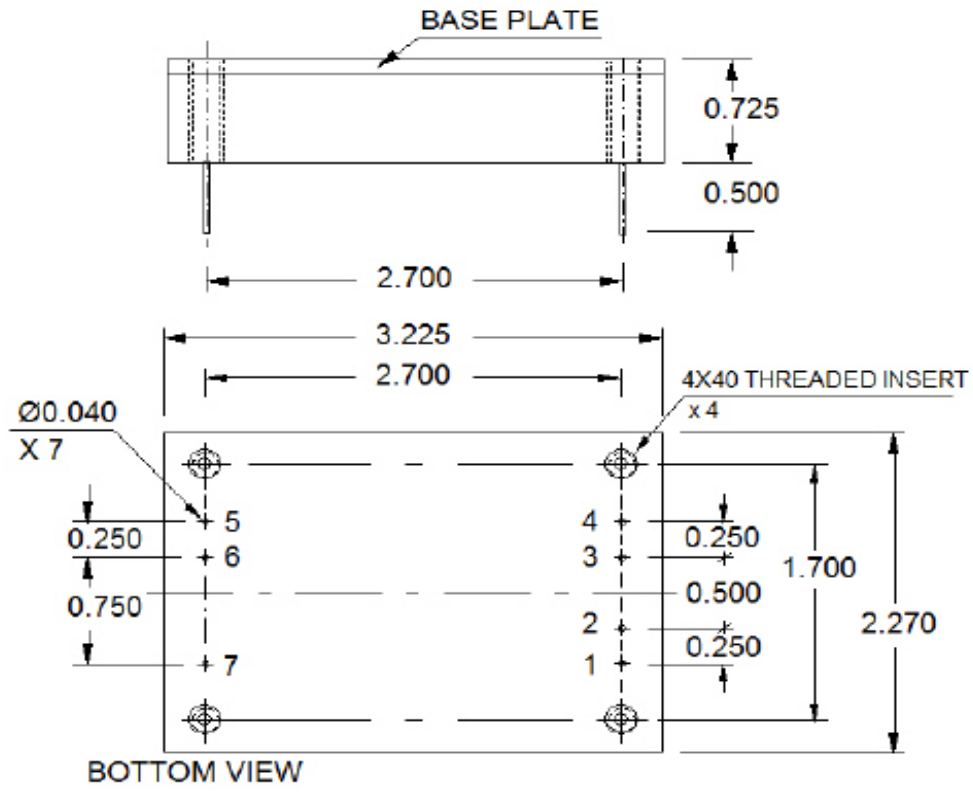
Wide Input Range: 300 - 900 VDC

Expanded Operating Temperature: -20°C or -40 °C to +85°C Available

Selected MIL STD 883 Screening Available

Consult Factory: 800-431-1064

SERIES DC3 SINGLE AND DUAL OUTPUT THRU-HOLE MODELS



Weight: 190 Grams Typical
All dimensions are in Inches
NOTE: The torque for mounting screws must be 6 to 9 In-Lbs.

