



# P-DUKE POWER

## TAD30 Series

AC-DC POWER SUPPLIES  
Up to 30 Watts

# 3

YEARS  
WARRANTY

ROHS  
COMPLIANT

REACH  
COMPLIANT

+85°C  
-40°C  
AMBIENT TEMP.



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway



3000  
VAC  
Reinforced  
Insulation

ADJ.  
Output  
Voltage

Internal  
EN55032  
Class  
Filter **B**

LOW  
Standby  
Power

LOW  
Leakage  
Current

Operating  
Altitude  
5000  
meter

Protection  
Class I  
Class II

OCP

OVP

SCP

### PART NUMBER STRUCTURE

| T                    | A            | D              | 30               | U                        | S               | 12                                                                                                                                           | B                         | - |                                                                                 |                                 |
|----------------------|--------------|----------------|------------------|--------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---|---------------------------------------------------------------------------------|---------------------------------|
| Application          | Package Code | Dimension Code | Output Power (W) | Input Voltage (VAC)      | Output Quantity | Output Voltage (VDC)                                                                                                                         | Protection Type           |   | Connector Options                                                               | Conformal Coating Options       |
| Industry Application | A: Open type |                |                  | U: Universal<br>85 ~ 264 | S: Single       | 3P3: 3.3<br>05: 5<br>7P5: 7.5<br>09: 9<br>12: 12<br>121: 12<br>15: 15<br>151: 15<br>18: 18<br>24: 24<br>28: 28<br>36: 36<br>48: 48<br>53: 53 | □: CLASS I<br>B: CLASS II |   | □: JST<br>M: Molex<br>T: Terminal Block<br>D: Pin Type*<br>*(Only for CLASS II) | □: None<br>R: Conformal Coating |

**TECHNICAL SPECIFICATION** All specifications are typical at 230VAC input, full load and 25°C unless otherwise noted

| Model Number | Input Range | Output Voltage | Output Current<br>Natural Convection | Max.<br>Output Power | Input Power<br>@No Load | Efficiency | Maximum<br>Capacitor Load |
|--------------|-------------|----------------|--------------------------------------|----------------------|-------------------------|------------|---------------------------|
|              | VAC         | VDC            | A                                    | W                    | mW                      | %          | μF                        |
| TAD30US3P3B  | 85 ~ 264    | 3.3            | 6                                    | 20                   | 40                      | 84         | 10000                     |
| TAD30US05B   | 85 ~ 264    | 5              | 6                                    | 30                   | 40                      | 87         | 12000                     |
| TAD30US7P5B  | 85 ~ 264    | 7.5            | 4                                    | 30                   | 40                      | 87         | 5340                      |
| TAD30US09B   | 85 ~ 264    | 9              | 3.34                                 | 30                   | 40                      | 88         | 3720                      |
| TAD30US12B   | 85 ~ 264    | 12             | 2.5                                  | 30                   | 40                      | 90.5       | 2085                      |
| TAD30US121B  | 85 ~ 264    | 12             | 2.5                                  | 30                   | 40                      | 88         | 2085                      |
| TAD30US15B   | 85 ~ 264    | 15             | 2                                    | 30                   | 40                      | 90.5       | 1350                      |
| TAD30US151B  | 85 ~ 264    | 15             | 2                                    | 30                   | 40                      | 88         | 1350                      |
| TAD30US18B   | 85 ~ 264    | 18             | 1.67                                 | 30                   | 40                      | 88         | 930                       |
| TAD30US24B   | 85 ~ 264    | 24             | 1.25                                 | 30                   | 40                      | 89.5       | 520                       |
| TAD30US28B   | 85 ~ 264    | 28             | 1.08                                 | 30                   | 40                      | 89.5       | 385                       |
| TAD30US36B   | 85 ~ 264    | 36             | 0.84                                 | 30                   | 40                      | 90         | 235                       |
| TAD30US48B   | 85 ~ 264    | 48             | 0.63                                 | 30                   | 40                      | 91.5       | 130                       |
| TAD30US53B   | 85 ~ 264    | 53             | 0.58                                 | 30                   | 40                      | 91         | 109                       |

