Power Distribution Module

# DC-DC Converters

## Isolated POL (iPOL) Series

Datasheet

Cobham.com/HiRel

**March 9th, 2017**

**The most important thing we build is trust**

## FEATURES

- Voltage Range
  - $V_{IN}$: $26.0V_{DC}$ to $48.0V_{DC}$
  - $V_{OUT}$: $0.65V_{DC}$ to $48.00V_{DC}$
- Typical Applications:
  - For $V_{OUT}$ = 0.65V to 48.0 V
- High Efficiency (>90%)
- High Density (up to 162W/in$^3$)
- Provide Enable/Disable Control
- Zero Voltage Switching / Zero Current Switching (ZVS/ZCS) Quasi-Resonant Converter Topology
- Contains Built-in Protection Features
  - Input Over/Under-voltage Shutdown
  - Short Circuit Protection
- Package: Gull Winged Power Package
- MIL-PRF-38534 Class L Qualification Pending

## OPERATIONAL ENVIRONMENT

- Temperature Range: -40°C to +125°C
- Total Dose: 100 krad(Si)
- SEL Immune: >80 MeV-cm$^2$/mg

## APPLICATIONS

- Low voltage, high current digital systems
- Sensitive low noise high speed ADC and DAC
- RF power

## INTRODUCTION

The Cobham Plainview iPOLs (isolated Point Of Load) Modules excel at speed, density, and efficiency to meet the demands of advanced power applications while providing isolation from input to output.

The output voltage of the iPOL tracks its input voltage with a voltage ratio K factor (Vin x K = Vout). These units deliver up to 50A of current with unprecedented efficiency and the smallest footprint in the industry for a radiation hard Point Of Load Converter. Paralleling units delivers even higher power levels.

This iPOLs are available in two types of power packages (613xxx and 612xxx) compatible with standard Hi-Rel manual surface mount assembly processes. The fast dynamic response and low noise performance of the these iPOLs eliminate the need for excessive bulk capacitance at the load, substantially increasing system density while improving reliability and decreasing non-recurring cost.

## APPLICATION EXAMPLES

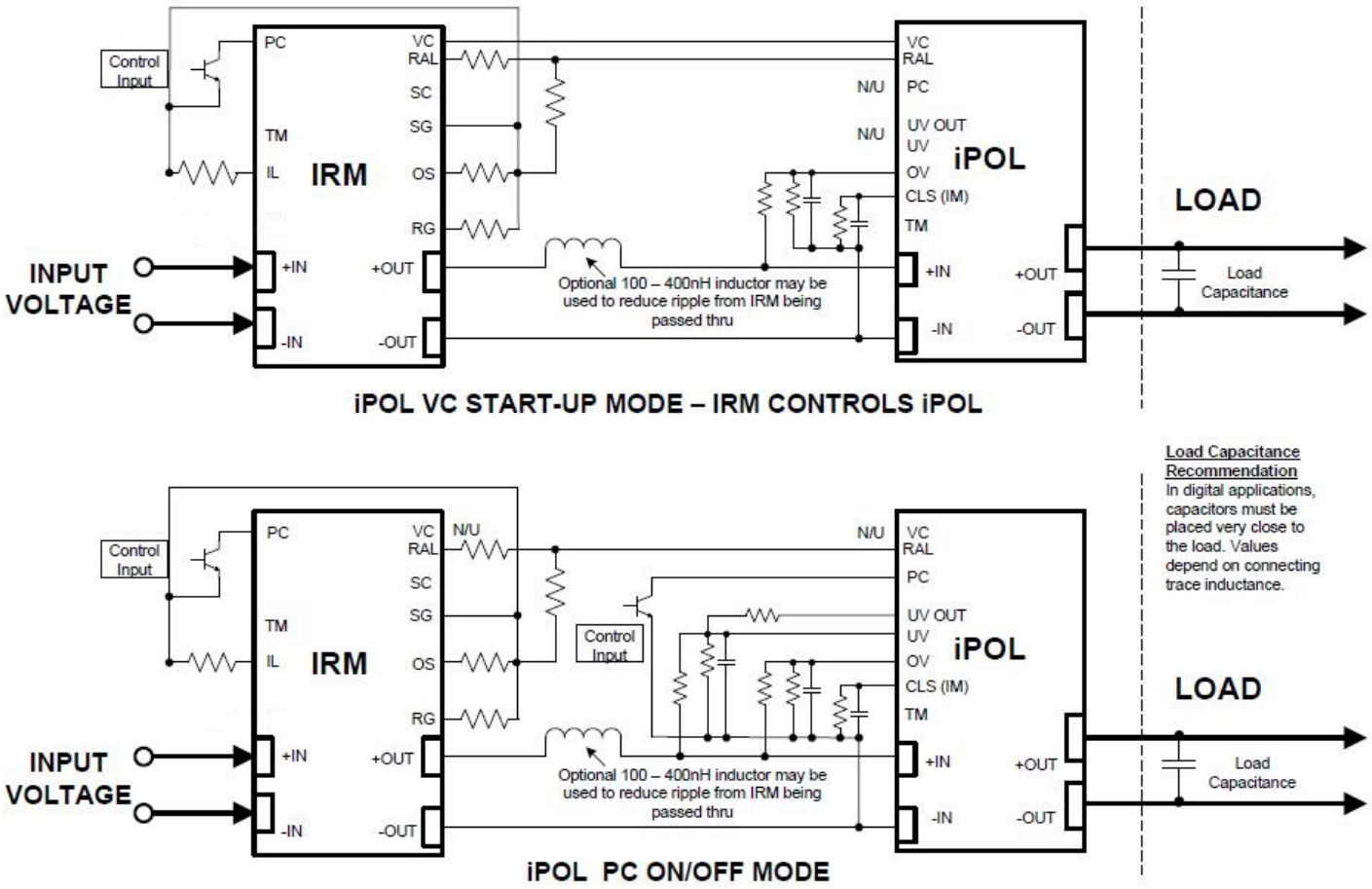



Figure 1: Typical Applications;
613xxx Modules Use VC Start-Up Mode;
612xxx Modules use either PC On/Off Mode or Self Start Mode (PC Pin Float, No connect VC Pin)