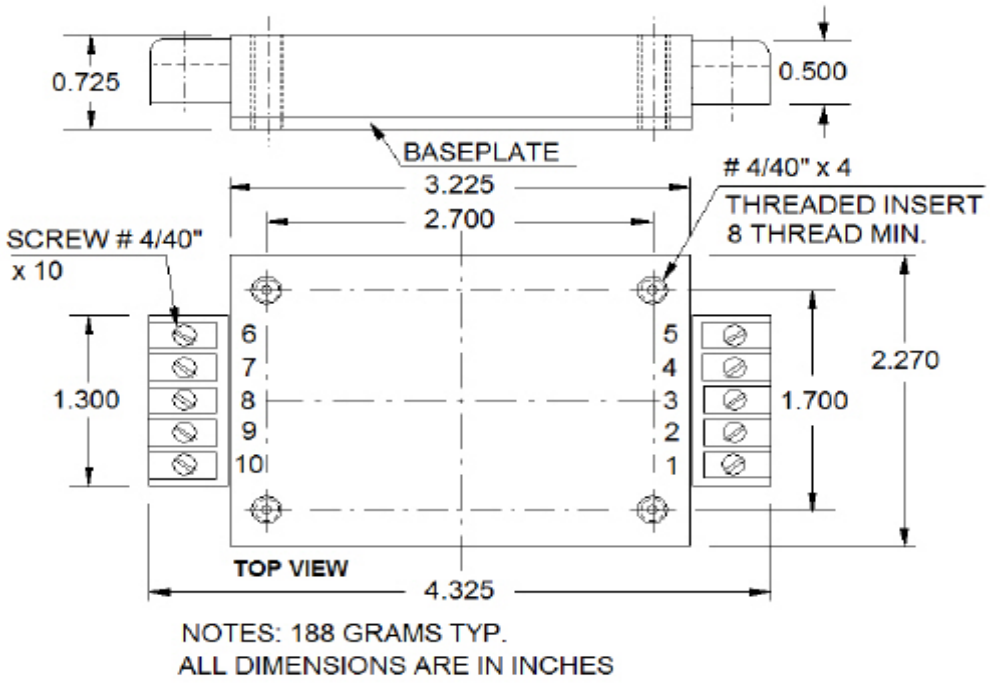
PIN #	SINGLE (For Units with Vout <=48V)	SINGLE (For Units with Vout>=100V)
1	+ Vout	+ Vout
2	+ Vout	NC
3	- Vout	NC
4	- Vout	- Vout
5	SDN	SDN
6	- Vin	- Vin
7	+ Vin	+ Vin

Shutdown Pin (SDN) Application Note [1]

PIN #	DUAL
1	+ Vout
2	COMM
3	COMM
4	- Vout
5	SDN
6	- Vin
7	+ Vin

Shutdown Pin (SDN) Application Note [1]

SERIES DC3 SINGLE AND DUAL OUTPUTS TERMINAL STRIP MODELS



Weight: 190 Grams Typical
All dimensions are in Inches
NOTE: The torque for mounting screws must be 6 to 9 In-Lbs.

Pin No.	SINGLE (For Units With Vout <=48V)	SINGLE (For Units With Vout>=100V)
1	+Vout	+Vout
2	+Vout	NC
3	NC	NC
4	-Vout	NC
5	-Vout	-Vout
6	SDN	SDN
7	-Vin	-Vin
8	NC	NC
9	NC	NC
10	+Vin	+Vin

Shutdown Pin (SDN) Application Note [1]

Pin No.	Dual
1	+Vout
2	COMM
3	NC
4	COMM
5	-Vout
6	SDN
7	-Vin
8	NC
9	NC
10	+Vin

Shutdown Pin (SDN) Application Note [1]

