

D3-2W Series

2W Unregulated Single & Dual output



Features

- 7 Pin SIL / 14 Pin DIL Package
- 1000 VDC Isolation
- Up to 6000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 86%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case

The D3 series is a family of cost effective 2W single & dual output DC-DC converters. These converters achieve low cost and ultra-miniature SIP 7 pin or DIP 14 pin size. Devices are encapsulated using flame retardant resin. The models operate from input voltage of 3.3, 5, 12, 15, 24, 48 Vdc with output voltage of 3.3, 5, 7.2, 9, 12, 15, 18, 24, ± 3.3 , ± 5 , ± 7.2 , ± 9 , ± 12 , ± 15 , ± 18 , ± 24 Vdc. High performance features include 1000Vdc~6000Vdc input/output isolation, high efficiency operation and output voltage accuracy of $\pm 3\%$ maximum. Standard features include an input range of $\pm 10\%$ tolerance and low output noise and ripple.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS	
Voltage accuracy	$\pm 3\%$
Line regulation	$\pm 1.2\%$ / Per 1% Vin Change
Load regulation	(From 20% to 100% Load) $\pm 10\%$ (Output 3.3V Model) $\pm 20\%$
Ripple & noise (20 MHz bandwidth)(1)	75mV pk-pk
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$
Capacitor load(2)	See table

INPUT SPECIFICATIONS	
Voltage Range	$\pm 10\%$
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	Capacitors
Input Reflected Ripple Current (3)	20mA pk-pk

ENVIRONMENT SPECIFICATIONS	
Operating Temperature	-40°C~85°C(See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

GENERAL SPECIFICATIONS	
Efficiency	See table
I/O Isolation Voltage (3 sec)	Input/Output 1000~6000Vdc
I/O Isolation Capacitance	60 pF Typ.
I/O Isolation Resistance	1000M Ohm, min
Switching Frequency	Variable 80kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

EMC SPECIFICATIONS		
Radiated Emissions	EN55022	CLASS B
Conducted Emissions (4)	EN55022	CLASS B
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT (5)	IEC 61000-4-4	Perf. Criteria A
Surge (5)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

PHYSICAL SPECIFICATIONS	
Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	0.5mm Alloy42 Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	(SIP/2.3g) (DIP/2.6g)
Dimensions	SIP Case 0.76"x0.24"x0.39" DIP Case 0.80"x0.40"x0.27"

ABSOLUTE MAXIMUM RATINGS (6)		
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.		
Input Surge Voltage(100mS)		
3.3 Models		6 Vdc ,max.
5 Models		7 Vdc ,max.
12 Models		15 Vdc ,max.
15 Models		18 Vdc ,max.
24 Models		28 Vdc ,max.
48 Models		54 Vdc ,max.
Soldering Temperature (1.5mm from case 10 sec. max.)		260 °C ,max.

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D3 - 2W Unregulated Single & Dual output

PART NUMBER STRUCTURE

D3 - 12 05 SS H6

Series Name

Input Voltage

3R3 - 3.3V
05 - 5V
12 - 12V
15 - 15V
24 - 24V
48 - 48V

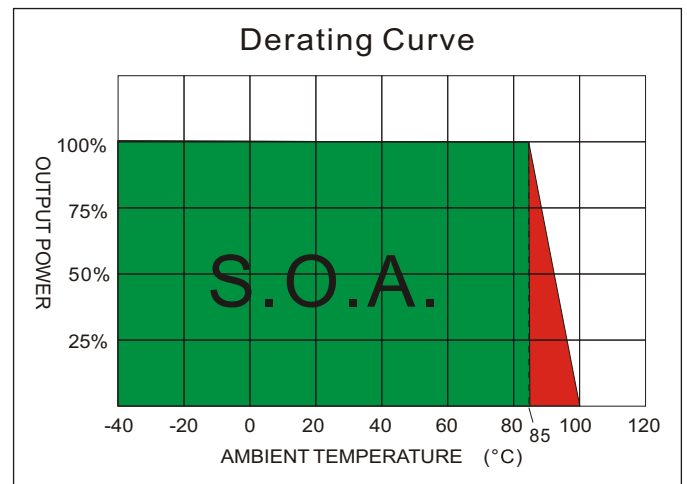
Output Voltage

3R3 - 3.3V
05 - 5V
7R2 - 7.2V
09 - 9V
12 - 12V
15 - 15V
24 - 24V

Case & Output T ype

S - SIP Case, Dual Output
D - DIP Case, Dual Output
SS - SIP Case, Single Output
DS - DIP Case, Single Output

