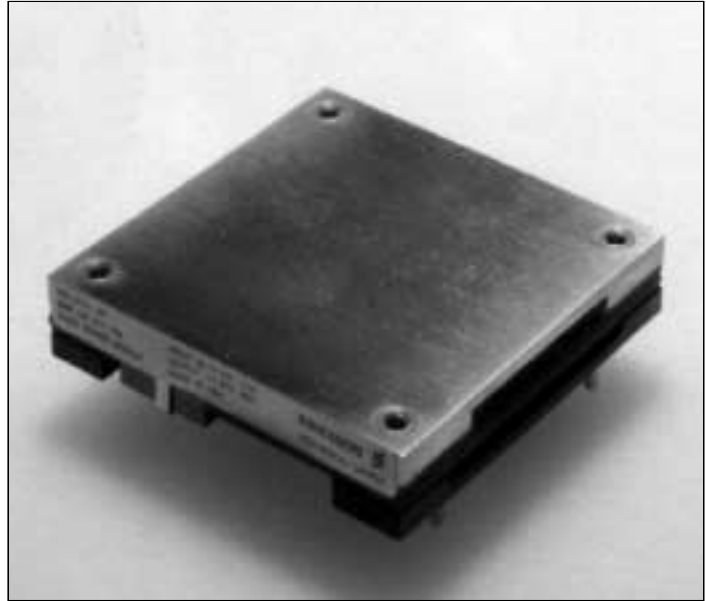


## Advanced Specification

### 300 Watt DC/DC Power Module

### 48V Input, 12V Output

- *High efficiency 92% Typ (25A) at full load*
- *High power density, 103 W/in<sup>3</sup>, (12V @ 25A)*
- *Fast dynamic response, 200 $\mu$ s,  $\pm$  200 mV<sub>peak</sub> Typ*
- *Low output ripple, 80 mV<sub>p-p</sub> Typ*
- *Parallelable with no external components*
- *Wide input voltage range (36-75V)*
- *1,500Vdc isolation voltage*
- *Max case temperature +100°C*
- *UL 1950/UL<sub>c</sub> 1950 Recognized*
- *TUV EN 60 950 Type Approval*



The PKL series represents another one of Ericsson's "industry first" achievements in the continued development of our "Third Generation" of high-density, high-efficiency power modules. This module packs 103 W/in<sup>3</sup> at 92% efficiencies (12V @ 25A) in an industry standard footprint that has been enhanced to include two additional output pins for motherboard connection reliability. These breakthrough features come from using the most advanced patented topology utilizing integrated magnetics and synchronous rectification on a low-resistivity multilayer PCB.

This product features fast dynamic response times and low output ripple, which are important parameters when supplying low-voltage logics. The PKL series also is especially suited for limited board space and high dynamic load applications.

Ericsson's PKL Power Module has been designed with the converging "New Telecoms" market in mind, by specifying the input voltage range in accordance with ETSI specifications. The PKL series also offers over-voltage protection, under-voltage protection, over-temperature protection, soft-start, and is short circuit proof.

These modules are manufactured on highly automated manufacturing lines. Ericsson's world-class quality commitment is reflected in our standard five-year warranty. Ericsson Microelectronics has been an ISO 9001 certified supplier since 1991.

*For a complete product program, please reference the 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
TRIM	Output voltage adjust
+SEN	Positive remote sense
+OUT	Positive output

Note: If the remote sense is not needed the "-Sense" should be connected to -Out and "+Sense" should be connected to +Out.