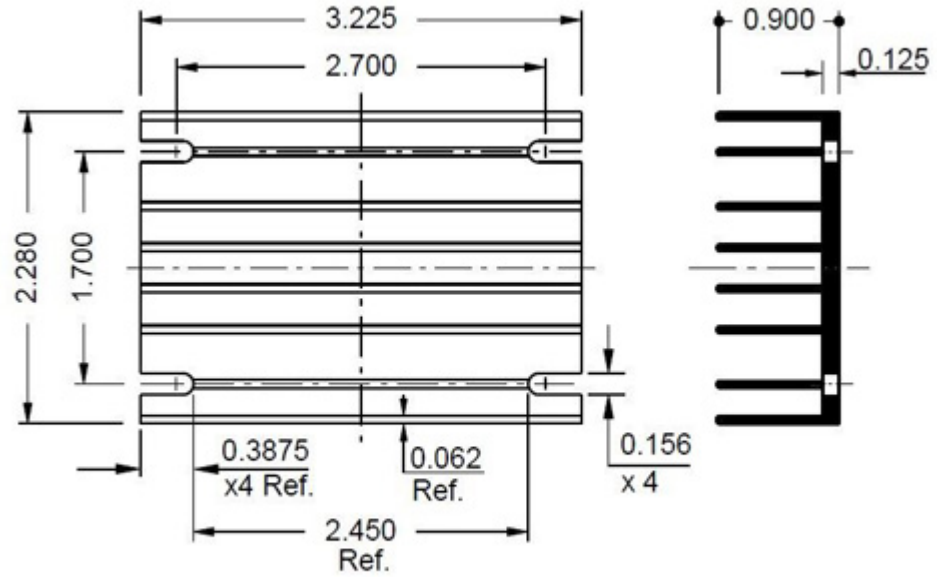
Pico Part No. (Thru Hole)	Pico Part No. (Terminal Strip)	Output Voltage (VDC)	Max. Load Current (A)	Max. Output Power (watts) ***	EFF @ Full Load Typical (%)*	Output Voltage Toler ance (±%)**	Load Regulation 10-100% Load (±%)**	Line Regulation @ Full Load (±%)	Output Voltage Ripple Typical (mv p-p)*	Price (Thru Hole) (US $)	Price (Terminal Strip) (US $)
DC3-3.3S	DC3-3.3ST	3.3	9.09	30	68	2	2	1	75	231.13	250.44
DC3-5S	DC3-5ST	5	8.00	40	74	2	2	1	75	231.13	250.44
DC3-5.2S	DC3-5.2ST	5.2	7.70	40	74	2	2	1	75	231.13	250.44
DC3-12S	DC3-12ST	12	4.16	50	80	2	2	1	75	231.13	250.44
DC3-15S	DC3-15ST	15	3.33	50	80	2	2	1	75	231.13	250.44
DC3-24S	DC3-24ST	24	2.08	50	84	1	1	1	75	231.13	250.44
DC3-28S	DC3-28ST	28	1.79	50	85	1	1	1	75	231.13	250.44
DC3-48S	DC3-48ST	48	1.04	50	85	1	1	1	75	231.13	250.44
DC3-100S	DC3-100ST	100	0.50	50	82	1	1	1	100	254.31	267.03
DC3-125S	DC3-125ST	125	0.40	50	82	1	1	1	125	254.31	267.03
DC3-150S	DC3-150ST	150	0.33	50	82	1	1	1	150	254.31	267.03
DC3-175S	DC3-175ST	175	0.29	50	81	1	1	1	175	254.31	267.03
DC3-200S	DC3-200ST	200	0.25	50	81	1	1	1	200	279.74	293.73
DC3-225S	DC3-225ST	225	0.22	50	81	1	1	1	225	279.74	293.73
DC3-250S	DC3-250ST	250	0.20	50	81	1	1	1	250	279.74	293.73
DC3-275S	DC3-275ST	275	0.18	50	80	1	1	1	300	279.74	293.73
DC3-300S	DC3-300ST	300	0.17	50	80	1	1	1	300	307.71	323.10

*Measurment taken at 600 VDC Input
** 10% minimum load required at all times
***Using proper thermal management. Maximum baseplate temperature of +85°C

SERIES DC3 - DUAL OUTPUT - 50 WATTS MAXIMUM											
Pico Part No. (Thru Hole)	Pico Part No. (Terminal Strip)	Output Voltage (VDC)	Max. Load Current Per Output (A)	Max. Output Power Per Output (watts) ***	EFF @ Full Load Typical (±%)*	Output Voltage Toler ance (±%)**	Load Regulation 10-100% Load **** (±%)**	Line Regulation @ Full Load (±%)	Output Voltage Ripple Typical (mv p-p)*	Price (Thru Hole) (US $)	Price (Terminal Strip) (US $)
DC3-5D	DC3-5DT	±5	4.00	20	75	2	2	1	75	251.35	270.60
DC3-12D	DC3-12DT	±12	2.08	25	80	2	2	1	75	251.35	270.60

DC3-15D	DC3-15DT	±15	1.66	25	80	2	2	1	75	251.35	270.60
DC3-24D	DC3-24DT	±24	1.04	25	84	2	2	1	75	251.35	270.60
DC3-28D	DC3-28DT	±28	0.892	25	84	2	2	1	75	251.35	270.60

