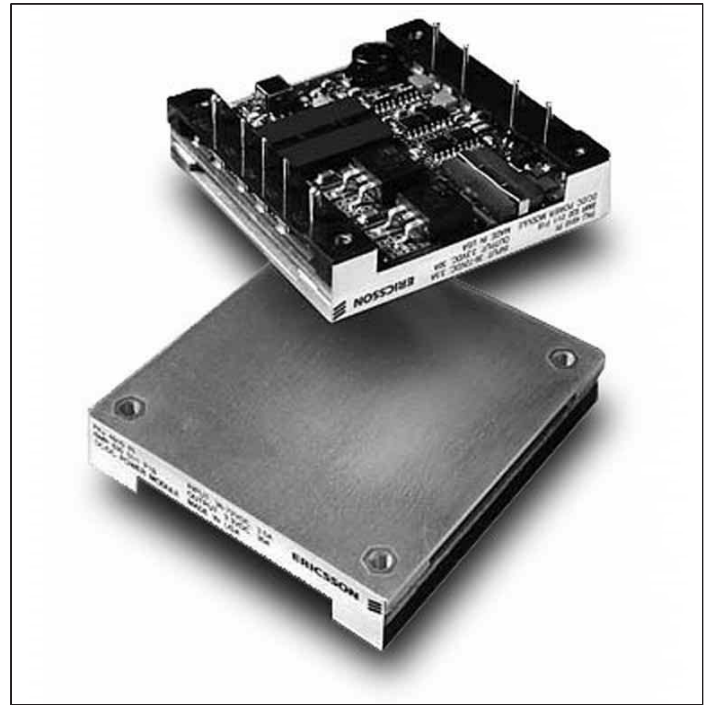


Advanced Specification

15-30A DC/DC Power Modules

48V Input, 1.5V Output

- *High efficiency 87% Typ (15A) at full load*
- *Industry standard footprint*
- *Max case temperature +100°C*
- *Wide input voltage range according to ETSI specifications*
- *1,500 Vdc isolation voltage*
- *MTBF > 3 million hours in accordance with Bellcore TR-332*



The PKJ series represents a “third generation” of High Density DC/DC Power Modules providing high efficiencies. To achieve this high efficiency, Ericsson uses proprietary drive and control circuits with planar magnetics and low resistivity multilayer PCB technology, and a patent pending topology with active rectification. The PKJ series can be used without bulky and height consuming heatsinks, resulting in a lower total cost. This also provides narrow board spacing for electronic, shelf based applications.

The products are in the industry standard package size and offer a beneficial alternative to competing products on the market. Because for certain applications they may not require heatsinks, they are ideal for cost sensitive or high-density applications.

The PKJ series also offers the flexibility of using a heatsink when needed, enabling reduced airflow, extended reliability or higher ambient temperature operation in a wide range of 48V and 60V DC powered systems. Similar to other Ericsson Power Modules, the PKJ series includes an under-voltage shut down facility, protecting the associated batteries from being too deeply discharged. The PKJ series also offers over-voltage protection, over-temperature protection and is short circuit proof.

These products are manufactured using highly automated manufacturing lines with a world-class quality commitment and a five-year warranty. Ericsson Microelectronics has been an ISO 9001 certified supplier since 1991.

For product program please see back cover.

General

Connections

| Designation | Function |
|-------------|--|
| -In | Negative input |
| Case | Connected to base plate |
| RC | Remote control (primary). To turn-on and turn-off the output |
| +In | Positive input |
| -Out | Negative output |
| -Sen | Negative remote sense (if sense is not needed, connect to -Out) |
| Trim | Output voltage adjust |
| +Sen | Positive remote sense (if sense is not needed, connect to +Out) |
| +Out | Positive output |

