



# 500E series

## Single Output DC/DC Converter

### DESCRIPTIONS

The 500E series is a family of compact high performance 5 W DC/DC converters that operate over input voltage ranges of 4.3-6 VDC, 10.3-15.0 VDC, 15.5-22.5 VDC, 20.4-30.0 VDC, 24.2-36.0 VDC and 41.3-60.0 VDC and provide precisely regulated output voltages of 5V, 12V and 15V.

The -30°C to +75°C operating temperature range makes it ideal for data communication equipment, mobile battery driven equipment, distributed power systems, telecommunication equipment, mixed analog/digital subsystems, process/machine control equipment, computer peripheral systems industrial robot systems.

### OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point			±3	% Output voltage at nominal line & FL
Line Regulation			±0.3	% Output voltage measured from min. input line to maximum
Load Regulation			±0.3	% Output voltage measured from FL to no load
Ripple/Noise			20	mV p-p, Nom.Line @FL, 20MHz B.W., using 1 µf bypass capacitor
Short Circuit Protection				Continuous, Automatic Recovery
Temperature Coefficient			±0.01	% per °C

### FEATURES

- Up to 70% Efficiency
- Single output, 5 watt converters
- 500 VDC Input / Output Isolation
- Continuous Short Circuit Protection
- Continuous Six-Sided Shielding
- UL1950 Approved, File No. E104645
- CSA 22.2 Approved, File No. LR89494
- >1,300,000 Hours MTBF

### INPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Input Voltage				
5 VDC Input Models	4.65	5	5.25	VDC @ FL
12 VDC Input Models	10.9	12	13.2	VDC @ FL
24 VDC Input Models	21.6	24	26.4	VDC @ FL
28 VDC Input Models	25.2	28	30.8	VDC @ FL
48 VDC Input Models	43.2	48	52.8	VDC @ FL
Input Filter				Pi Filter

### GENERAL CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Switching Frequency		100		kHz
Isolation Voltage	500			VDC, 1 minute
Isolation Resistance	1000			Mohm, 500VDC
Isolation Capacitance		70		pF, 100kHz, 1Volt
MTBF (MIL-HBK-217F)	1.3			Million Hours, +25°C, Ground Benign

Martek Power reserves the right to change specifications without notice.



### ENVIRONMENTAL SPECIFICATIONS

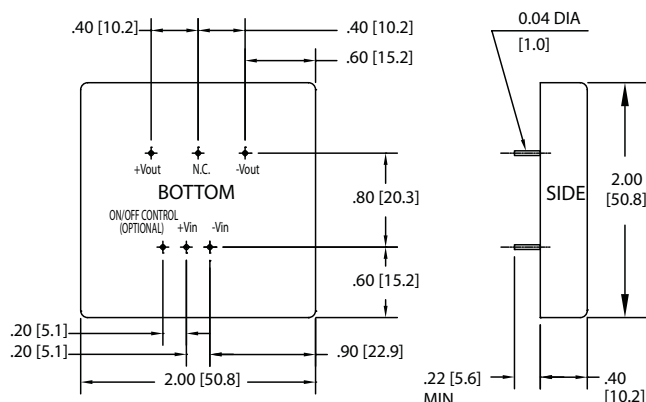
	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-30		+75	°C; Ambient
Storage Temp. Range	-40		+125	°C
Relative Humidity			+95	% Humidity; non-condensing
Cooling				Free-Air Convection

### PHYSICAL CHARACTERISTICS

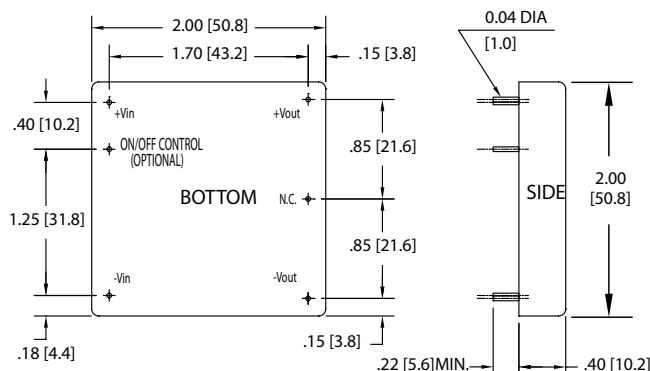
	Unit/Comments
Case Size	2.0 X 2.0 X 0.4 inches (50.8 X 50.8 X 10.2 mm)
Case Material	Black Coated Metal
Shield Connection	Negative Output Pin
Flammability	UL94V-0
Weight	2.6 oz.

### OUTLINE DRAWING

CASE "A"



CASE "A1" (OPTIONAL)



**Notes:**

- Unless otherwise specified dimensions are in inches (mm).  
Tolerances      Inches                  mm  
                         X.XX = ±0.02                  X.X = ±0.5  
                         X.XXX = ±0.010                X.XX = ±0.25
- Case A pinning is standard. Case A model numbers do not require suffixing.
- Case A1 pinning is optional. Case A1 model numbers must be suffixed with "A1". Example: 512S48E-A1

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified. External, low ESR, 10 microfarad (minimum) capacitor across input is recommended for operation.



## HOW TO ORDER

**HOW TO ORDER**

**5 XX S XX E - A1 - Y**

Wattage — 5  
 Output Voltage — XX  
 Output Configuration, (S=Single, D=Dual) — S  
 Nominal Input Voltage — XX  
 ROHS Compliant — E  
 Case D1 pinning is optional — A1  
 Nominal Input Voltage — Y

**Case A pinning is standard. Case A model numbers do not require suffixing.**  
**Case A1 pinning is optional. Case A1 model numbers must be suffixed with "A1".**  
**Example: 512S48E-A1**

## INPUT VOLTAGE RANGE VS OUTPUT LOAD

Nominal Input (VDC)	Input Voltage Range (VDC) at:			
	20% Load	40% Load	60% Load	100% Load
5	4.30 - 6.00	4.40 - 5.70	4.55 - 5.60	4.65 - 5.25
12	10.3 - 15.0	10.4 - 14.6	10.6 - 13.6	10.9 - 13.2
24	20.4 - 30.0	20.6 - 29.0	21.0 - 27.0	21.6 - 26.4
28	24.2 - 36.0	24.5 - 34.0	24.9 - 31.3	25.2 - 30.8
48	41.3 - 60.0	42.0 - 58.0	42.3 - 54.4	43.2 - 52.8



**MODEL SELECTION CHART**

Model	Nominal Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current (mA)	No Load Input Current (mA)	Full Load Input Current (mA)	Efficiency @ FL (%)	Case Style
505S5E	5	5	1000	90	1580	67	A or A1
512S5E	5	12	450	80	1650	65	A or A1
515S5E	5	15	350	70	1580	66	A or A1
505S12E	12	5	1000	40	600	69	A or A1
512S12E	12	12	450	40	750	60	A or A1
515S12E	12	15	350	40	625	70	A or A1
505S24E	24	5	1000	20	360	70	A or A1
512S24E	24	12	450	20	360	67	A or A1
515S24E	24	15	350	20	312	70	A or A1
505S28E	28	5	1000	20	255	70	A or A1
512S28E	28	12	450	15	287	67	A or A1
515S28E	28	15	350	15	268	70	A or A1
505S48E	48	5	1000	11	160	70	A or A1
512S48E	48	12	450	11	168	67	A or A1
515S48E	48	15	350	11	156	70	A or A1