| INPUT SPECIFICATIONS          |                        |  |      |              |      |      |
|-------------------------------|------------------------|--|------|--------------|------|------|
| Parameter                     | Conditions             |  | Min. | Typ.         | Max. | Unit |
| Operating input voltage range | AC input               |  | 85   |              | 264  | VAC  |
|                               | DC input               |  | 120  |              | 370  | VDC  |
| Input frequency               | AC input               |  | 47   |              | 63   | Hz   |
| Input current                 | 100VAC and Full Load   |  |      |              | 0.8  | A    |
|                               | 240VAC and Full Load   |  |      |              | 0.4  |      |
| No load input power           | 230VAC                 |  |      | 40           |      | mW   |
| Leakage current               | 264VAC                 |  |      |              | 100  | μA   |
| Start up time                 |                        |  |      |              | 1500 | ms   |
| Rise time                     | Others                 |  |      | 20           |      | ms   |
|                               | 24Vout, 28Vout, 36Vout |  |      | 40           |      |      |
|                               | 48Vout, 53Vout         |  |      | 50           |      |      |
| Hold up time                  | 115VAC and Full Load   |  |      | 16           |      | ms   |
| Input inrush current          | 230VAC                 |  |      | 40           |      | A    |
| Input protection              | Internal fuse          |  |      | T1.6A/250VAC |      |      |

**OUTPUT SPECIFICATIONS**

| Parameter                    | Conditions                                      | Min.  | Typ. | Max.  | Unit                            |
|------------------------------|-------------------------------------------------|-------|------|-------|---------------------------------|
| Output power                 |                                                 |       |      | 30    | Watts                           |
| Initial set voltage accuracy | 230VAC and Full Load                            | -1.0  |      | +1.0  | %                               |
| Line regulation              | Low Line to High Line at Full Load              | -0.2  |      | +0.2  | %                               |
| Load regulation              | No Load to Full Load                            | -0.7  |      | +0.7  | %                               |
|                              | 3.3Vout, 5Vout                                  | -0.5  |      | +0.5  |                                 |
|                              | Others                                          | -0.6  |      | +0.6  |                                 |
|                              | 10% Load to 90% Load                            | -0.4  |      | +0.4  |                                 |
| Voltage adjustability        |                                                 | -10   |      | +10   | %                               |
| Minimum load                 |                                                 |       | 0    |       | %                               |
| Ripple and noise             | Measured by 20MHz bandwidth                     |       |      |       | mVp-p                           |
|                              | With a 10 $\mu$ F/25V 1206 X7R MLCC             |       | 50   |       |                                 |
|                              | 3.3Vout, 5Vout, 7.5Vout, 9Vout                  |       | 50   |       |                                 |
|                              | With a 1 $\mu$ F/50V 1206 X7R MLCC              |       | 50   |       |                                 |
|                              | 12Vout, 15Vout, 18Vout, 24Vout, 28Vout, 36Vout  |       | 50   |       |                                 |
| Temperature coefficient      | With a 0.1 $\mu$ F/100V 1206 X7R MLCC           |       | 50   |       | %/°C                            |
|                              | 48Vout, 53Vout                                  |       |      |       |                                 |
| Transient response           | Load step from 50 ~ 75% change at 2.5A/ $\mu$ s | -0.02 |      | +0.02 | %Vout                           |
|                              | Peak deviation                                  |       | 500  | 3     | $\mu$ s                         |
|                              | Recovery time                                   |       |      |       |                                 |
| Over voltage protection      | % of Vout(nom); Automatics recovery             | 125   |      | 140   | %                               |
| Over load protection         | % of Iout rated; Hiccup mode                    |       | 140  |       | %                               |
| Short circuit protection     |                                                 |       |      |       | Continuous, automatics recovery |