Weight
85 grams

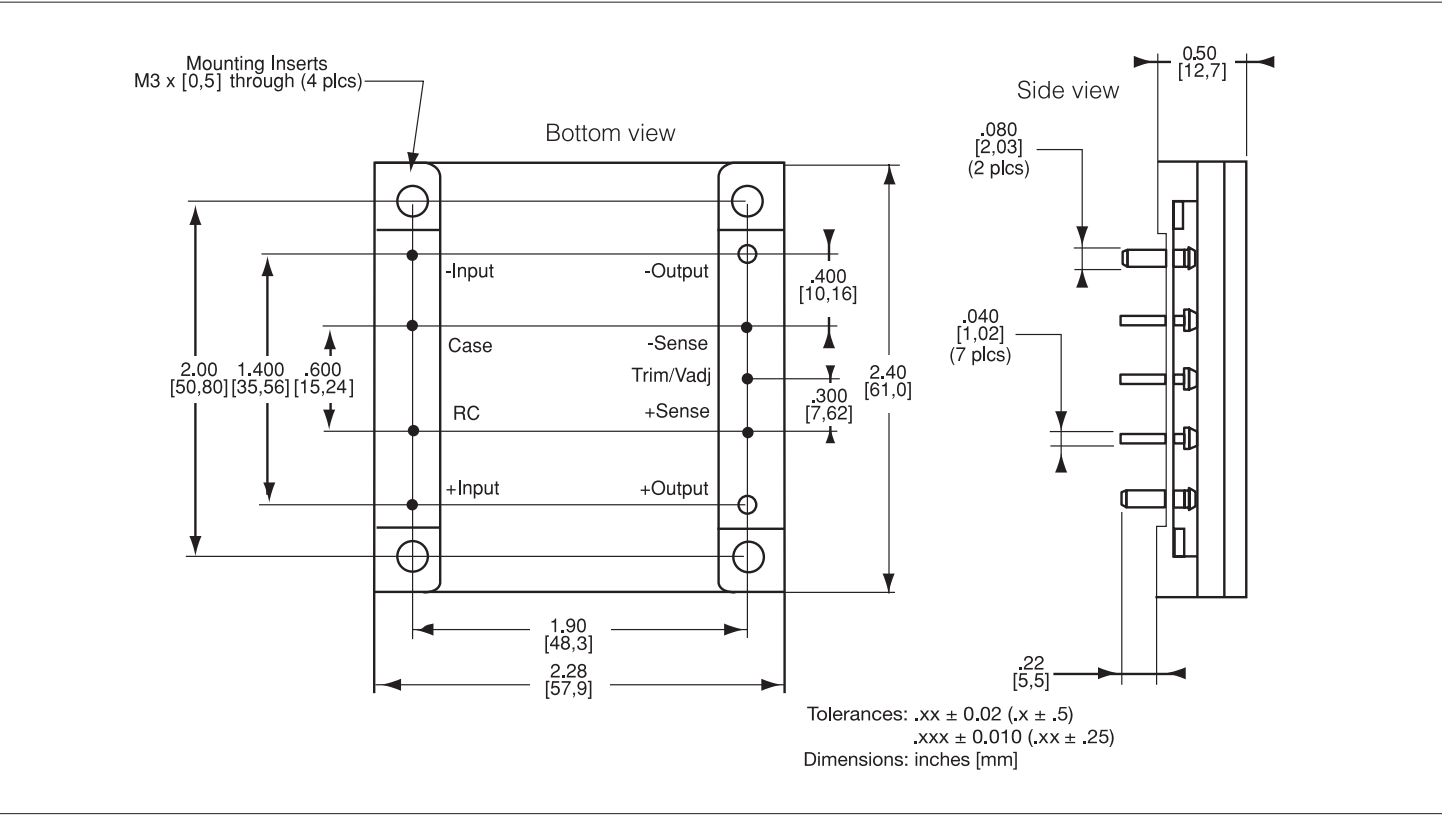
Case
Aluminum baseplate with metal standoffs.

Pins
Pin material: Brass
Pin plating: Tin/Lead over Nickel.

Input $T_C < T_{Cmax}$

| Characteristics | | Conditions | | min | typ | max | Unit |
|-----------------|---|-----------------------------|------------------------|-----|------|-------------------|---------|
| V_I | Input voltage range | | | 36 | | 75 | Vdc |
| V_{Ioff} | Turn-off input voltage | Ramping from higher voltage | | 31 | 33 | | Vdc |
| V_{Ion} | Turn-on input voltage | Ramping from lower voltage | | | 34 | 36 | Vdc |
| C_I | Input capacitance | | | | 2.35 | | μF |
| I_{lac} | Reflected ripple current | 5 Hz to 20 MHz | | | 20 | | mA p-p |
| I_{Imax} | Maximum input current | $V_I = V_{I \min}$ | 22.5 W 30 W 45 W | | | 0.8 1.1 1.7 | A |
| P_{II} | Input idling power | $I_O = 0$ | | 2.5 | 7.5 | | W |
| P_{RC} | Input stand-by power (turned off with RC) | $V_I = 50V$ | RC open | 0.6 | 1.5 | | W |
| TRIM | Maximum input voltage on trim pin | | | | | 6 | Vdc |

Mechanical Data



PKJ 4418 PIOAT/PKJ 4318 PIOAT/PKJ 4218 PIOAT $T_C = -40...+100^{\circ}\text{C}$, $V_I = 36...75\text{ V}$ dc unless otherwise specified.

