

## DC-DC CONVERTERS



### MAIN FEATURES

- Power range: 2 to 25W for current models; design capability up to 300W.
- SMD and thick film technology utilized to shrink size and enhance reliability
- Designed with derating to enhance reliability.
- High efficiency: 70% for 10W power models. 80% or above for higher power models.
- 100% burn-in.
- 200% computerized functional test before and after burn-in.
- 100% tested for dielectric withstand.
- MTBF: 500khrs typical.
- A wide range of standard products are provided. Semi-standard or OEM design are also acceptable.

# SPECIFICATIONS OF REPRESENTATIVE MODELS

DELTA PRODUCTS CORP

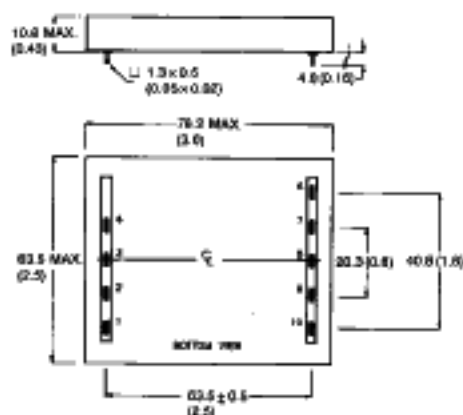
BOE D ■ 2744838 0000356 573 ■ DELT

## 25-30 Watts / 6-Sided Shielding

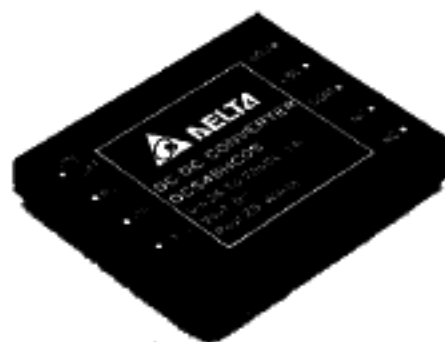
DCS24HC05

| Input voltage |             | Output voltage (VDC) | Output current (A) | Model number | Package | Features   |
|---------------|-------------|----------------------|--------------------|--------------|---------|--|
| Nominal (VDC) | Range (VDC) |                      |                    |              |         |  |
| 48            | 36-72       | 5                    | 5                  | DCS48HC05    | HC      | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• Ceramic hybrid technology</li> <li>• Low profile</li> <li>• High power density</li> <li>• 6-sided shielding</li> <li>• High efficiency (&gt;80% typ)</li> <li>• 500 VDC isolation</li> </ul> |
|               |             | 12                   | 2.5                | DCS48HC12    |         |  |
| 24            | 18-36       | 5                    | 5                  | DCS24HC05    |         |  |
|               |             | 12                   | 2.5                | DCS24HC12    |         |  |
| 12            | 10-20       | 5                    | 5                  | DCS12HC05    |         |  |

### Construction & Dimensions



UNIT: mm/(inch)

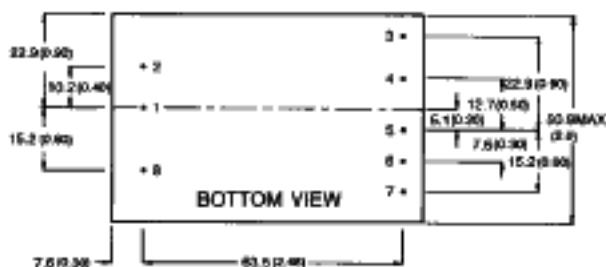


| PIN | FUNCTION      |
|-----|---------------|
| 1   | REMOTE ON/OFF |
| 2   | N.C.          |
| 3   | +Vin          |
| 4   | -Vin          |
| 6   | N.C.          |
| 7   | N.C.          |
| 8   | COM           |
| 9   | Vo1           |
| 10  | O/P ADJUST    |