**GENERAL SPECIFICATIONS**

| Parameter            | Conditions                                                     | Min. | Typ. | Max.                                 | Unit       |
|----------------------|----------------------------------------------------------------|------|------|--------------------------------------|------------|
| Isolation voltage    | 1 minute (Reinforced insulation) Input to Output               | 3000 |      |                                      | VAC        |
| Isolation resistance | 500VDC                                                         | 0.1  |      |                                      | G $\Omega$ |
| Switching frequency  | 230VAC and Full Load                                           | 30   | 45   | 60                                   | kHz        |
| Safety approvals     | IEC 60335-1/ IEC 61558-1/ IEC 61558-2-16<br>IEC/ EN/ UL62368-1 |      |      | CB:TUV<br>UL:E193009<br>CB:UL(Demko) |            |
| Weight               | Connector type<br>Pin type                                     |      |      | 60.5g (2.13oz)<br>58.0g (2.05oz)     |            |
| MTBF                 | MIL-HDBK-217F, Full load                                       |      |      | 3.341 x 10 <sup>6</sup> hrs          |            |

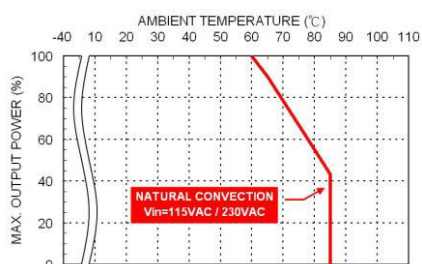
**ENVIRONMENTAL SPECIFICATIONS**

| Parameter                     | Conditions                       | Min. | Typ. | Max.          | Unit |
|-------------------------------|----------------------------------|------|------|---------------|------|
| Operating ambient temperature | Natural convection With derating | -40  |      | +85           | °C   |
| Storage temperature range     |                                  | -40  |      | +85           | °C   |
| Operating altitude            |                                  |      |      | 5000          | m    |
| Shock                         |                                  |      |      | IEC60068-2-27 |      |
| Vibration                     |                                  |      |      | IEC60068-2-6  |      |
| Relative humidity             | Non-condensing                   |      |      | 5% to 95% RH  |      |

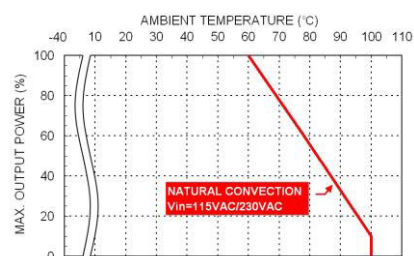
**EMC SPECIFICATIONS**

| Parameter                      | Conditions               | Level                                 |
|--------------------------------|--------------------------|---------------------------------------|
| EMI                            | EN55032 and FCC Part 15  | Conducted Class B<br>Radiated Class B |
| Harmonic currents              | EN61000-3-2 Full Load    | Class A                               |
| Voltage flicker                | EN61000-3-3              |                                       |
| EMS                            | EN55035                  |                                       |
| ESD                            | EN61000-4-2              | Perf. Criteria A                      |
| Radiated immunity              | EN61000-4-3 20 V/m       | Perf. Criteria A                      |
| Fast transient                 | EN61000-4-4 $\pm$ 2kV    | Perf. Criteria A                      |
| Surge                          | EN61000-4-5 DM $\pm$ 1kV | Perf. Criteria A                      |
| Conducted immunity             | EN61000-4-6 20 Vr.m.s    | Perf. Criteria A                      |
| Power frequency magnetic field | EN61000-4-8 30 A/m       | Perf. Criteria A                      |
| Dip and interruptions          | EN61000-4-11             |                                       |