High Isolation
Optional, if no suffix "H" mean 1 KVDC Isolation
H - 3KVdc Isolation
H2 - 2KVdc Isolation
H4 - 4KVdc Isolation
H5 - 5.2KVdc Isolation
H6 - 6KVdc Isolation



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)				
D3-3R33R3SS	3.3	26	797	3.3	400	76	470
D3-3R305SS	3.3	30	797	5	400	76	470
D3-3R37R2SS	3.3	30	808	7.2	278	75	470
D3-3R309SS	3.3	30	758	9	222	80	470
D3-3R312SS	3.3	35	748	12	167	81	470
D3-3R315SS	3.3	40	777	15	133	78	470
D3-3R318SS	3.3	35	787	18	111	77	470
D3-3R324SS	3.3	35	767	24	83	79	470
D3-053R3SS	5	16	513	3.3	400	78	470
D3-0505SS	5	20	488	5	400	82	470
D3-057R2SS	5	22	494	7.2	278	81	470
D3-0509SS	5	35	476	9	222	84	470
D3-0512SS	5	30	470	12	167	85	470
D3-0515SS	5	25	465	15	133	86	470
D3-0518SS	5	25	494	18	111	81	470
D3-0524SS	5	22	471	24	83	85	470
D3-123R3SS	12	20	242	3.3	400	69	470
D3-1205SS	12	20	203	5	400	82	470
D3-127R2SS	12	15	201	7.2	278	83	470
D3-1209SS	12	17	201	9	222	83	470
D3-1212SS	12	15	196	12	167	85	470
D3-1215SS	12	20	196	15	133	85	470
D3-1218SS	12	18	198	18	111	84	470
D3-1224SS	12	15	201	24	83	83	470
D3-243R3SS	24	5	107	3.3	400	78	470
D3-2405SS	24	10	104	5	400	80	470
D3-247R2SS	24	10	104	7.2	278	80	470
D3-2409SS	24	10	100	9	222	83	470
D3-2412SS	24	8	98	12	167	85	470
D3-2415SS	24	8	99	15	133	84	470
D3-2418SS	24	10	102	18	111	82	470
D3-2424SS	24	13	100	24	83	83	470

Suffix "H" means 3 KVdc isolation
Suffix "H5" means 5.2 KVdc isolation

Suffix "H2" means 2 KVdc isolation
Suffix "H6" means 6 KVdc isolation

Suffix "H4" means 4 KVdc isolation

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D3 - 2W Unregulated Single & Dual output