## 20Watts/Wide Input Range

| Input voltage |             | Output voltage (VDC) | Output current (A) | Model number | Package | Features  |   |  |
|---------------|-------------|----------------------|--------------------|--------------|---------|---|---|--|
| Nominal (VDC) | Range (VDC) |                      |                    |              |         |   |   |  |
| 12            | 9-18        | 5                    | 4.0                | DPS12J05     | J       | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• 2:1 wide input range</li> <li>• High efficiency</li> <li>• Short circuit protection</li> <li>• 500 VDC isolation</li> </ul> |   |  |
|               |             | 12                   | 1.6                | DPS12J12     |         |   |   |  |
|               |             | 15                   | 1.3                | DPS12J15     |         |   |   |  |
| 24            | 18-36       | 5                    | 4.0                | DPS24J05     |         |   |   |  |
|               |             | 12                   | 1.6                | DPS24J12     |         |   |   |  |
|               |             | 15                   | 1.3                | DPS24J15     |         |   |   |  |
| 48            | 36-72       | 5                    | 4.0                | DPS48J05     |         |   |   |  |
|               |             | 12                   | 1.6                | DPS48J12     |         |   |   |  |
|               |             | 15                   | 1.3                | DPS48J15     |         |   |   |  |
| 12            | 9-18        | ± 5                  | 2.0                | DPD12J05     |         |   | J | <ul style="list-style-type: none"> <li>• Dual regulated outputs</li> <li>• 2:1 wide input range</li> <li>• High efficiency</li> <li>• Short circuit protection</li> <li>• 500 VDC isolation</li> </ul> |
|               |             | ± 12                 | 0.8                | DPD12J12     |         |   |   |  |
|               |             | ± 15                 | 0.65               | DPD12J15     |         |   |   |  |
| 24            | 18-36       | ± 5                  | 2.0                | DPD24J05     |         |   |   |  |
|               |             | ± 12                 | 0.8                | DPD24J12     |         |   |   |  |
|               |             | ± 15                 | 0.65               | DPD24J15     |         |   |   |  |
| 48            | 36-72       | ± 5                  | 2.0                | DPD48J05     |         |   |   |  |
|               |             | ± 12                 | 0.8                | DPD48J12     |         |   |   |  |
|               |             | ± 15                 | 0.65               | DPD48J15     |         |   |   |  |

### Construction & Dimensions



| PIN | FUNCTION |
|-----|----------|
| 1   | + Vin    |
| 2   | - Vin    |
| 3   | NC       |
| 4   | NC       |
| 5   | + Vout   |
| 6   | COM      |
| 7   | - Vout   |
| 8   | NC       |

UNIT: mm(inch)

## 6 Watts

| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package  | Features  |
|---------------|-------------|----------------------|---------------------|--------------|--|---|
| Nominal (VDC) | Range (VDC) |                      |                     |              |  |   |
| 5             | 4.75-5.25   | 5                    | 800                 | DPS05L05     | L  | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• Metal case</li> <li>• 500 VDC isolation</li> </ul>  |
|               |             | 12                   | 500                 | DPS05L12     |  |   |
|               |             | 15                   | 300                 | DPS05L15     |  |   |
| 12            | 11.4-12.6   | 5                    | 800                 | DPS12L05     |  |   |
|               |             | 12                   | 500                 | DPS12L12     |  |   |
|               |             | 15                   | 300                 | DPS12L15     |  |   |
| 24            | 22.8-25.2   | 5                    | 800                 | DPS24L05     |  |   |
|               |             | 12                   | 500                 | DPS24L12     |  |   |
|               |             | 15                   | 300                 | DPS24L15     |  |   |
| 5             | 4.5-5.5     | ±12                  | 200                 | DPD05L12     |  | <ul style="list-style-type: none"> <li>• Dual unregulated outputs</li> <li>• Metal case</li> <li>• 500 VDC isolation</li> </ul> |
|               |             | ±15                  | 150                 | DPD05L15     |  |   |
| 12            | 10.8-13.2   | ±12                  | 200                 | DPD12L12     |  |   |
|               |             | ±15                  | 150                 | DPD12L15     |  |   |
| 24            | 22.8-26.4   | ±12                  | 200                 | DPD24L12     |  |   |
|               |             | ±15                  | 150                 | DPD24L15     |  |   |
| 48            | 36-72       | 5                    | 800                 | DPS48L05     | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• 2:1 wide input range</li> <li>• Metal case</li> <li>• 500 VDC isolation</li> </ul> |   |
|               |             | 12                   | 500                 | DPS48L12     |  |   |
|               |             | 15                   | 400                 | DPS48L15     |  |   |
|               |             | ±12                  | 250                 | DPD48L12     |  |   |
|               |             | ±15                  | 200                 | DPD48L15     |  |   |