## DETAILED BLOCK DIAGRAM

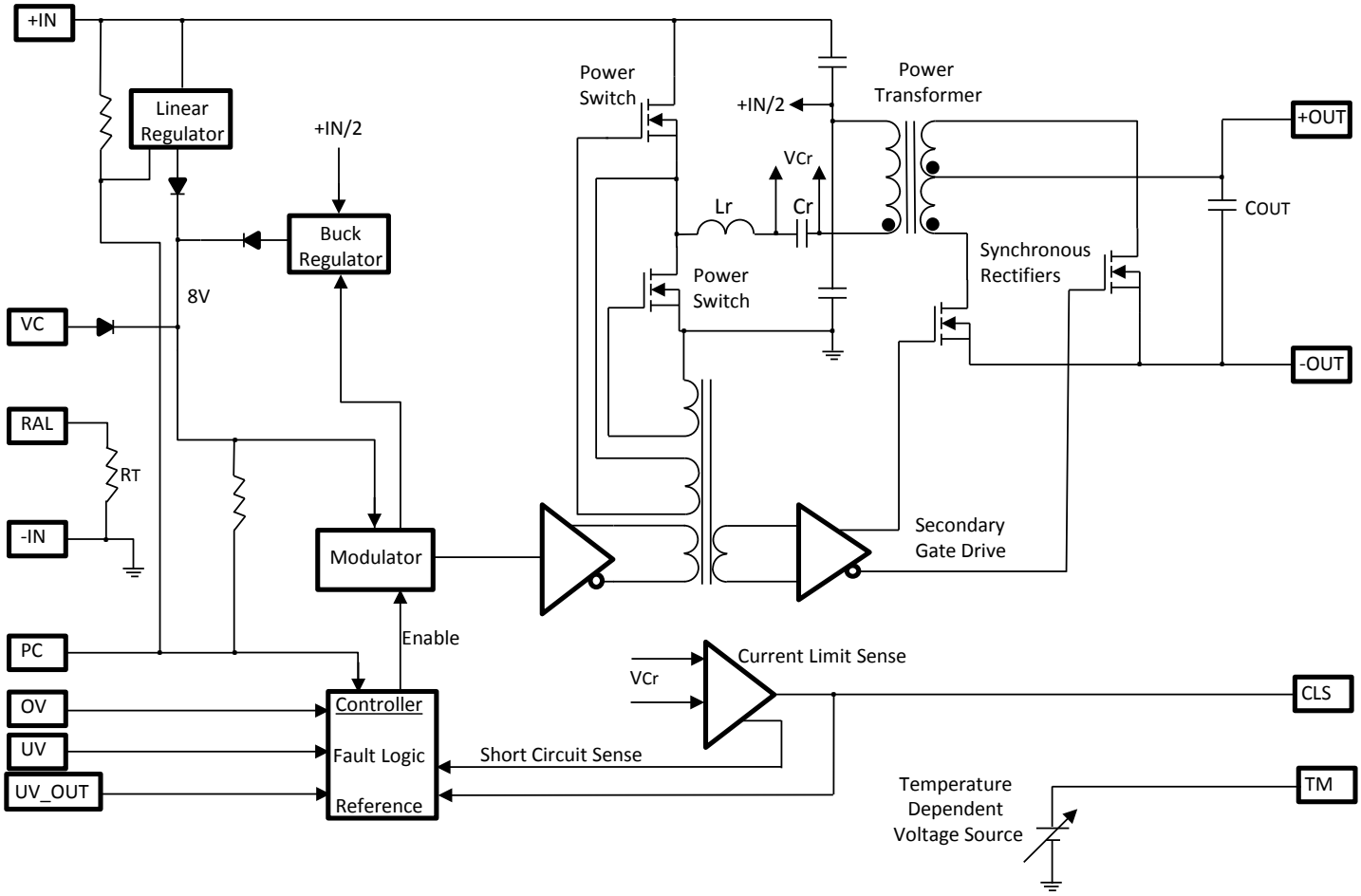



Figure 2: Detailed Block Diagram

## PINLIST

Table 1: PIN NUMBERS AND NAMES for 612XXX iPOLs

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | +IN | 24 | +OUT |
| 2 | +IN | 23 | +OUT |
| 3 | -IN | 22 | +OUT |
| 4 | -IN | 21 | -OUT |
| 5 | UV_OUT | 20 | -OUT |
| 6 | OV | 19 | -OUT |
| 7 | CLS | 18 | +OUT |
| 8 | TM | 17 | +OUT |
| 9 | VC | 16 | +OUT |
| 10 | RAL | 15 | -OUT |
| 11 | UV | 14 | -OUT |
| 12 | PC | 13 | -OUT |

Table 2: PIN NUMBERS AND NAMES for 613XXX iPOLs

| Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|
| 1 | +OUT | 40 | +OUT |
| 2 | -OUTA | 39 | -OUTB |
| 3 | +OUT | 38 | +OUT |
| 4 | -OUTA | 37 | -OUTB |
| 5 | +OUT | 36 | +OUT |
| 6 | -OUTA | 35 | -OUTB |
| 7 | +OUT | 34 | +OUT |
| 8 | -OUTA | 33 | -OUTB |
| 9 | +OUT | 32 | +OUT |
| 10 | -OUTA | 32 | -OUTB |
| 11 | +OUT | 30 | +OUT |
| 12 | -OUTA | 29 | -OUTB |
| 13 | +IN | 28 | -IN |
| 14 | +IN | 27 | -IN |
| 15 | +IN | 26 | -IN |
| 16 | +IN | 25 | -IN |
| 17 | VC | 24 | UV_OUT |
| 18 | RAL | 23 | OV |
| 19 | UV | 22 | CLS |
| 20 | PC | 21 | TM |

Notes: The Negative output leads (-OUTA, -OUTB) must be connected TOGETHER on the board as close to the iPOL as possible

Table 3: Pin Functional Descriptions

| PIN | DESCRIPTION | FUNCTION |
|---|---|---|
| +IN / -IN | Input voltage pins | Apply input voltage with all +IN pins in parallel and all -IN in parallel. -IN is also the reference (GND) for all control signals. |
| +OUT | Positive output voltage pins | Draw output power from any or all +OUT pins in parallel. Note that output is isolated from input. Loads should be connected between a +OUT pin and its adjacent -OUT pin to minimize noise and Rout. |
| -OUT | Negative output voltage pins | Draw output power from any or all -OUT pins in parallel. |
| CLS (IM) | Current-Limit-Slow and Current Monitor pin | Connect a resistor to -IN (GND) to set the slow current limit threshold. A parallel capacitor sets the time constant for the slow current limit trip. The voltage on this pin may be monitored as an analog of the load current. |
| OV | Overvoltage pin | When the voltage on this pin exceeds 1.20V the module will shut down. Connect to a voltage divider between +IN and -IN (GND). |
| PC | Primary Control pin | When open the module is on. When pulled below 1V the module will shut down. |
| RAL | Internal thermistor | Connect to IRM to add adaptive temperature compensation. |
| TM | Temperature Monitor | This output provides the internal controller temperature at 10mV / °C, +/- 20°C. |
| UV | Under-voltage pin | When the voltage on this pin falls below 1.20V the module will shut down. Connect to a voltage divider between +IN and –IN (GND). |
| UV_OUT | Under-voltage hysteresis output pin | This pin is at 3V when operating and falls to 0V when in under-voltage shutdown. |
| VC | IRM control pin | Startup control voltage sourced by IRM module when in VC startup mode. |