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Full load (mA)			
D3-483R3SS	48	5	53	3.3	400	78	470	
D3-4805SS	48	5	53	5	400	78	470	
D3-487R2SS	48	10	52	7.2	278	80	470	
D3-4809SS	48	10	52	9	222	80	470	
D3-4812SS	48	10	50	12	167	82	470	
D3-4815SS	48	8	52	15	133	80	470	
D3-4818SS	48	8	51	18	111	81	470	
D3-4824SS	48	10	51	24	83	81	470	
D3-3R33R3DS	3.3	26	808	3.3	400	75	470	
D3-3R305DS	3.3	40	819	5	400	74	470	
D3-3R37R2DS	3.3	40	808	7.2	278	75	470	
D3-3R309DS	3.3	45	808	9	222	75	470	
D3-3R312DS	3.3	50	767	12	167	79	470	
D3-3R315DS	3.3	47	767	15	133	79	470	
D3-3R318DS	3.3	50	787	18	111	77	470	
D3-3R324DS	3.3	47	797	24	83	76	470	
D3-053R3DS	5	20	506	3.3	400	79	470	
D3-0505DS	5	20	470	5	400	85	470	
D3-057R2DS	5	25	482	7.2	278	83	470	
D3-0509DS	5	30	476	9	222	84	470	
D3-0512DS	5	30	471	12	167	85	470	
D3-0515DS	5	25	465	15	133	86	470	
D3-0518DS	5	32	500	18	111	80	470	
D3-0524DS	5	25	500	24	83	80	470	
D3-123R3DS	12	12	219	3.3	400	76	470	
D3-1205DS	12	10	211	5	400	79	470	
D3-127R2DS	12	16	201	7.2	278	83	470	
D3-1209DS	12	10	196	9	222	85	470	
D3-1212DS	12	13	194	12	167	86	470	
D3-1215DS	12	15	201	15	133	83	470	
D3-1218DS	12	18	198	18	111	84	470	
D3-1224DS	12	15	201	24	83	83	470	
D3-243R3DS	24	10	110	3.3	400	76	470	
D3-2405DS	24	8	102	5	400	82	470	
D3-247R2DS	24	10	104	7.2	278	80	470	
D3-2409DS	24	8	102	9	222	82	470	
D3-2412DS	24	8	100	12	167	83	470	
D3-2415DS	24	8	98	15	133	85	470	
D3-2418DS	24	10	102	18	111	82	470	
D3-2424DS	24	12	100	24	83	83	470	
D3-483R3DS	48	5	53	3.3	400	78	470	
D3-4805DS	48	5	53	5	400	78	470	
D3-487R2DS	48	10	52	7.2	278	80	470	
D3-4809DS	48	8	52	9	222	80	470	
D3-4812DS	48	5	50	12	167	84	470	
D3-4815DS	48	8	52	15	133	80	470	
D3-4818DS	48	8	51	18	111	81	470	
D3-4824DS	48	10	51	24	83	81	470	

Suffix "H" means 3 KVdc isolation
 Suffix "H5" means 5.2 KVdc isolation

Suffix "H2" means 2 KVdc isolation
 Suffix "H6" means 6 KVdc isolation

Suffix "H4" means 4 KVdc isolation

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D3 - 2W Unregulated Single & Dual output

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL(%)	Capacitor Load(µF)
		No-Load (mA)	Full Load (mA)				
D3-3R33R3S	3.3	25	797	±3.3	±200	76	±220
D3-3R305S	3.3	40	777	±5	±200	78	±220
D3-3R37R2S	3.3	40	797	±7.2	±139	76	±220
D3-3R309S	3.3	40	797	±9	±111	76	±220
D3-3R312S	3.3	45	777	±12	±83.5	78	±220
D3-3R315S	3.3	45	777	±15	±66.6	78	±220
D3-3R318S	3.3	45	777	±18	±55.5	78	±220
D3-3R324S	3.3	45	767	±24	±41.6	79	±220
D3-053R3S	5	25	588	±3.3	±200	68	±220
D3-0505S	5	25	548	±5	±200	73	±220
D3-057R2S	5	25	519	±7.2	±139	77	±220
D3-0509S	5	30	506	±9	±111	79	±220
D3-0512S	5	30	494	±12	±83.5	81	±220
D3-0515S	5	30	488	±15	±66.6	82	±220
D3-0518S	5	26	482	±18	±55.5	83	±220
D3-0524S	5	30	488	±24	±41.6	82	±220
D3-123R3S	12	10	245	±3.3	±200	68	±220
D3-1205S	12	18	225	±5	±200	74	±220
D3-127R2S	12	15	211	±7.2	±139	79	±220
D3-1209S	12	13	203	±9	±111	82	±220
D3-1212S	12	23	203	±12	±83.5	82	±220
D3-1215S	12	20	201	±15	±66.6	83	±220
D3-1218S	12	16	198	±18	±55.5	84	±220
D3-1224S	12	15	196	±24	±41.6	85	±220
D3-243R3S	24	6	117	±3.3	±200	71	±220
D3-2405S	24	7	111	±5	±200	75	±220
D3-247R2S	24	12	110	±7.2	±139	76	±220
D3-2409S	24	7	103	±9	±111	81	±220
D3-2412S	24	6	99	±12	±83.5	84	±220
D3-2415S	24	6	98	±15	±66.6	85	±220
D3-2418S	24	6	97	±18	±55.5	86	±220
D3-2424S	24	8	97	±24	±41.6	86	±220
D3-483R3S	48	5	56	±3.3	±200	75	±220
D3-4805S	48	4	56	±5	±200	75	±220
D3-487R2S	48	5	53	±7.2	±139	78	±220
D3-4809S	48	5	54	±9	±111	77	±220
D3-4812S	48	4	50	±12	±83.5	83	±220
D3-4815S	48	5	50	±15	±66.6	83	±220
D3-4818S	48	6	52	±18	±55.5	80	±220
D3-4824S	48	6	52	±24	±41.6	80	±220
D3-3R33R3D	3.3	25	808	±3.3	±200	75	±220
D3-3R305D	3.3	45	808	±5	±200	75	±220
D3-3R37R2D	3.3	40	797	±7.2	±139	76	±220
D3-3R309D	3.3	40	797	±9	±111	76	±220
D3-3R312D	3.3	45	777	±12	±83.5	78	±220
D3-3R315D	3.3	45	777	±15	±66.6	78	±220
D3-3R318D	3.3	45	777	±18	±55.5	78	±220
D3-3R324D	3.3	45	767	±24	±41.6	79	±220