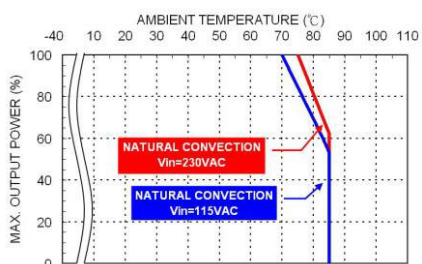
## CHARACTERISTIC CURVE



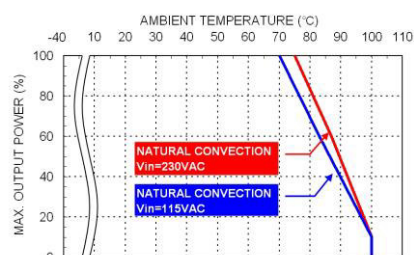
Derating Curve vs. Ambient Temperature  
TAD30USxxB xx=3P3/05/7P5/09/121/151/18  
Connector Option : (□):JST)



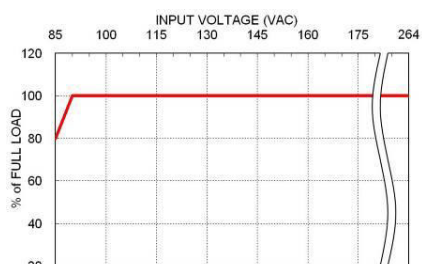
Derating Curve vs. Ambient Temperature  
TAD30USxxB xx=3P3/05/7P5/09/121/151/18  
Connector Option : ( -M / -T / -D )



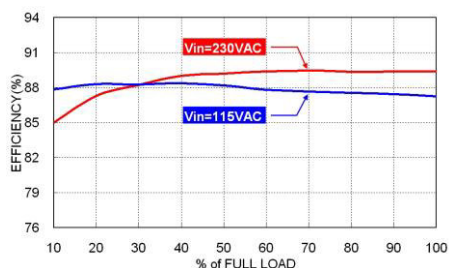
Derating Curve vs. Ambient Temperature  
TAD30USxxB xx=12/15/24/28/36/48/53  
Connector Option : (□):JST)



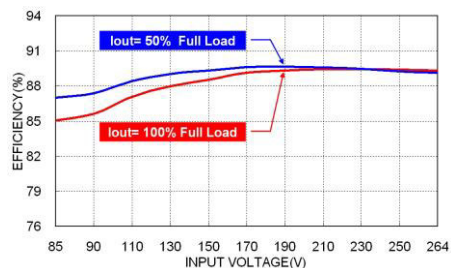
Derating Curve vs. Ambient Temperature  
TAD30USxxB xx=12/15/24/28/36/48/53  
Connector Option : ( -M / -T / -D )



Derating Curve vs. Input Voltage



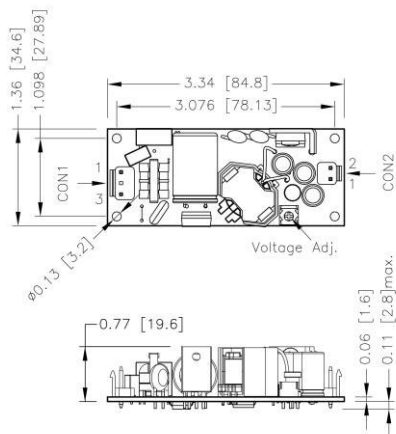
TAD30US24B Efficiency vs. Output Load



TAD30US24B Efficiency vs. Input Voltage

## MECHANICAL DRAWING

TAD Connector type



FRONT VIEW

\*Either one of four screw holes of Open / Chassis type can be considered as PE connection for CLASS I application

## CONNECTORS CONNECTION

| CON1 – Input Connector |         |
|------------------------|---------|
| Pin 1                  | Line    |
| Pin 3                  | Neutral |

| CON2 – Output Connector |       |
|-------------------------|-------|
| Pin 1                   | +Vout |
| Pin 2                   | -Vout |

- All dimensions in inch [mm]  
Tolerance : x.xx±0.02 [x.x±0.5]  
x.xxx±0.010 [x.xx±0.25]
- The screw locked torque: MAX 5.0kgf-cm/0.49N-m

## CONNECTOR OPTIONS

Blank:

JST Type

Housing

CON1: **VHR-3N**

CON2: **VHR-2N**

Crimp terminals

CON1: **SVH-21T-P1.1**

CON2: **SVH-21T-P1.1**



**-M**

Molex Type

Housing

CON1: **09-50-8031**

CON2: **09-50-8021**

Crimp terminals

CON1: **SD-2478**

CON2: **SD-2478**



**-T**

Terminal Block

Mates with

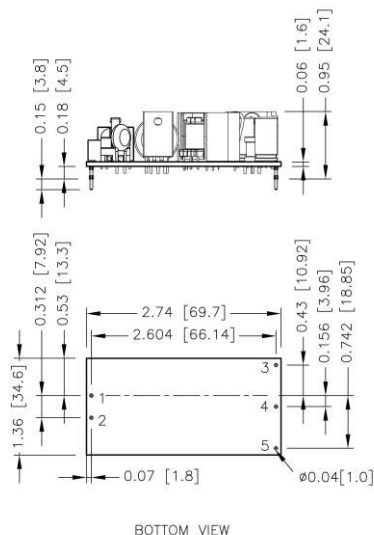
**Screw locked torque**  
**MAX 2Kgf.cm/0.2N.m**

**Wire dimension range**  
**26 ~ 16AWG**



## MECHANICAL DRAWING

TAD -D Pin type



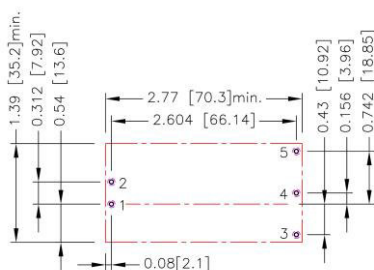
## PIN CONNECTION

| PIN | SINGLE  |
|-----|---------|
| 1   | Neutral |
| 2   | Line    |
| 3   | +Vout   |
| 4   | -Vout   |
| 5   | Trim    |

- All dimensions in inch [mm]
- Tolerance :x.xxx±0.02 [x.x±0.5]  
x.xxx±0.010 [x.xx±0.25]
- Pin dimension tolerance ±0.004[0.10]

## RECOMMENDED PAD LAYOUT

TAD -D Pin type



- All dimensions in inch[mm]
- Pad size(lead free recommended)
- Through hole 1.2.3.4.5:  $\phi 0.051$ [1.30]
- Top view pad 1.2.3.4.5:  $\phi 0.064$ [1.63]
- Bottom view pad 1.2.3.4.5:  $\phi 0.102$ [2.60]

## OUTPUT VOLTAGE ADJUSTMENT

It allows the user to increase or decrease the output voltage of the module.

This is accomplished by connecting an external resistor between the Trim pin and either the +Vout or -Vout pins.

With an external resistor between the Trim and -Output pin, the output voltage increases.

With an external resistor between the Trim and +Output pin, the output voltage decreases.

The external Trim resistor needs to be at least 1/16W of rated power.

### Trim Up Equation

$$R_U = \left[ \frac{G \times L}{(V_{o,up} - L - K)} - H \right] \Omega$$

### Trim Down Equation

$$R_D = \left[ \frac{(V_{o,down} - L) \times G}{(V_o - V_{o,down})} - H \right] \Omega$$

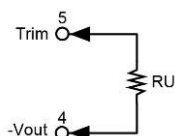
### Trim Constants

| Module        | G      | H    | K    | L   |
|---------------|--------|------|------|-----|
| TAD30US3P3B-D | 5100   | 2050 | 0.8  | 2.5 |
| TAD30US05B-D  | 7500   | 2000 | 2.5  | 2.5 |
| TAD30US7P5B-D | 22000  | 2000 | 5    | 2.5 |
| TAD30US09B-D  | 33000  | 2000 | 6.5  | 2.5 |
| TAD30US12B-D  | 51000  | 2000 | 9.5  | 2.5 |
| TAD30US15B-D  | 68000  | 2000 | 12.5 | 2.5 |
| TAD30US18B-D  | 91000  | 2000 | 15.5 | 2.5 |
| TAD30US24B-D  | 130000 | 2000 | 21.5 | 2.5 |
| TAD30US28B-D  | 160000 | 2000 | 25.5 | 2.5 |
| TAD30US36B-D  | 220000 | 2000 | 33.5 | 2.5 |
| TAD30US48B-D  | 620000 | 2000 | 45.5 | 2.5 |
| TAD30US53B-D  | 680000 | 2000 | 50.5 | 2.5 |

## EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.

Trim-up



### US3P3B-D

| $\Delta V$ (%)   | 1       | 2       | 3       | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 3.333   | 3.366   | 3.399   | 3.432  | 3.465  | 3.498  | 3.531  | 3.564  | 3.597  | 3.630  |
| RU (k $\Omega$ ) | 384.314 | 191.132 | 126.738 | 94.541 | 75.223 | 62.344 | 53.145 | 46.245 | 40.879 | 36.586 |

### US05B-D

| $\Delta V$ (%)   | 1       | 2       | 3       | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
|------------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|
| Vout (V)         | 5.050   | 5.100   | 5.150   | 5.200  | 5.250  | 5.300  | 5.350  | 5.400  | 5.450  | 5.500  |
| RU (k $\Omega$ ) | 373.000 | 185.500 | 123.000 | 91.750 | 73.000 | 60.500 | 51.571 | 44.875 | 39.667 | 35.500 |

### US7P5B-D

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8      | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| Vout (V)         | 7.575   | 7.650   | 7.725   | 7.800   | 7.875   | 7.950   | 8.025   | 8.100  | 8.175  | 8.250  |
| RU (k $\Omega$ ) | 731.333 | 364.667 | 242.444 | 181.333 | 144.667 | 120.222 | 102.762 | 89.667 | 79.481 | 71.333 |

### US09B-D

| $\Delta V$ (%)   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9      | 10     |
|------------------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| Vout (V)         | 9.090   | 9.180   | 9.270   | 9.360   | 9.450   | 9.540   | 9.630   | 9.720   | 9.810  | 9.900  |
| RU (k $\Omega$ ) | 914.667 | 456.333 | 303.556 | 227.167 | 181.333 | 150.778 | 128.952 | 112.583 | 99.852 | 89.667 |

### US12B-D

| $\Delta V$ (%)   | 1        | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Vout (V)         | 12.120   | 12.240  | 12.360  | 12.480  | 12.600  | 12.720  | 12.840  | 12.960  | 13.080  | 13.200  |
| RU (k $\Omega$ ) | 1060.500 | 529.250 | 352.167 | 263.625 | 210.500 | 175.083 | 149.786 | 130.813 | 116.056 | 104.250 |

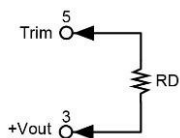
### US15B-D

| $\Delta V$ (%)   | 1        | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Vout (V)         | 15.150   | 15.300  | 15.450  | 15.600  | 15.750  | 15.900  | 16.050  | 16.200  | 16.350  | 16.500  |
| RU (k $\Omega$ ) | 1131.333 | 564.667 | 375.778 | 281.333 | 224.667 | 186.889 | 159.905 | 139.667 | 123.926 | 111.333 |