## PACKAGE PINOUT DIAGRAM

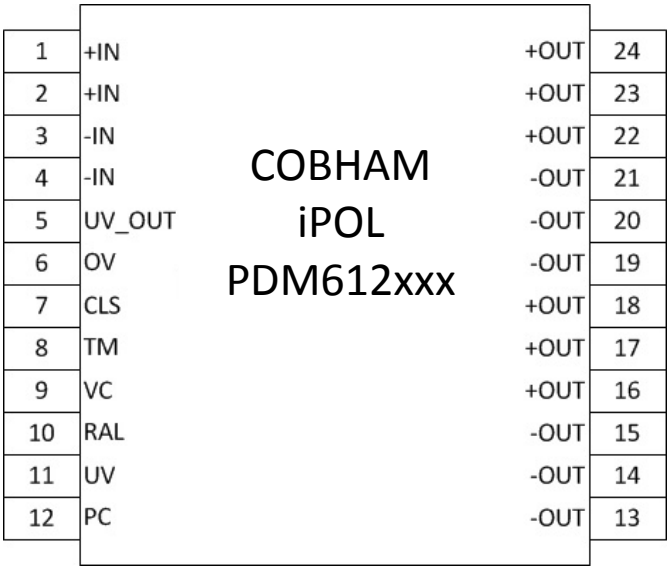



Figure 3: Package Pinout Diagram for 612xxx iPOLs

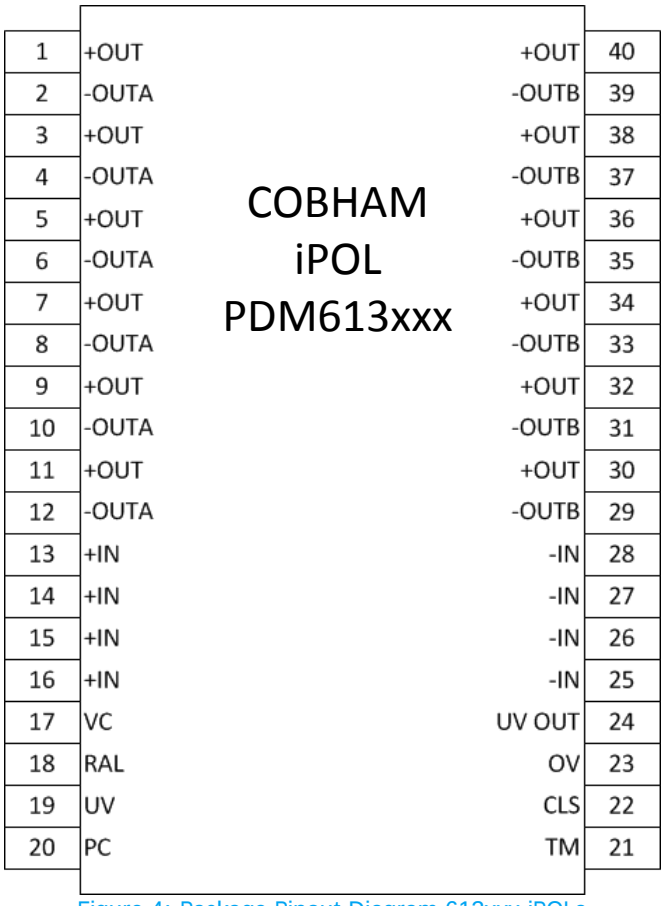



Figure 4: Package Pinout Diagram 613xxx iPOLs

## FUNCTIONAL DESCRIPTION

### Control Functions

There are three ways for an iPOL to be turned on; PC Mode, VC mode and Self Start mode.

### VC Mode

In VC Mode the iPOL is started by the IRM. This mode is used when the IRM ramps its output slowly from 0V to control inrush currents. The VC pin of the iPOL is connected to the VC pin of the IRM. The IRM provides nominal 8V startup power to the iPOL for 10mS until the iPOL input voltage has risen high enough for the iPOL to generate its own control voltage (approximately $22V_{IN}$). The 612xxx iPOLs should not be used in this mode as this mode disables their internal soft start.

### PC Mode

In PC Mode the iPOL is controlled by its PC pin. The iPOL will start whenever the input voltage is above approximately 22V and the PC pin is open. When the PC pin in pulled to GND (-IN) the module will be off. The VC pin is not used and should be left unconnected. The 613xxx iPOLs should not be used in this mode as they depend on the IRM output rise to for inrush current limiting.

### Self-Start Mode

In Self-start Mode the iPOL will start whenever the input voltage is above approximately 22V and the PC pin and the VC pin are floating. In this case, the 612xxx iPOLs will soft start up until the output voltage reaches the input voltage times its K factor. At that point, the output will rise as a function of the rise time of the input voltage. The 613xxx iPOLs should not be used in this mode because they depend on the IRM output rise time for soft start.

### Over-Voltage Detection

The OV pin is used for overvoltage shutdown protection. The pin threshold is 1.20V. An external resistor voltage divider is used to set the input overvoltage level. For example, if a 1.21k ohm resistor is connected from the OV pin to -IN and a 49.9k resistor is connected from +IN to the OV pin, the overvoltage trip point will be 50.7V.

OV Threshold Equation:

$$\left[\frac{49.9k + 1.21k}{1.21k}\right] * 1.20V = OV\ Threshold$$

### Under-Voltage Detection

The module UV pin is used for under-voltage shutdown protection. The pin threshold is 1.20V. An external resistor voltage divider is used to set the input under-voltage level. For example, if a 1.21k ohm resistor is connected from the UV pin to -IN and a 22.6k resistor is connected from +IN to the UV pin, the under-voltage trip point will be 23.6V.

UV Threshold Equation:

$$\left[\frac{22.6k + 1.21k)}{1.21k}\right] * 1.20V = UV\ Threshold$$

When an under-voltage is detected, the module will shut-down and then restart when the input is back in range. The UV_OUT pin may be used to provide additional hysteresis. When the module is ON, the UV_OUT pin is 3V. When an under-voltage is detected, the UV OUT pin falls to 0V. Hysteresis may be added by connecting a resistor from the UV_OUT pin to the UV pin. A 100k resistor will add about 0.5V hysteresis.

### Current Limit Slow

The CLS function protects the iPOL from overload currents (prevents thermal overstress of the components within the iPOL). The CLS (IM) pin source current varies in proportion to the output current. Connect a 10Kohm resistor from the CLS (IM) pin to -IN to scale the voltage. The current limit trip point is nominally 1.2V, so the 10k ohms resistor will set the trip point approximately 133% of full output. A capacitor needs to be placed across the resistor to integrate the source current and delay the trip. A capacitor of 0.27µF will give a time constant of 2.7mS resulting in a trip time of 8mS for an overload of 140%. Reduce this resistor to 1Kohms to rely on the internal current limit of the iPOL (and disable the CLS current limit function), which protects the iPOL from short circuit output.