## 5-6 Watts/6-Sided Shielding

| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package | Features  |
|---------------|-------------|----------------------|---------------------|--------------|---------|---|
| Nominal (VDC) | Range (VDC) |                      |                     |              |         |   |
| 5             | 4.6-5.5     | 5                    | 1000                | DPS0505A-1   | A1      | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• 6-sided shielding</li> <li>• 500 VDC isolation</li> </ul> |
| 24            | 21.6-26.4   | 5                    | 1000                | DPS2405A-1   |         |   |
| 5             | 4.75-5.25   | ±15                  | 150                 | DPD0505A-1   |         |   |
| 5             | 4.5-5.5     | ±12                  | 230                 | DPD0506A-1   |         | <ul style="list-style-type: none"> <li>• Dual regulated outputs</li> <li>• 6-sided shielding</li> <li>• 500 VDC isolation</li> </ul>  |

## 2-3 Watts/Wide Input Range

PRODUCT

| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package | Features   |
|---------------|-------------|----------------------|---------------------|--------------|---------|--|
| Nominal (VDC) | Range (VDC) |                      |                     |              |         |  |
| 5             | 4.5-5.5     | 5                    | 300                 | DPS05T05     | T       | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• Wide input range</li> <li>• Short circuit protection</li> <li>• 500 VDC isolation</li> </ul> |
|               |             | 12                   | 140                 | DPS05T12     |         |  |
|               |             | 15                   | 100                 | DPS05T15     |         |  |
| 12            | 9.4-18      | 5                    | 300                 | DPS12T05     |         |  |
|               |             | 12                   | 140                 | DPS12T12     |         |  |
|               |             | 15                   | 100                 | DPS12T15     |         |  |
| 24            | 20-30       | 5                    | 300                 | DPS24T05     |         |  |
|               |             | 12                   | 140                 | DPS24T12     |         |  |
|               |             | 15                   | 100                 | DPS24T15     |         |  |
| 48            | 36-72       | 5                    | 500                 | DPS48T05     |         |  |
|               |             | 12                   | 200                 | DPS48T12     |         |  |
|               |             | 15                   | 200                 | DPS48T15     |         |  |

## 2-3 Watts/Wide Input Range

PRODUCT

| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package | Features  |
|---------------|-------------|----------------------|---------------------|--------------|---------|---|
| Nominal (VDC) | Range (VDC) |                      |                     |              |         |   |
| 5             | 4.5-5.5     | 9                    | 200                 | DPS05M09     | M       | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• Wide input range</li> <li>• Short circuit protection</li> <li>• Remote control</li> <li>• 2000 VAC isolation</li> </ul> |
| 12            | 9.4-16      | 9                    | 200                 | DPS12M09     |         |   |
| 5             | 4.5-5.5     | 9                    | 200                 | DPS05S09     | S       | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• Wide input range</li> <li>• Short circuit protection</li> <li>• Open type</li> <li>• 2000 VAC isolation</li> </ul>      |
| 12            | 9.4-16      | 9                    | 200                 | DPS12S09     |         |   |
|               |             | 12                   | 140                 | DPS12S12     |         |   |
| 48            | 36-72       | 5                    | 500                 | DPS48S05     |         |   |
| 5             | 4.5-5.5     | 9                    | 200                 | DPS05SE09    | SE      | <ul style="list-style-type: none"> <li>• Enable/disable control for SE models</li> </ul>  |
| 12            | 9.4-16      | 9                    | 200                 | DPS12SE09    |         |   |

## 2 Watts

PRODUCT

| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package | Features  |
|---------------|-------------|----------------------|---------------------|--------------|---------|---|
| Nominal (VDC) | Range (VDC) |                      |                     |              |         |   |
| 48            | 38-62       | 5                    | 500                 | DPS4802A-1   | A2      | <ul style="list-style-type: none"> <li>• 500 VDC isolation</li> <li>• 5-sided metal case</li> </ul>                               |
| 48            | 42-56       | 5                    | 400                 | DPS4802C-1   | A3      | <ul style="list-style-type: none"> <li>• 500 VDC isolation</li> <li>• 6-sided shielding</li> </ul>                                |
| 15            | 12-18       | 5                    | 400                 | DUS1502A-1   | A4      | <ul style="list-style-type: none"> <li>• Non-isolation</li> <li>• 24 pin DIP package</li> </ul>                                   |
| 5             | 4.75-5.25   | 9                    | 200                 | DPS0502B     | A5      | <ul style="list-style-type: none"> <li>• 500 VDC isolation</li> <li>• Single unregulated output</li> <li>• SIP package</li> </ul> |