Output

| Characteristics | | Conditions | Device | Output | | | Unit |
|-----------------|---|---|--|----------------------|----------------|----------------|--------------------|
| | | | | min | typ | max | |
| V_{OI} | Output voltage initial setting and accuracy | $T_C = +25^{\circ}\text{C}$, $V_I = 53\text{V}$, $I_O = I_{Omax}$ | All | 1.48 | 1.5 | 1.52 | V |
| | Output adjust range | $I_O = 0$ to I_{Omax} | All | 1.2 | | 1.65 | V |
| I_O | Output current | | PKJ 4418 PIOAT PKJ 4318 PIOAT PKJ 4218 PIOAT | 0 0 0 | | 30 20 15 | A |
| V_O | Output voltage tolerance band | $I_O = 0$ to I_{Omax} | All | 1.43 | | 1.58 | V |
| | Line regulation | $I_O = I_{Omax}$ | All | | 2 | 15 | mV |
| | Load regulation | $V_I = 53\text{V}$, $I_O = 0$ to I_{Omax} | All | | 2 | 15 | mV |
| V_{tr} | Load transient voltage deviation | Load step = $0.25 \times I_{Omax}$ $dl/dt = 1\text{A}/\mu\text{s}$ | All | ± 100 | | | mV_{peak} |
| t_{tr} | Load transient recovery time | | All | 50 | | | μs |
| t_s | Start-up time | From V_I connection to $V_O = 0.9 \times V_{Onom}$ | All | | 20 | 30 | ms |
| I_{lim} | Current limit threshold | $V_O = 0.96 V_{Onom}$ @ $T_C < 100^{\circ}\text{C}$ | PKJ 4418 PIOAT PKJ 4318 PIOAT PKJ 4218 PIOAT | 30.5 20.5 15.5 | 35 24 18 | 40 29 21 | A |
| I_{SC} | Short circuit current | | PKJ 4418 PIOAT PKJ 4318 PIOAT PKJ 4218 PIOAT | | 36 25 19 | 40 29 21 | A |
| V_{Oac} | Output ripple and noise | $I_O = I_{Omax}$ $f \leq 20\text{ MHz}$ | All | | 60 | 120 | mVp-p |
| SVR | Supply voltage rejection (ac) | $f < 1\text{kHz}$ | All | -50 | | | dB |
| OVP | Over voltage protection | $V_{in} = 50\text{V}$ | All | | 2.5 | 2.9 | V |

Miscellaneous

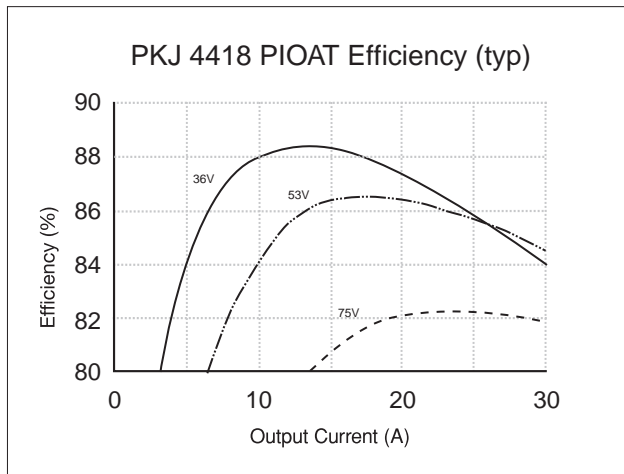
| Characteristics | | Conditions | Device | min | typ | max | Unit |
|-----------------|-------------------|---|--|-----|-------------------|-----|------|
| η | Efficiency | $T_A = +25^{\circ}\text{C}$, $V_I = 53\text{V}$, $I_O = I_{Omax}$ | PKJ 4418 PIOAT PKJ 4318 PIOAT PKJ 4218 PIOAT | | 85 86 87 | | % |
| P_d | Power dissipation | $I_O = I_{Omax}$, $V_I = 53\text{V}$ | PKJ 4418 PIOAT PKJ 4318 PIOAT PKJ 4218 PIOAT | | 7.9 4.9 3.4 | | W |

Absolute Maximum Ratings

| Characteristics | | min | max | Unit |
|-----------------|--|-------|------|----------------------|
| T_C | Case temperature @ max output power | -40 | +100 | $^{\circ}\text{C}$ |
| T_S | Storage temperature | -40 | +125 | $^{\circ}\text{C}$ |
| V_I | Continuous input voltage | -0.5 | +80 | Vdc |
| V_{ISO} | Isolation voltage (input to output test voltage) | 1,500 | | Vdc |
| V_{RC} | Remote control voltage | | 15 | Vdc |
| I^2t | Inrush transient | | 1 | A^2s |

Stress in excess of Absolute Maximum Ratings may cause permanent damage. Absolute Maximum Ratings, sometimes referred to as "no destruction limits," are normally tested with one parameter at a time exceeding the limits of output data or electrical characteristics. If exposed to stress above these limits, function and performance may degrade in an unspecified manner.

Thermal Data



Product Program

| V_I | V_O/I_O | P_{Omax} | Ordering Number |
|---------|-----------|------------|-----------------|
| 48/60 V | 1.5V/30A | 45W | PKJ 4418 PIOAT |
| 48/60 V | 1.5V/20A | 30W | PKJ 4318 PIOAT |
| 48/60 V | 1.5V/15A | 22.5W | PKJ 4218 PIOAT |

The PKL 4000 DC/DC power modules will be available with the different options listed in the Product Options table.

Please check with the factory for availability.

Product Options

| Option | Suffix | Example |
|--|--------|------------------|
| Negative remote on/off logic Ericsson Unique Trim, (i.e. V_{out} Adjust) | – | PKJ 4418 PIOAT |
| Positive remote on/off logic | P | PKJ 4418 PIPOAT |
| Lead length of 0.145" \pm 0.010" | LA | PKJ 4418 PIOATLA |

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Advanced Specification

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