## ABSOLUTE MAXIMUM RATINGS (1, 2)

Table 4: Absolute Maximum Ratings

| SYMBOL | PARAMETER | MIN | MAX | UNITS |
|---|---|---|---|---|
| $V_{IN}$ | Positive Supply Voltage | -0.3 | +55.0 | $V_{DC}$ |
| OV, UV, PC pins | Max Voltage on PC, OV and UV Pins | -0.3 | +4.0 | $V_{DC}$ |
| VC | Max Voltage on VC Pin | -0.3 | 11 | $V_{DC}$ |
| | Input to Output Isolation(4) | -- | 200 | $V_{DC}$ |
| $T_J$(3) | Operating Temperature Range | -40 | +125 | °C |
| $T_{STG}$ | Storage Temperature | -55 | +125 | °C |

Notes:

1. Stresses outside the listed absolute maximum ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond limits indicated in the operational sections of this specification are not recommended. Exposure to absolute maximum rating conditions for extended periods may affect device reliability and performance.
2. All voltages referenced to -IN
3. Junction Temperature. Corresponds to a 105C lead temperature at maximum load or no load condition at 115C lead temperature.
4. All input pins tied together to all output pins tied together

## OPERATIONAL ENVIRONMENT (1)

Table 5: Operational Environment

| SYMBOL | PARAMETER | LIMIT | UNITS |
|---|---|---|---|
| TID | Total Ionizing Dose(2) | 100 | krad(Si) |
| SEL | Single Event Latchup Immunity(3) | >80 | MeV-cm$^2$/mg |

Notes:

1. For devices with procured with a total ionizing dose tolerance guarantee, post-irradiation performance is guaranteed at 25°C per MIL-STD-883 Method 1019, Condition A up to maximum TID level procured.
2. Per MIL-STD-883, method 1019, condition A *(Optional: Per MIL-STD-883, method 1019.9, condition A, with extended room temperature anneal per section 3.11.2)*
3. SEL is performed at 125°C

## RECOMMENDED OPERATING CONDITIONS (1)

Table 6: Recommended Operating Conditions

| SYMBOL | PARAMETER | MIN | MAX | UNITS |
|---|---|---|---|---|
| $T_L$(2) | Case Operating Temperature Range | -40 | +85 | °C |
| $V_{IN}$ | Positive Supply Voltage | +26 | +48 | $V_{DC}$ |

Notes:

1. All voltages referenced to –IN
2. Lead Temperature of module.

## ELECTRICAL CHARACTERISTICS[1]

(26V < $V_{IN}$ < 48V, -40°C< $T_J$ <+125°C); Unless otherwise noted.

Table 7: DC Electrical Characteristics

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| **INPUT/OUTPUT PARAMETERS** | | | | | | |
| $V_{IN}$ | Input Supply Voltage | | 26 | - | 55 | $V_{DC}$ |
| $V_{OVT}$ | Over-Voltage Trip Point | $V_{IN}$ Rising | 1.15 | 1.23 | 1.28 | $V_{DC}$ |
| | OV Hysteresis | | 0.030 | 0.060 | 0.090 | $V_{DC}$ |
| | OV Response Time | | | | 4.7 | µSec |
| $V_{UVT}$ | Under-Voltage Trip Point | $V_{IN}$ Falling | 1.05 | 1.195 | 1.25 | $V_{DC}$ |
| | UV Hysteresis | | 0.030 | 0.060 | 0.090 | $V_{DC}$ |
| $V_{UV\ HYST}$ | Under-Voltage External Hysteresis Voltage | UV Untripped | 3.0 | 3.3 | 3.6 | $V_{DC}$ |
| | | UV Tripped | 0 | - | 0.2 | $V_{DC}$ |
| PC[2] | PC Voltage | Enabled (floating PC Pin) | - | - | 4.0 | $V_{DC}$ |
| | PC threshold | | 1.0 | - | 1.2 | $V_{DC}$ |
| | PC Source Current | iPOL Disabled | - | - | 590 | µA |
| | Enable Response Time | | - | - | 440 | µSec |
| | Output Voltage Rise Time | (612xxx Modules Only) | 400 | - | 1000 | µSec |
| VC[2] | VC Input Voltage | | - | 10 | - | $V_{DC}$ |
| | VC Pulse width | | - | 10 | - | mSec |
| | VC Load Current | | - | - | 200 | mA |
| | VC to Vout turn-on delay | | - | - | 400 | µSec |
| CLS | CLS Threshold Voltage | | 0.89 | 1.2 | 1.3 | $V_{DC}$ |
| | CLS (IM) Source Current | Maximum Continuous Load | 5 | 90 | 125 | µA |
| RAL | Thermistor to -IN | 25C | - | 10K | | ohms |
| TM | Temperature Monitor | 27C | - | 2.0 | - | V |
| | Gain | | - | 10 | - | 10mV / °C |

Notes:

1. All voltages referenced to –IN
2. PC and VC parameters are guaranteed by design and not test.

Table 8 Electrical Characteristics Continued;
Rout of Each iPOL type in milliohms.

| iPOL PN | Min | 25°C Nom | Max | Min | 85°C Nom | Max | Min | -40°C Nom | Max |
|---|---|---|---|---|---|---|---|---|---|
| 613140 | 0.8 | 1.0 | 1.2 | 1.0 | 1.2 | 1.4 | 0.7 | 0.9 | 1.2 |
| 613132[2] | 1.0 | 1.3 | 1.5 | 1.10 | 1.45 | 1.65 | 0.9 | 1.2 | 1.4 |
| 613124[2] | 1.4 | 1.6 | 1.7 | 1.52 | 1.79 | 1.85 | 1.2 | 1.5 | 1.7 |
| 612116 | 5.0 | 6.4 | 7.0 | 6.0 | 6.4 | 8.5 | 5.0 | 6.0 | 7.0 |
| 612112 | 6.6 | 7.7 | 10.0 | 6.6 | 7.4 | 10.7 | 6.5 | 7.0 | 10.0 |
| 612108 | 14.0 | 21.0 | 23.0 | 16.0 | 21.0 | 26.0 | 14.0 | 19.0 | 23.0 |
| 612106[2] | 21.0 | 30.0 | 32.0 | 24.0 | 33.0 | 36.0 | 24.0 | 28.0 | 33.0 |
| 612105[2] | 31.0 | 37.0 | 43.0 | 35.0 | 44.0 | 49.0 | 30.0 | 35.0 | 42.5 |
| 612104[1] | 37.0 | 44.0 | 51.0 | 44.0 | 52.0 | 59.0 | 33.0 | 42.0 | 50.0 |
| 612103[1] | 60.0 | 71.0 | 98.0 | 63.0 | 75.0 | 94.0 | 55.0 | 69 | 99 |
| 612102[1] | 75.0 | 80.0 | 85.0 | 85.0 | 90.0 | 95.0 | 70 | 75 | 80 |
| 612101[1] | 84.0 | 96.0 | 102.0 | 102.0 | 108.0 | 114.0 | 80 | 90 | 96 |

Notes:

1) Module not yet in production. Parameters are TBR.
2) Contact manufacturer for parameter verification.