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D3 - 2W Unregulated Single & Dual output

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current	EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Full load (mA)		
D3-053R3D	5	25	597	±3.3	±200	67	±220
D3-0505D	5	15	533	±5	±200	75	±220
D3-057R2D	5	35	556	±7.2	±139	72	±220
D3-0509D	5	30	476	±9	±111	84	±220
D3-0512D	5	25	488	±12	±83.5	82	±220
D3-0515D	5	25	488	±15	±66.6	82	±220
D3-0518D	5	25	476	±18	±55.5	84	±220
D3-0524D	5	40	482	±24	±41.6	83	±220
D3-123R3D	12	15	249	±3.3	±200	67	±220
D3-1205D	12	20	225	±5	±200	74	±220
D3-127R2D	12	20	219	±7.2	±139	76	±220
D3-1209D	12	15	206	±9	±111	81	±220
D3-1212D	12	23	203	±12	±83.5	82	±220
D3-1215D	12	20	201	±15	±66.6	83	±220
D3-1218D	12	16	198	±18	±55.5	84	±220
D3-1224D	12	16	196	±24	±41.6	85	±220
D3-243R3D	24	10	123	±3.3	±200	68	±220
D3-2405D	24	8	110	±5	±200	76	±220
D3-247R2D	24	15	111	±7.2	±139	75	±220
D3-2409D	24	7	105	±9	±111	79	±220
D3-2412D	24	7	100	±12	±83.5	83	±220
D3-2415D	24	7	98	±15	±66.6	85	±220
D3-2418D	24	10	99	±18	±55.5	84	±220
D3-2424D	24	8	99	±24	±41.6	84	±220
D3-483R3D	48	5	64	±3.3	±200	65	±220
D3-4805D	48	4	56	±5	±200	75	±220
D3-487R2D	48	10	56	±7.2	±139	74	±220
D3-4809D	48	5	54	±9	±111	77	±220
D3-4812D	48	5	52	±12	±83.5	80	±220
D3-4815D	48	8	51	±15	±66.6	81	±220
D3-4818D	48	6	52	±18	±55.5	80	±220
D3-4824D	48	6	52	±24	±41.6	80	±220

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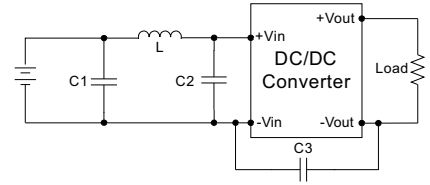
NOTE