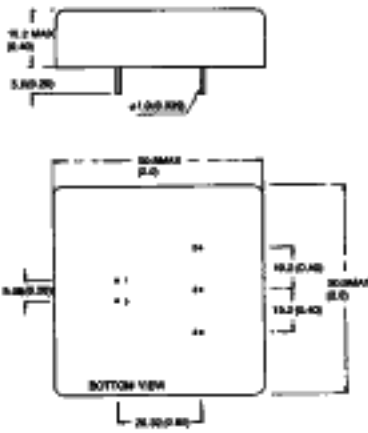
## 2 Watts DIP Package

| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package | Features   |
|---------------|-------------|----------------------|---------------------|--------------|---------|--|
| Nominal (VDC) | Range (VDC) |                      |                     |              |         |  |
| 5             | 4.75-5.25   | 5                    | 220                 | DPS05RB05    | RB      | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• 10 mm (0.4 in.) low profile</li> <li>• 500 VDC isolation</li> <li>• Enable/disable control for RE model</li> </ul> |
|               |             | 9                    | 200                 | DPS05RB09    |         |  |
|               |             | 12                   | 160                 | DPS05RB12    |         |  |
|               |             | 15                   | 100                 | DPS05RB15    |         |  |
| 12            | 10.8-13.2   | 5                    | 220                 | DPS12RB05    |         |  |
|               |             | 9                    | 200                 | DPS12RB09    |         |  |
|               |             | 12                   | 160                 | DPS12RB12    |         |  |
|               |             | 15                   | 100                 | DPS12RB15    |         |  |
| 12            | 11.4-12.6   | 9                    | 200                 | DPS12RE09    | RE      |  |
| 5             | 4.75-5.25   | 5                    | 220                 | DPS05C05     | C       | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• 2000 VDC isolation</li> </ul>  |
|               |             | 12                   | 160                 | DPS05C12     |         |  |
|               |             | 15                   | 100                 | DPS05C15     |         |  |
| 12            | 10.8-13.2   | 5                    | 220                 | DPS12C05     |         |  |
|               |             | 12                   | 160                 | DPS12C12     |         |  |
|               |             | 15                   | 100                 | DPS12C15     |         |  |

## 2 Watts DIP Package

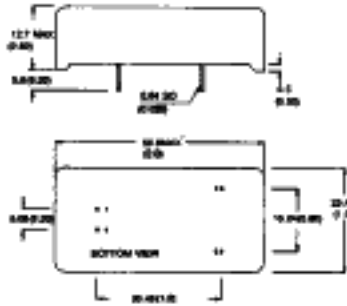
| Input voltage |             | Output voltage (VDC) | Output current (mA) | Model number | Package | Features   |
|---------------|-------------|----------------------|---------------------|--------------|---------|--|
| Nominal (VDC) | Range (VDC) |                      |                     |              |         |  |
| 5             | 4.75-5.25   | 5                    | 220                 | DPS05R05     | RS      | <ul style="list-style-type: none"> <li>• Single regulated output</li> <li>• 500 VDC isolation</li> </ul> |
|               |             | 9                    | 200                 | DPS05R09     |         |  |
|               |             | 12                   | 160                 | DPS05R12     |         |  |
|               |             | 15                   | 100                 | DPS05R15     |         |  |
| 12            | 10.8-13.2   | 5                    | 220                 | DPS12R05     |         |  |
|               |             | 9                    | 200                 | DPS12R09     |         |  |
|               |             | 12                   | 160                 | DPS12R12     |         |  |
|               |             | 15                   | 100                 | DPS12R15     |         |  |
| 5             | 4.75-5.25   | ±12                  | 60                  | DPD05R12     | RD      | <ul style="list-style-type: none"> <li>• Dual regulated outputs</li> <li>• 500 VDC isolation</li> </ul>  |
|               |             | ±15                  | 40                  | DPD05R15     |         |  |
| 12            | 10.8-13.2   | ±5                   | 80                  | DPD12R05     |         |  |
|               |             | ±12                  | 60                  | DPD12R12     |         |  |
|               |             | ±15                  | 40                  | DPD12R15     |         |  |
| 5             | 4.75-5.25   | 9                    | 200                 | DPS05U09     |         |  |
| 12            | 10.8-13.2   | 9                    | 200                 | DPS12U09     |         |  |