Table 9 Electrical Characteristic Continued;
Output Characteristics

| iPOL | K Factor ($V_{out}/V_{in}$) | Max Output Current Continuous(A)[4] | Max Load Capacitance 48Vin(uF)[2] | Output Ripple Frequency Minimum MHz [3] | Output Ripple Frequency Maximum MHz[3] | Max Output Voltage Ripple mVp^p |
|---|---|---|---|---|---|---|
| 613140 | 1/40 | 50 | 5,000 | 2.51 | 3.26 | 340 |
| 613132 | 1/32 | 50 | 5,000 | 2.88 | 3.52 | 330 |
| 613124[1] | 1/24 | 37.5 | 3500 | 2.88 | 3.52 | 220 |
| 612116 | 1/16 | 16.7 | 3500 | 2.88 | 3.52 | 250 |
| 612112 | 1/12 | 12.5 | 2000 | 2.40 | 3.19 | 250 |
| 612108 | 1/8 | 8.33 | 700 | 2.40 | 3.19 | 250 |
| 612106 | 1/6 | 6.25 | 400 | 2.40 | 3.19 | 200 |
| 612105 | 1/5 | 5.2 | 300 | 2.40 | 3.19 | 260 |
| 612104[1] | 1/4 | 4.17 | 200 | 2.40 | 3.19 | 220 |
| 612103[1] | 1/3 | 3.125 | 100 | 2.40 | 3.19 | 480 |
| 612102[1] | 1/2 | 2.1 | 50 | 2.40 | 3.19 | 175 |
| 612101[1] | 1/1 | 1.04 | 10 | 2.40 | 3.19 | 250 |

Notes:

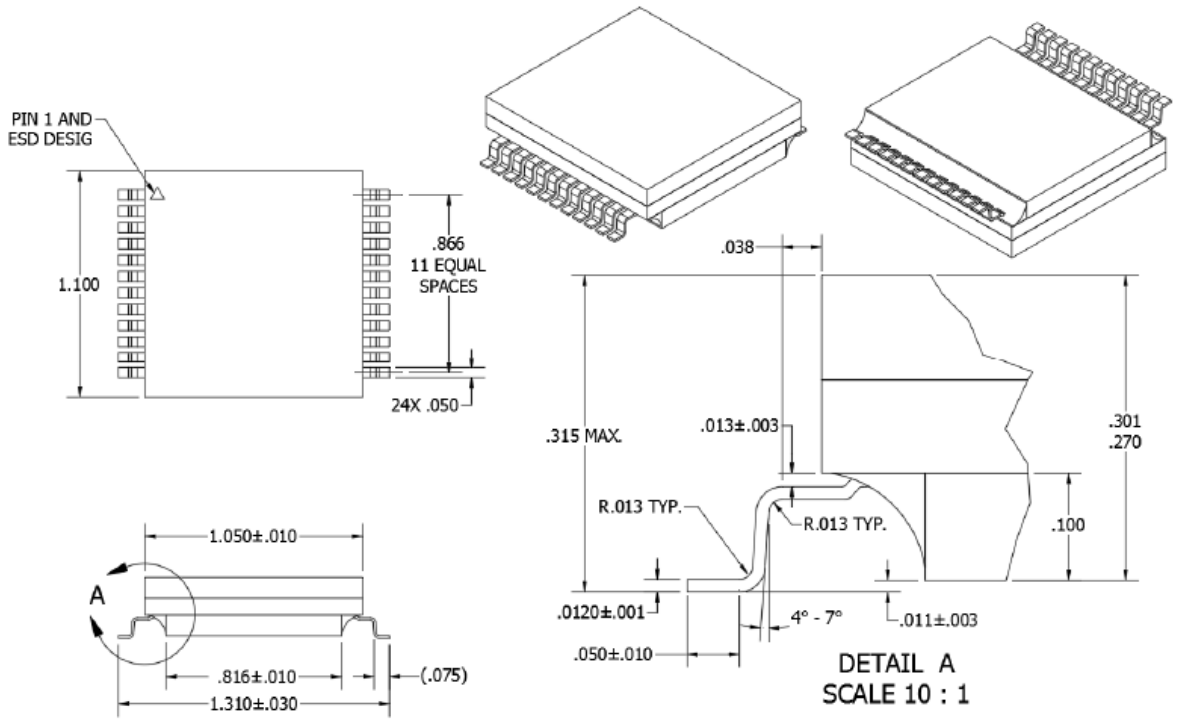
1) Module not yet in production. Parameters are TBR.
2) Values are calculated, not tested. Values indicate ability to start-up module during recommended start-up mode with a CLS resistance of 10Kohms.
3) Values are calculated for EOL and not tested.
4) Maximum current at which all internal components meet deratings with an 85°C lead temperature and a 48V input.

Table 10 Electrical Characteristic Continued;
Maximum no load power dissipation (W) vs. input voltage and temperature[4] and efficiency[2]

| iPOL | No Load Vin=26V 25C to 85C | No Load Vin=32V 25C to 85C | No Load Vin=48V 25C to 85C | No Load Vin=26V -40C | No Load Vin=32V -40C | No Load Vin=48V -40C | No Load Vin=26V >85C to 125C | No Load Vin=32V >85C to 125C | No Load Vin=48V >85C to 125C | Min Efficiency Max Load | Min Efficiency 1/3 Load |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 613140 | 3.4 | 3.7 | 5.3 | 4.6 | 5.0 | 7.1 | 4.1 | 4.4 | 6.4 | 88.5% | 82.5% |
| 613132 | 3.3 | 3.9 | 5.4 | 5.5[3] | 6.4[3] | 8.5[3] | 4.1 | 4.4 | 6.4 | 89.4% | 84.2% |
| 613124[1] | 3.0 | 3.3 | 5.0 | 4.0 | 4.5 | 7.5 | 3.4 | 4.0 | 6.4 | 89.4% | 87.1% |
| 612116 | 2.0 | 2.1 | 2.8 | 2.5 | 2.7 | 4.2 | 2.4 | 2.5 | 3.4 | 91.5% | 87.3% |
| 612112 | 2.1 | 2.3 | 3.4 | 2.5[3] | 2.8[3] | 4.1[3] | 2.5 | 2.8 | 4.1 | 90.5% | 86.6% |
| 612108 | 2.5 | 2.5 | 2.9 | 3.5 | 3.5 | 4.1 | 3.0 | 3.0 | 3.5 | 91.5% | 85.6% |
| 612106 | 2.1 | 2.4 | 3.3 | 2.5[3] | 2.8[3] | 3.8[3] | TBS | TBS | TBS | 92.5% | 90.5% |
| 612105 | 2.2 | 2.5 | 3.5 | 2.6[3] | 2.9[3] | 4.0[3] | TBS | TBS | TBS | 89.8% | 85.0% |
| 612104[1] | 1.4 | 1.9 | 2.9 | 2.9 | 2.9 | 3.4 | TBS | TBS | TBS | 92.5% | 88.5% |
| 612103[1] | 1.5 | 1.9 | 2.5 | 2.9 | 2.9 | 3.4 | TBS | TBS | TBS | 94.9% | 89.2% |
| 612102[1] | 2.5 | 2.5 | 2.9 | 2.9 | 2.9 | 3.4 | TBS | TBS | TBS | 91.0% | 85.6% |
| 612101[1] | 2.4 | 2.3 | 3.4 | 2.9 | 2.9 | 3.4 | TBS | TBS | TBS | 90.5% | 85.0% |

Notes:
1) Module not yet in production. Parameters are TBR.
2) Efficiency guaranteed from 25°C to 85°C lead temperature.
3) Contact manufacturer for verification of values.
4) Temperatures reflect module lead temperature.

## PACKAGE DRAWINGS




Dimensions in inches.
Tolerances ±.005 inches unless otherwise noted.

Figure 5: Package Drawing for 612xxx Modules

**Lead Material and Plating:** Lead material is Copper, UNS No. C10100 IAW ASTM-B152/B512M. Temper is H02-Half Hard. Plating is Gold Plated, 5-10 micro-inches IAW MIL-DTL-45204, Type I, Grade A, Class 1, over Electrolytic Nickel plated 200-350 micro-inches in accordance with AMS-QQ-P290, Class 1, Grade G. Final finish is Sn60/Pb40.