DC3 HEATSINK PN: HSDC3

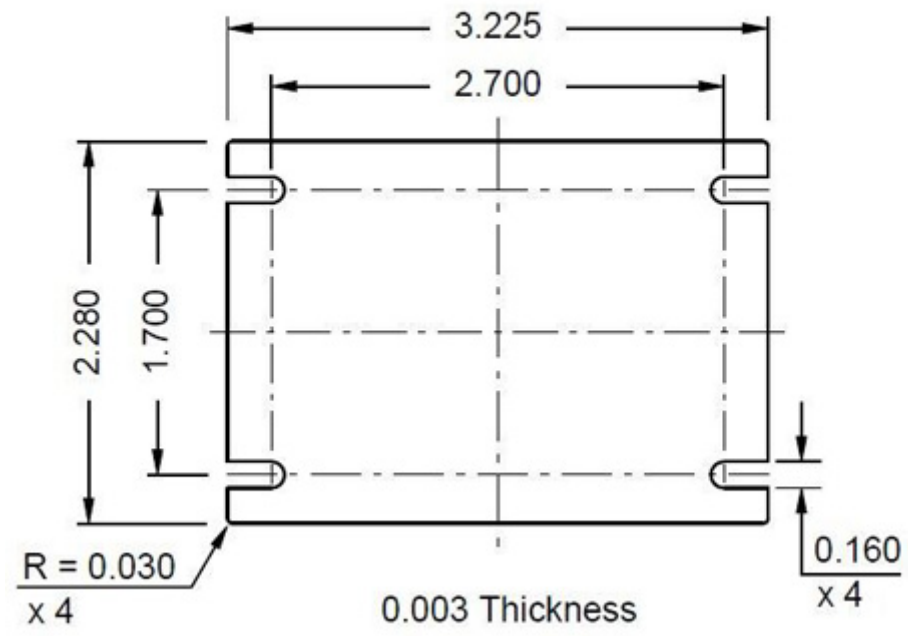


Note: All dimensions are in inches
Typical Weight: 89 Grams

THERMAL CONSIDERATIONS FORMULA

Tc-Ta = /\ =Trca Pout (1/n-1) where,
Trca = Thermal Resistance of case to air
Pout = Output Power in Watts
n = Efficiency
Tc = Case Temperature in °C
Ta = Ambient Temperature in °C

THERMAL INTERFACE
PN: TIDC3



Thermal Considerations

Table 1	DC3 Series	
Trca	**Baseplate**	**Heatsink HSDC3**
Free Air	7.9	3.9

200 LFM	4.9	2.1
400 LFM	2.5	1.5
600 LFM	2.2	1.2
800 LFM	1.5	1.0
1000 LFM	1.2	0.98

EXAMPLE 1:

A DC3-24S module has an efficiency of 84%. What is the maximum ambient temperature if 50 Watts of power is needed?

A) In free air:
From Table1: Trca = 7.9
Using relation (2)
/\T=7.9(50)[(1/.84)-1]=75.2°C
Tc-Ta=75.2°C
85-Ta=75.2°C
Ta=9.8°C Maximum

B) In free air with heatsink HSDC3:
Trca=3.9
/\T=3.9(50)[(1/.84)-1]=37.1°C
Ta = 85-37.3=47.9°C

C) With 400 LFM of air flow with no heatsink:
Trca=1.5
/\T=1.5(50)[(1/.84)-1]=14.3°C
Ta=85-14.3=70.7°C

EXAMPLE 2:

What would be the maximum output power for a DC3-24S module at an ambient temperature of 50°C with an efficiency of 84%?

A) If the module is used in free air:
From Table 1: Trca=7.9
Using Relation (2)
85-50=7.9 Pout[1/.84-1]
Pout = 35/[7.9(.19)]=23W

B) If the module is used with heatsink HSDC3 and with free air:
Trca=3.9
Pout = 35/[3.9(.19)] = 47.2W

C) If the module is used in an area with forced air at 400 LFM with no heatsink:
Trca=2.5

Pout = 35/[2.5(.19)] = 50W Maximum Output

For immediate engineering assistance or to place an order:
Call Toll Free: 800-431-1064

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