A1



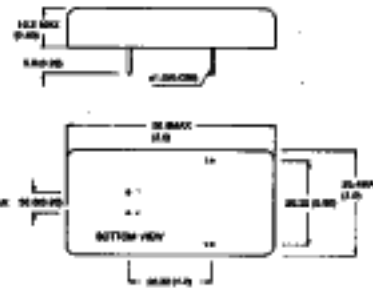
| PN | SINGLE | DUAL   |
|----|--------|--------|
| 1  | + Vin  | + Vn   |
| 2  | + Vout | + Vout |
| 3  | NO PIN | COM    |
| 4  | - Vout | - Vout |
| 5  | - Vin  | - Vn   |

A2



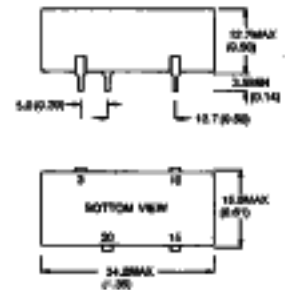
| PN | FUNCTION |
|----|----------|
| 1  | + Vin    |
| 2  | + Vout   |
| 3  | - Vout   |
| 4  | - Vin    |

A3



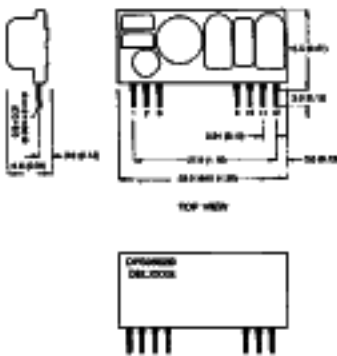
| PN | FUNCTION |
|----|----------|
| 1  | + Vin    |
| 2  | + Vout   |
| 3  | - Vout   |
| 4  | - Vin    |

A4



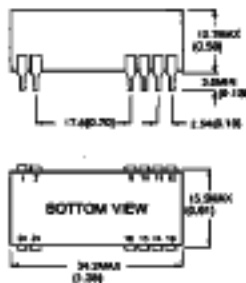
| PN | FUNCTION |
|----|----------|
| 3  | COM      |
| 10 | + Vn     |
| 15 | NC       |
| 20 | + Vout   |

A5



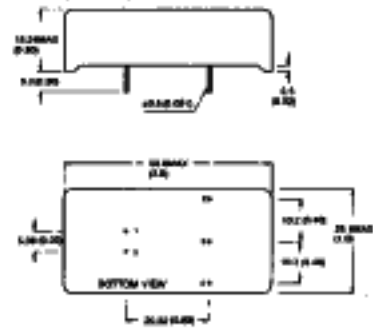
| PN | SINGLE OUTPUT |
|----|---------------|
| 1  | + INPUT       |
| 2  | NC            |
| 3  | NC            |
| 9  | NC            |
| 10 | - OUTPUT      |
| 11 | + OUTPUT      |
| 12 | - INPUT       |

C



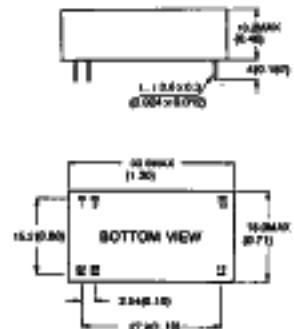
| PN     | FUNCTION |
|--------|----------|
| 1, 2   | + Vin    |
| 8, 10  | - Vout   |
| 11, 12 | + Vout   |
| 13-16  | NC       |
| 23, 24 | - Vin    |

L



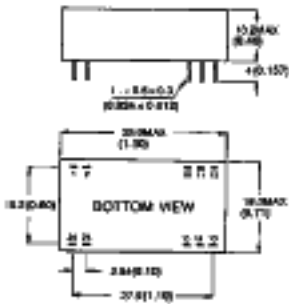
| PN | SINGLE | DUAL   |
|----|--------|--------|
| 1  | + Vn   | + Vn   |
| 2  | + Vout | + Vout |
| 3  | NO PIN | COM    |
| 4  | - Vout | - Vout |
| 5  | - Vn   | - Vn   |