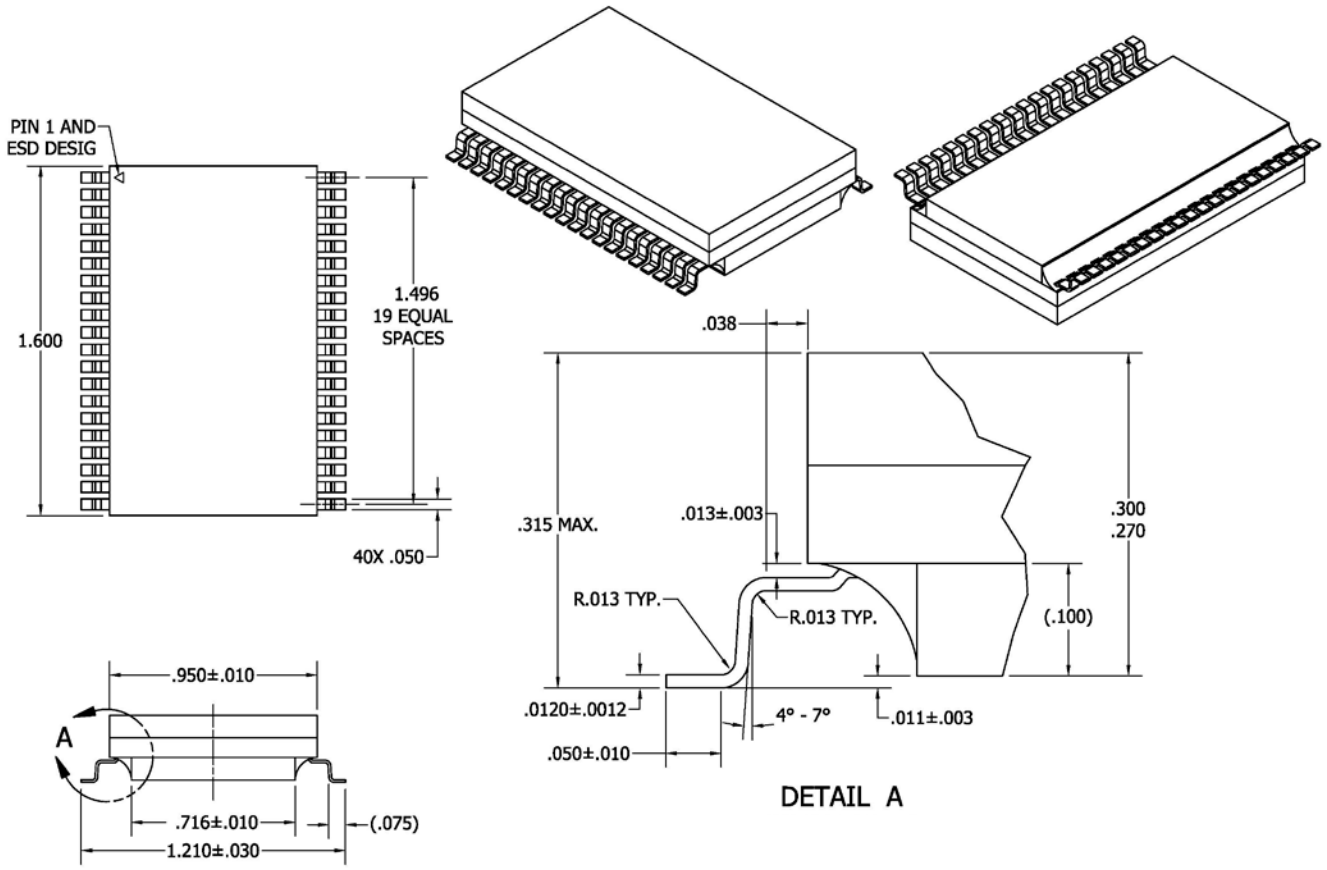
Table 11: MECHANICAL CHARACTERISTICS

| SYM | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| L | Length | - | - | - | 1.105 [28.067] | in [mm] |
| W | Width | - | - | - | 1.06 [26.924] | in [mm] |
| H | Height | - | - | - | 0.315 [8.001] | in [mm] |
| Wt | Weight | - | - | - | 16 | g |
| - | Soldering tip dwell time per single pin | Tip temperature 600°F<br>Assembly pre-heated to 125°F | - | - | 6 | Sec |

NOTE: Product is not designed for reflow applications. Manual soldering of leads is required.

| CONVERSION | |
|---|---|
| INCH | MM |
| 0.001 | 0.025 |
| 0.003 | 0.076 |
| 0.005 | 0.127 |
| 0.010 | 0.254 |
| 0.011 | 0.279 |
| 0.012 | 0.305 |
| 0.013 | 0.330 |
| 0.030 | 0.762 |
| 0.038 | 0.965 |
| 0.050 | 1.270 |
| 0.075 | 1.905 |
| 0.100 | 2.540 |
| 0.270 | 6.858 |
| 0.301 | 7.645 |
| 0.315 | 8.001 |
| 0.816 | 20.726 |
| 0.866 | 21.996 |
| 1.050 | 26.670 |
| 1.100 | 27.940 |
| 1.310 | 33.274 |

## PACKAGE DRAWINGS




Dimensions in inches.
Tolerances ±.005 inches unless otherwise noted.

Figure 6: Package Drawing for 613xxx Modules

**Lead Material and Plating:** Lead material is Copper, UNS No. C10100 IAW ASTM-B152/B512M. Temper is H02-Half Hard. Plating is Gold Plated, 5-10 micro-inches IAW MIL-DTL-45204, Type I, Grade A, Class 1, over Electrolytic Nickel plated 200-350 micro-inches in accordance with AMS-QQ-P290, Class 1, Grade G. Final finish is Sn60/Pb40.

Table 12: MECHANICAL CHARACTERISTICS

| SYM | PARAMETER | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| L | Length | - | - | - | 1.605 [40.767] | in [mm] |
| W | Width | - | - | - | 0.960 [24.384] | in [mm] |
| H | Height | - | - | - | 0.315 [8.001] | in [mm] |
| Wt | Weight | - | - | - | 25 | g |
| - | Soldering tip dwell time per single pin | Tip temperature 600°F<br>Assembly pre-heated to 125°F | - | - | 6 | Sec |

NOTE: Product is not designed or reflow applications. Manual soldering of leads is required.

| CONVERSION | |
|---|---|
| INCH | MM |
| 0.001 | 0.025 |
| 0.003 | 0.076 |
| 0.005 | 0.127 |
| 0.010 | 0.254 |
| 0.011 | 0.279 |
| 0.012 | 0.305 |
| 0.013 | 0.330 |
| 0.030 | 0.762 |
| 0.038 | 0.965 |
| 0.050 | 1.270 |
| 0.075 | 1.905 |
| 0.100 | 2.540 |
| 0.270 | 6.858 |
| 0.315 | 8.001 |
| 0.716 | 18.186 |
| 0.866 | 21.996 |
| 0.950 | 24.130 |
| 1.050 | 26.670 |
| 1.100 | 27.940 |
| 1.210 | 30.734 |
| 1.310 | 33.274 |
| 1.600 | 40.640 |