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal V_n and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Input filter components are required to help meet conducted emission class B, which application refer to the EMI Filter of design & feature configuration.
5. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
The filter capacitor ZimTec Electronics suggest: Nippon - chemi - con KY series, 470uF/100V.
6. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
7. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

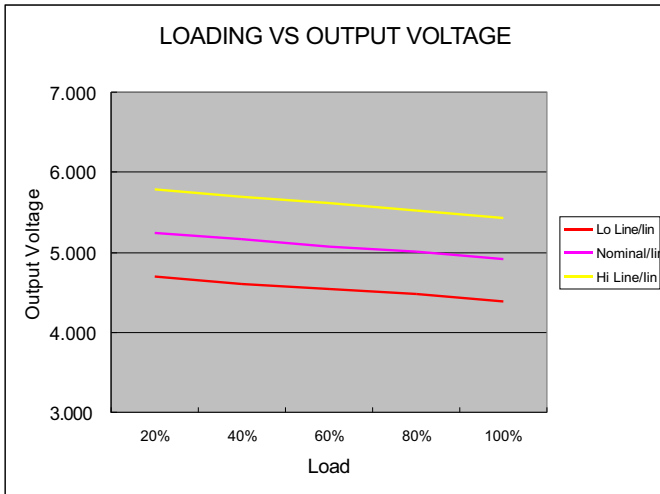
TEST CONFIGURATIONS

EMI Filter

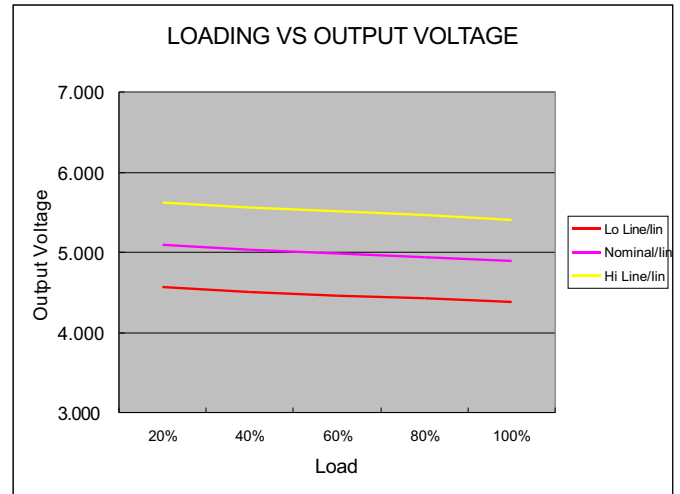
Input filter components (C1, L, C2, C3) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



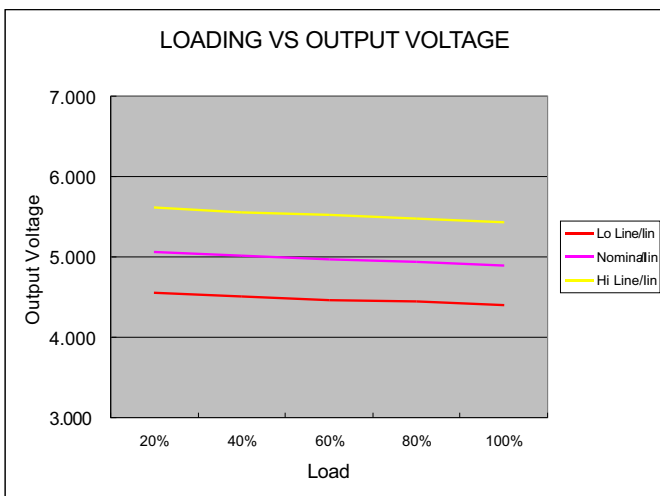
	C1	L	C2	C3
D3-3R3XXXXX	1210, 2.2uF/100V	18uH		
D3-05XXXXX	1210, 2.2uF/100V	18uH		
D3-12XXXXX	1210, 2.2uF/100V	18uH		
D3-15XXXXX	1210, 2.2uF/100V	18uH		
D3-24XXXXX	1210, 2.2uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV
D3-48XXXXX	Electrolytic capacitor 10uF/100V	18uH	1210, 2.2uF/100V	1206, 470pF/2KV