## Weight

100 grams

## Case

Aluminum baseplate with metal standoffs

## Pins

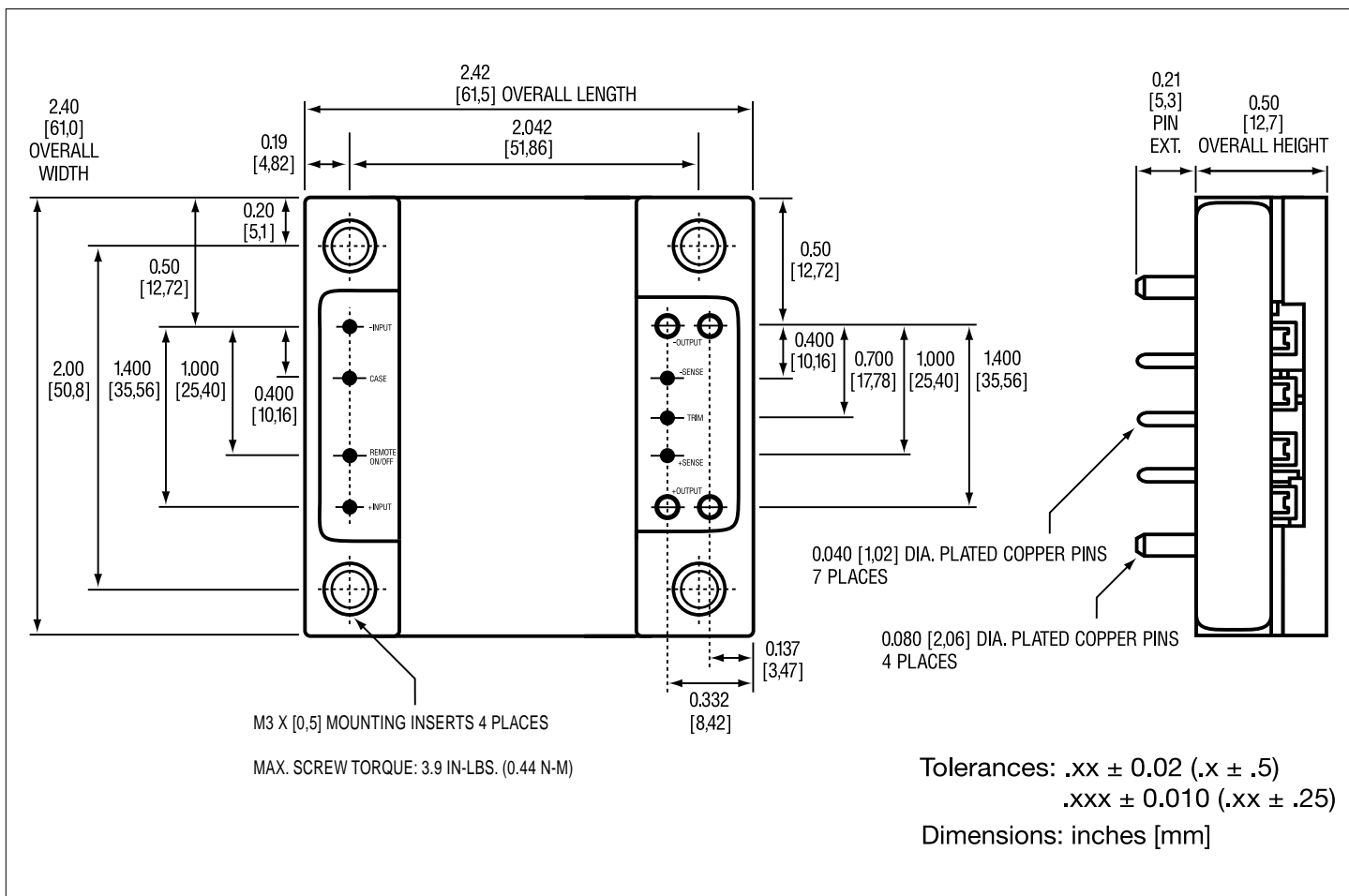
Pin material: Brass

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			3.5			$\mu F$
$I_{I max}$	Maximum input current	$V_I = V_{I min}$	250 W 300 W			8.0 9.6	A
$P_{Ii}$	Input idling power		$I_O = 0$		9		W
$P_{RC}$	Input stand-by power (turned off with RC)	$V_I = 50V$	RC open		1.2		W
TRIM	Maximum input voltage on trim pin				6		Vdc

## Mechanical Data



# PKL 4313 PIT/PKL 4213 PIT

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

## Output

Characteristics		Conditions	Device	Output			Unit
				min	typ	max	
$V_{O_i}$	Output voltage initial setting and accuracy	$T_C = +25^{\circ}\text{C}$ , $V_I = 53\text{V}$ , $I_O = I_{O_{\text{max}}}$	All	11.8	12	12.2	V
	Output adjust range	$I_O = 0$ to $I_{O_{\text{max}}}$	All	9.6		13.3	V
$I_O$	Output current		PKL 4313 PIT PKL 4213 PIT	0 0		25 20	A
$V_O$	Output voltage tolerance band	$I_O = 0$ to $I_{O_{\text{max}}}$	All	11.64		12.36	V
	Line regulation	$I_O = I_{O_{\text{max}}}$	All		5	20	mV
	Load regulation	$V_I = 53\text{V}$ , $I_O = 0$ to $I_{O_{\text{max}}}$	All		5	20	mV
$V_{tr}$	Load transient voltage deviation	Load step = $0.25 \times I_{O_{\text{max}}}$ $di/dt = 1\text{A}/\mu\text{s}$	All		$\pm 200$		$\text{mV}_{\text{peak}}$
$t_{tr}$	Load transient recovery time		All		200		$\mu\text{s}$
$t_s$	Start-up time	From $V_I$ connection to $V_O = 0.9 \times V_{O_{\text{nom}}}$	All		20	30	ms
$I_{lim}$	Current limit threshold	$V_O = 0.96 V_{O_{\text{nom}}}$ @ $T_C < 100^{\circ}\text{C}$	PKL 4313 PIT PKL 4213 PIT	26 22	27.5 23.5	32 28	A
$I_{SC}$	Short circuit current		PKL 4313 PIT PKL 4213 PIT		30 26	33 29	A
$V_{Oac}$	Output ripple and noise	$I_O = I_{O_{\text{max}}}$ , $f \leq 20\text{ MHz}$	All		80	150	$\text{mV}_{\text{p-p}}$
SVR	Supply voltage rejection (ac)	$f < 1\text{kHz}$	All	-50			dB
OVP	Over voltage protection	$V_{in} = 50\text{V}$	All		14.9	15.5	V

## Miscellaneous

Characteristics		Conditions	Device	min	typ	max	Unit
$\eta$	Efficiency	$T_A = +25^{\circ}\text{C}$ , $V_I = 53\text{V}$ , $I_O = I_{O_{\text{max}}}$	PKL 4313 PIT PKL 4213 PIT		92 92		%
$P_d$	Power dissipation	$I_O = I_{O_{\text{max}}}$ , $V_I = 53\text{V}$	PKL 4313 PIT PKL 4213 PIT		26 20.9		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		12	Vdc
$I^2t$	Inrush transient		1	$\text{A}^2\text{s}$

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.

## Product Program

$V_I$	$V_O/I_O$	$P_{Omax}$	Ordering Number
48/60 V	12V/25A	300W	PKL 4313 PIT
48/60 V	12V/20A	240W	PKL 4213 PIT

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 Industry Standard Trim, (i.e. $V_{out}$ Adjust)	-	PKL 4119A PIT
Positive remote on/off logic	P	PKL 4119A PIPT
Lead length of 0.145" $\pm$ 0.010"	LA	PKL 4119A PITLA

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### Preliminary Data Sheet

AE/LZT 108 4895 R2

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