Figure 7

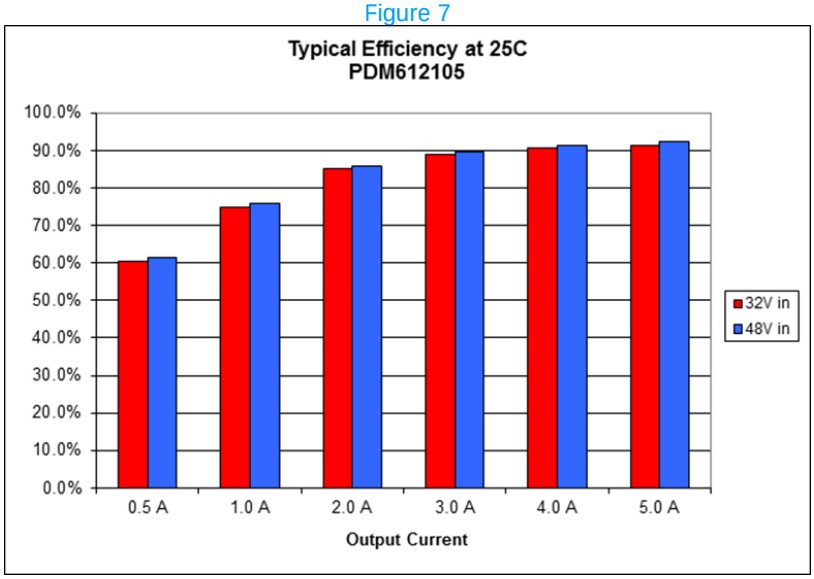



Figure 8

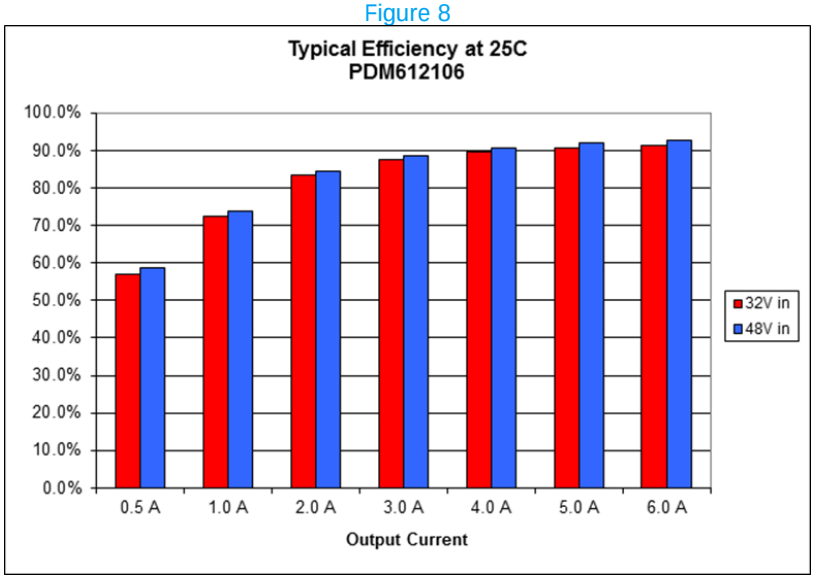



Figure 9

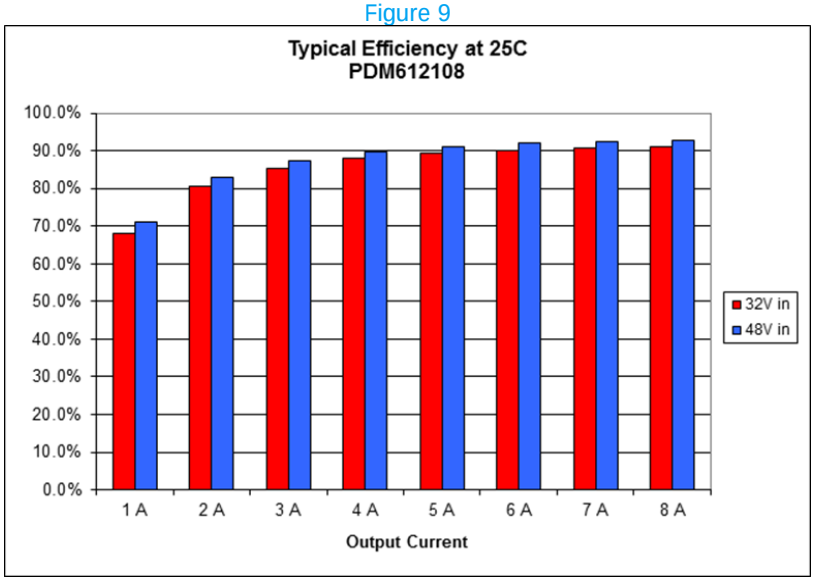


Figure 10

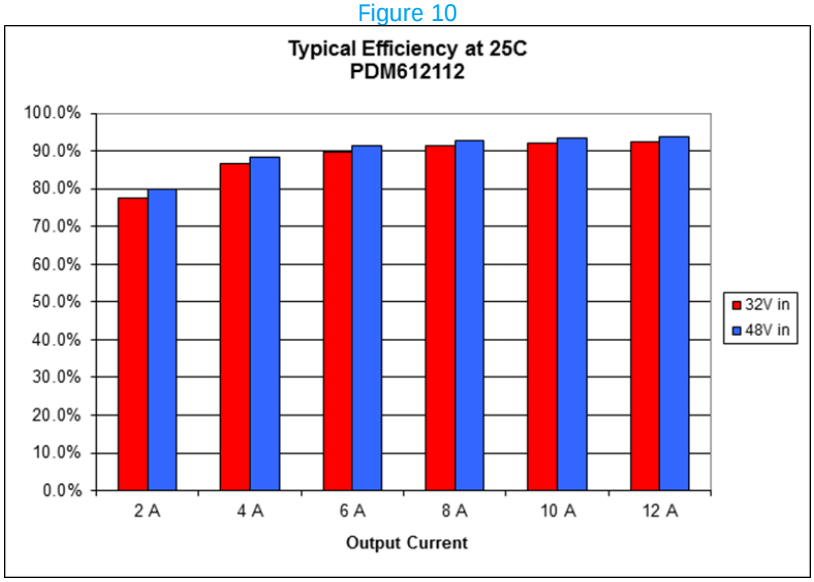



Figure 11

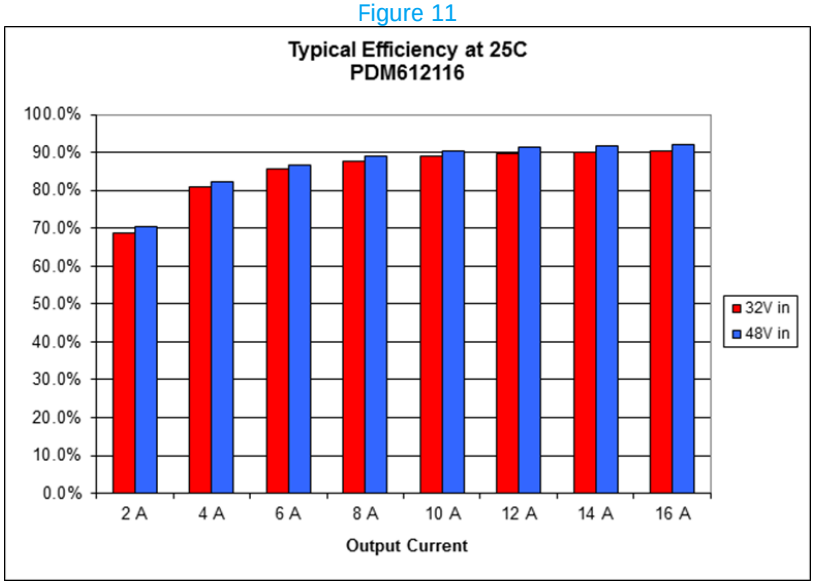



Figure 12

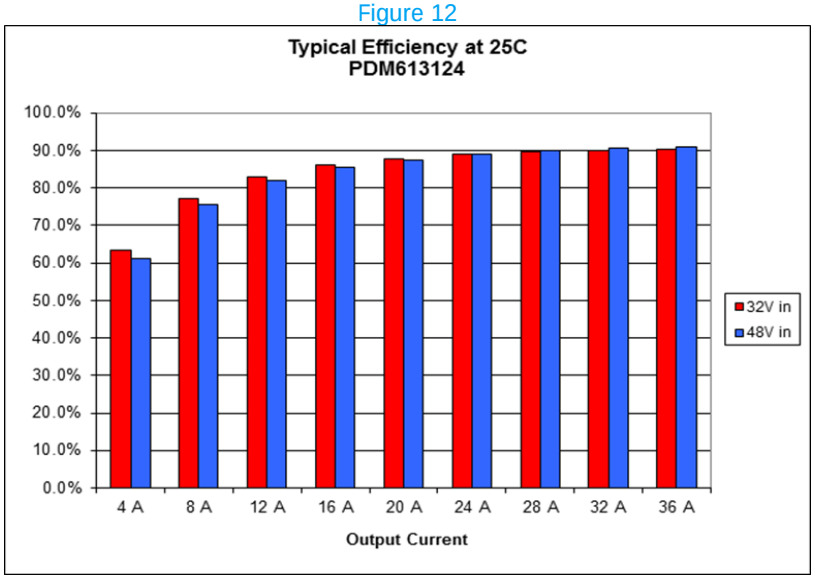


Figure 13

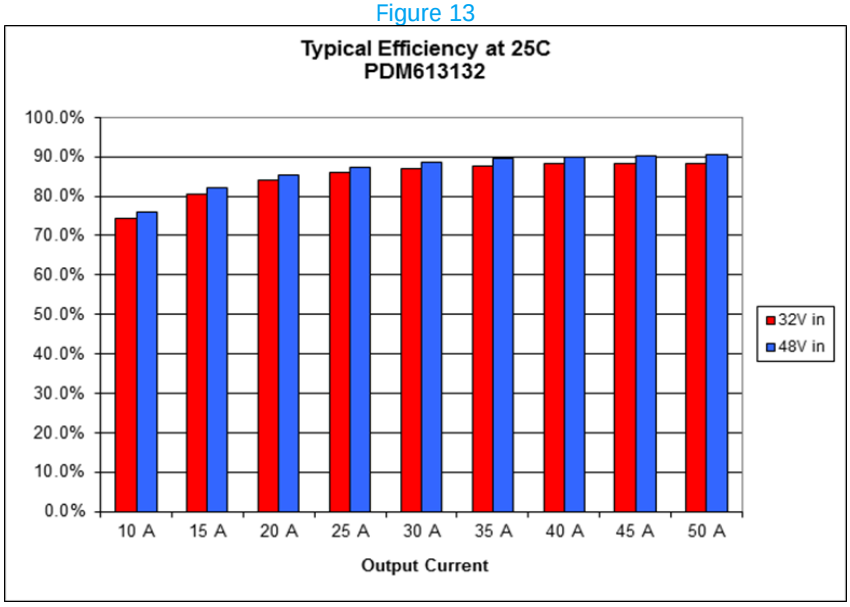
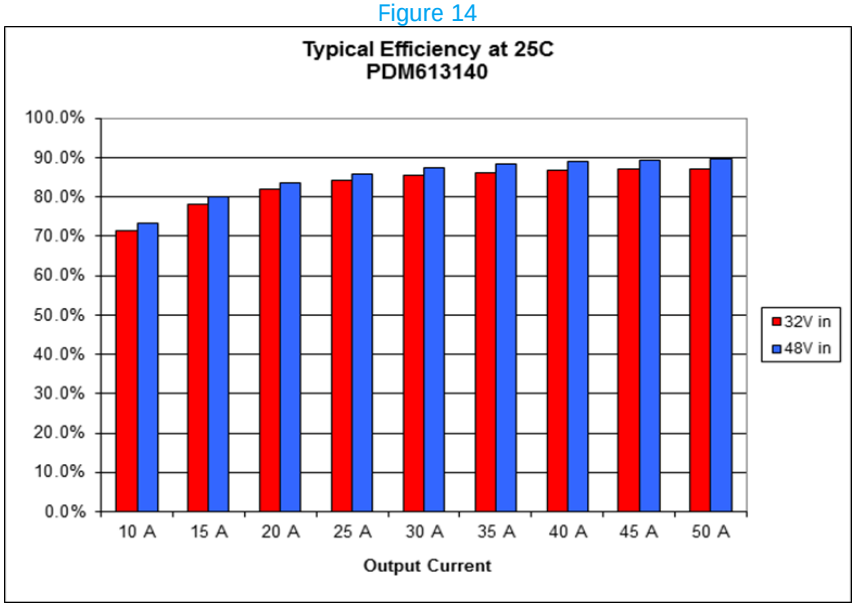



Figure 14



## ORDERING INFORMATION

Generic Datasheet Part Numbering

PDM61xxxx - *

**Screening Level:**

**(7) = Commercial Flow, +25°C testing only**
**Non-destruct bond pull and internal visual inspection are performed.**
**Element evaluation in accordance with Aeroflex ANPDM103.**
**48hrs of Burn-In.**

**(S) = Operating Temperature Range – 40°C to +125°C.**
**Screened in accordance with Aeroflex ANPDM101.**
**Qualified in accordance with Aeroflex ANPDM102.**
**Element evaluation in accordance with Aeroflex ANPDM103.**

**Model Number**
**DC-DC Converter, Isolated POL (iPOL)**
**Voltage Ratio: $V_{OUT}$ = K ($V_{IN}$);**
**Radiation Tolerant**
**612101**
**612102**
**612103**
**612104**
**612105**
**612106**
**612108**
**612112**
**612116**
**613124**
**613132**
**613140**

## REVISION HISTORY

Table 15: Revision History

| Date | Rev. # | Change Description | Initials |
|---|---|---|---|
| 03/13/17 | A | Initial Release | CL |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## *Cobham Semiconductor Solutions – Datasheet Definitions*

*Advanced Datasheet - Product In Development*

*Preliminary Datasheet - Shipping Prototype*

*Datasheet - Shipping Space Grade & Reduced Hi – Rel*

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