**OUTPUT VOLTAGE ADJUSTMENT(CONTINUED)**
**Trim-up**

|                  |          |          |          |         |         |         |         |         |         |         |
|------------------|----------|----------|----------|---------|---------|---------|---------|---------|---------|---------|
| <b>US18B-D</b>   |          |          |          |         |         |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 18.180   | 18.360   | 18.540   | 18.720  | 18.900  | 19.080  | 19.260  | 19.440  | 19.620  | 19.800  |
| RU (k $\Omega$ ) | 1261.889 | 629.944  | 419.296  | 313.972 | 250.778 | 208.648 | 178.556 | 155.986 | 138.432 | 124.389 |
| <b>US24B-D</b>   |          |          |          |         |         |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 24.240   | 24.480   | 24.720   | 24.960  | 25.200  | 25.440  | 25.680  | 25.920  | 26.160  | 26.400  |
| RU (k $\Omega$ ) | 1352.167 | 675.083  | 449.389  | 336.542 | 268.833 | 223.694 | 191.452 | 167.271 | 148.463 | 133.417 |
| <b>US28B-D</b>   |          |          |          |         |         |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 28.280   | 28.560   | 28.840   | 29.120  | 29.400  | 29.680  | 29.960  | 30.240  | 30.520  | 30.800  |
| RU (k $\Omega$ ) | 1426.571 | 712.286  | 474.190  | 355.143 | 283.714 | 236.095 | 202.082 | 176.571 | 156.730 | 140.857 |
| <b>US36B-D</b>   |          |          |          |         |         |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 36.360   | 36.720   | 37.080   | 37.440  | 37.800  | 38.160  | 38.520  | 38.880  | 39.240  | 39.600  |
| RU (k $\Omega$ ) | 1525.778 | 761.889  | 507.259  | 379.944 | 303.556 | 252.630 | 216.254 | 188.972 | 167.753 | 150.778 |
| <b>US48B-D</b>   |          |          |          |         |         |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 48.480   | 48.960   | 49.440   | 49.920  | 50.400  | 50.880  | 51.360  | 51.840  | 52.320  | 52.800  |
| RU (k $\Omega$ ) | 3227.167 | 1612.583 | 1074.389 | 805.292 | 643.833 | 536.194 | 459.310 | 401.646 | 356.796 | 320.917 |
| <b>US53B-D</b>   |          |          |          |         |         |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 53.530   | 54.060   | 54.590   | 55.120  | 55.650  | 56.180  | 56.710  | 57.240  | 57.770  | 58.300  |
| RU (k $\Omega$ ) | 3205.547 | 1601.774 | 1067.182 | 799.887 | 639.509 | 532.591 | 456.221 | 398.943 | 354.394 | 318.755 |

**Trim-down**


|                  |          |          |          |          |          |         |         |         |         |         |
|------------------|----------|----------|----------|----------|----------|---------|---------|---------|---------|---------|
| <b>US3P3B-D</b>  |          |          |          |          |          |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 3.267    | 3.234    | 3.201    | 3.168    | 3.135    | 3.102   | 3.069   | 3.036   | 3.003   | 2.970   |
| RD (k $\Omega$ ) | 116.486  | 54.668   | 34.062   | 23.759   | 17.577   | 13.456  | 10.512  | 8.305   | 6.587   | 5.214   |
| <b>US05B-D</b>   |          |          |          |          |          |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 4.950    | 4.900    | 4.850    | 4.800    | 4.750    | 4.700   | 4.650   | 4.600   | 4.550   | 4.500   |
| RD (k $\Omega$ ) | 365.500  | 178.000  | 115.500  | 84.250   | 65.500   | 53.000  | 44.071  | 37.375  | 32.167  | 28.000  |
| <b>US7P5B-D</b>  |          |          |          |          |          |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 7.425    | 7.350    | 7.275    | 7.200    | 7.125    | 7.050   | 6.975   | 6.900   | 6.825   | 6.750   |
| RD (k $\Omega$ ) | 1442.667 | 709.333  | 464.889  | 342.667  | 269.333  | 220.444 | 185.524 | 159.333 | 138.963 | 122.667 |
| <b>US09B-D</b>   |          |          |          |          |          |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 8.910    | 8.820    | 8.730    | 8.640    | 8.550    | 8.460   | 8.370   | 8.280   | 8.190   | 8.100   |
| RD (k $\Omega$ ) | 2348.333 | 1156.667 | 759.444  | 560.833  | 441.667  | 362.222 | 305.476 | 262.917 | 229.815 | 203.333 |
| <b>US12B-D</b>   |          |          |          |          |          |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 11.880   | 11.760   | 11.640   | 11.520   | 11.400   | 11.280  | 11.160  | 11.040  | 10.920  | 10.800  |
| RD (k $\Omega$ ) | 3984.500 | 1965.750 | 1292.833 | 956.375  | 754.500  | 619.917 | 523.786 | 451.688 | 395.611 | 350.750 |
| <b>US15B-D</b>   |          |          |          |          |          |         |         |         |         |         |
| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6       | 7       | 8       | 9       | 10      |
| Vout (V)         | 14.850   | 14.700   | 14.550   | 14.400   | 14.250   | 14.100  | 13.950  | 13.800  | 13.650  | 13.500  |
| RD (k $\Omega$ ) | 5596.667 | 2763.333 | 1818.889 | 1346.667 | 1063.333 | 874.444 | 739.524 | 638.333 | 559.630 | 496.667 |