M



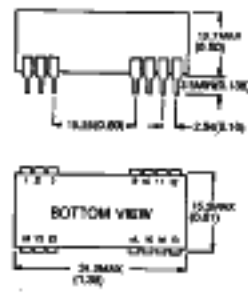
| PN     | FUNCTION |
|--------|----------|
| 1      | + Vin    |
| 2      | ENABLE   |
| 12     | + Vout   |
| 13     | - Vout   |
| 23, 24 | - Vin    |

RB



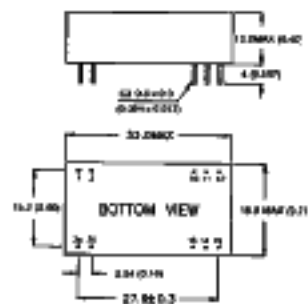
| PIN    | FUNCTION           |
|--------|--------------------|
| 1, 24  | + V <sub>in</sub>  |
| 2, 23  | NC                 |
| 10, 15 | - V <sub>out</sub> |
| 11, 14 | + V <sub>out</sub> |
| 12, 13 | - V <sub>in</sub>  |

RD



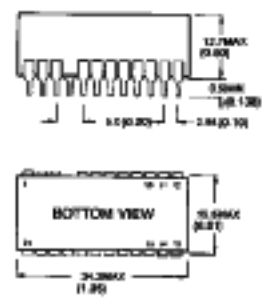
| PIN    | FUNCTION           |
|--------|--------------------|
| 1, 24  | + V <sub>in</sub>  |
| 2, 23  | - V <sub>out</sub> |
| 3, 22  | COM                |
| 3, 10  | NC                 |
| 10, 15 | COM                |
| 11, 14 | + V <sub>out</sub> |
| 12, 13 | - V <sub>in</sub>  |

RE



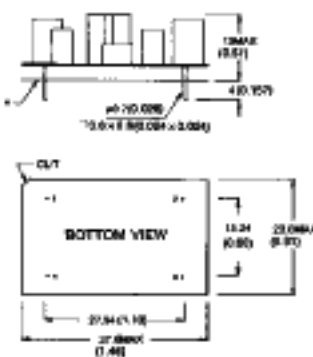
| PIN    | FUNCTION           |
|--------|--------------------|
| 1, 24  | + V <sub>in</sub>  |
| 23     | NC                 |
| 10, 15 | - V <sub>out</sub> |
| 11, 14 | + V <sub>out</sub> |
| 12, 13 | - V <sub>in</sub>  |
| 2      | ENABLE             |

RS



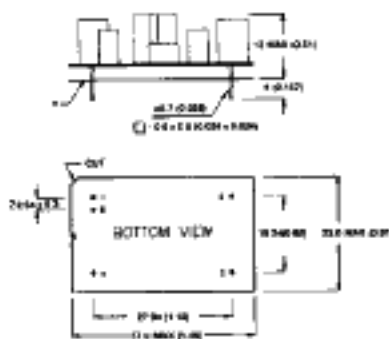
| PIN    | FUNCTION           |
|--------|--------------------|
| 1, 24  | + V <sub>in</sub>  |
| 10, 15 | - V <sub>out</sub> |
| 11, 14 | + V <sub>out</sub> |
| 12, 13 | - V <sub>in</sub>  |
| OTHERS | NC                 |

S



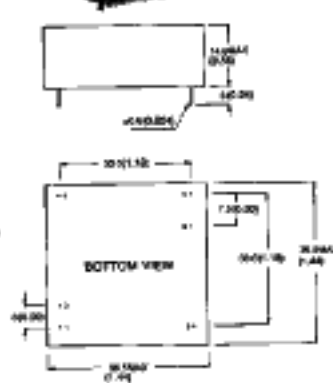
| PIN | FUNCTION           |
|-----|--------------------|
| 1   | + V <sub>in</sub>  |
| 2   | + V <sub>out</sub> |
| 3   | - V <sub>out</sub> |
| 4   | - V <sub>in</sub>  |

SE



| PIN | FUNCTION           |
|-----|--------------------|
| 1   | + V <sub>in</sub>  |
| 2   | + V <sub>out</sub> |
| 3   | - V <sub>out</sub> |
| 4   | - V <sub>in</sub>  |
| 5   | ENABLE             |

T



| PIN | FUNCTION           |
|-----|--------------------|
| 1   | + V <sub>in</sub>  |
| 2   | - V <sub>in</sub>  |
| 3   | NC                 |
| 4   | - V <sub>out</sub> |
| 5   | + V <sub>out</sub> |
| 6   | NC                 |