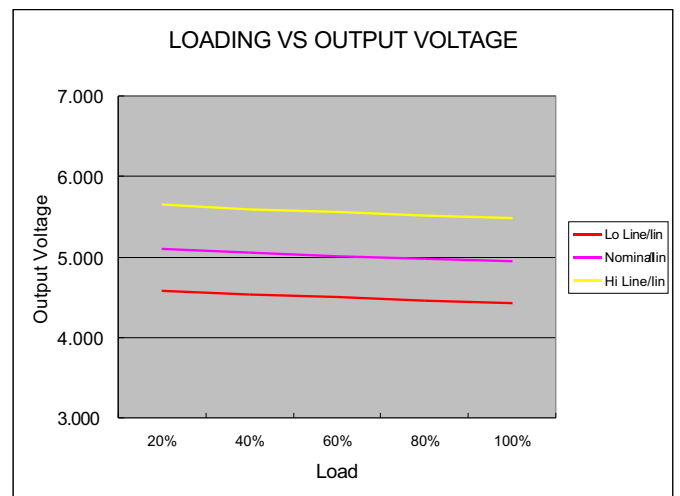
05 Models



12 Models



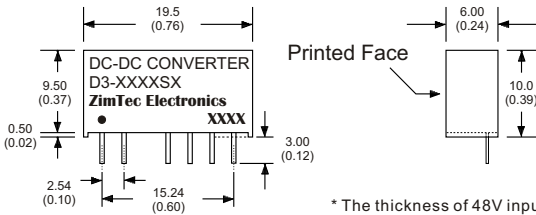
24 Models



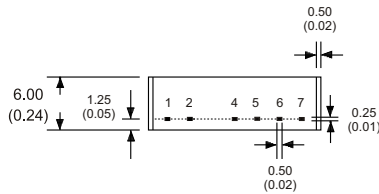
48 Models

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MECHANICAL SPECIFICATIONS



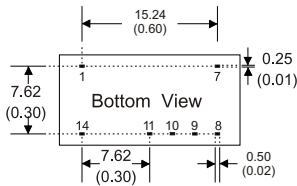
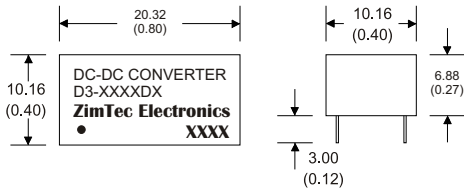
* The thickness of 48V input voltage model is 7.20(0.28)



7 Pin SIL Package

Notes : All dimensions are typical in millimeters (inches).
 1. Pin diameter: 0.5±0.05 (0.02±0.002)
 2. Pin pitch and length tolerance: ±0.35 (±0.014)
 3. Case Tolerance: ±0.5 (±0.02)

PIN CONNECTIONS				
PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	+V Input	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input	-V Input
4	-V Output	-V Output	N.P.	N.P.
5	N.P.	Common	-V Output	-V Output
6	+V Output	+V Output	N.P.	Common
7	N.P.	N.P.	+V Output	+V Output



14 Pin DIL Package

Notes : All dimensions are typical in millimeters (inches).
 1. Pin diameter: 0.5±0.05 (0.02±0.002)
 2. Pin pitch and length tolerance: ±0.35 (±0.014)
 3. Case Tolerance: ±0.5 (±0.02)

PIN CONNECTIONS				
PIN NUMBER	SINGLE	DUAL	SINGLE-H	DUAL-H
1	-V Input	-V Input	-V Input	-V Input
7	N.C.	N.C.	N.C.	N.C.
8	N.P.	Common	+V Output	+V Output
9	+V Output	+V Output	N.P.	Common
10	N.P.	N.P.	-V Output	-V Output
11	-V Output	-V Output	N.P.	N.P.
14	+V Input	+V Input	+V Input	+V Input