**OUTPUT VOLTAGE ADJUSTMENT(CONTINUED)**

Trim-down

**US18B-D**

| $\Delta V$ (%)   | 1        | 2        | 3        | 4        | 5        | 6        | 7        | 8       | 9       | 10      |
|------------------|----------|----------|----------|----------|----------|----------|----------|---------|---------|---------|
| Vout (V)         | 17.820   | 17.640   | 17.460   | 17.280   | 17.100   | 16.920   | 16.740   | 16.560  | 16.380  | 16.200  |
| RD (k $\Omega$ ) | 7743.111 | 3825.056 | 2519.037 | 1866.028 | 1474.222 | 1213.019 | 1026.444 | 886.514 | 777.679 | 690.611 |

**US24B-D**

| $\Delta V$ (%)   | 1         | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
|------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Vout (V)         | 23.760    | 23.520   | 23.280   | 23.040   | 22.800   | 22.560   | 22.320   | 22.080   | 21.840   | 21.600   |
| RD (k $\Omega$ ) | 11513.833 | 5690.917 | 3749.944 | 2779.458 | 2197.167 | 1808.972 | 1531.690 | 1323.729 | 1161.981 | 1032.583 |

**US28B-D**

| $\Delta V$ (%)   | 1         | 2        | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
|------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Vout (V)         | 27.720    | 27.440   | 27.160   | 26.880   | 26.600   | 26.320   | 26.040   | 25.760   | 25.480   | 25.200   |
| RD (k $\Omega$ ) | 14409.429 | 7123.714 | 4695.143 | 3480.857 | 2752.286 | 2266.571 | 1919.633 | 1659.429 | 1457.048 | 1295.143 |

**US36B-D**

| $\Delta V$ (%)   | 1         | 2         | 3        | 4        | 5        | 6        | 7        | 8        | 9        | 10       |
|------------------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Vout (V)         | 35.640    | 35.280    | 34.920   | 34.560   | 34.200   | 33.840   | 33.480   | 33.120   | 32.760   | 32.400   |
| RD (k $\Omega$ ) | 20250.222 | 10014.111 | 6602.074 | 4896.056 | 3872.444 | 3190.037 | 2702.603 | 2337.028 | 2052.691 | 1825.222 |

**US48B-D**

| $\Delta V$ (%)   | 1         | 2         | 3         | 4         | 5         | 6        | 7        | 8        | 9        | 10       |
|------------------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|
| Vout (V)         | 47.520    | 47.040    | 46.560    | 46.080    | 45.600    | 45.120   | 44.640   | 44.160   | 43.680   | 43.200   |
| RD (k $\Omega$ ) | 58148.833 | 28763.417 | 18968.278 | 14070.708 | 11132.167 | 9173.139 | 7773.833 | 6724.354 | 5908.093 | 5255.083 |

**US53B-D**

| $\Delta V$ (%)   | 1         | 2         | 3         | 4         | 5         | 6         | 7        | 8        | 9        | 10       |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|----------|
| Vout (V)         | 52.470    | 51.940    | 51.410    | 50.880    | 50.350    | 49.820    | 49.290   | 48.760   | 48.230   | 47.700   |
| RD (k $\Omega$ ) | 64110.453 | 31714.226 | 20915.484 | 15516.113 | 12276.491 | 10116.742 | 8574.065 | 7417.057 | 6517.161 | 5797.245 |