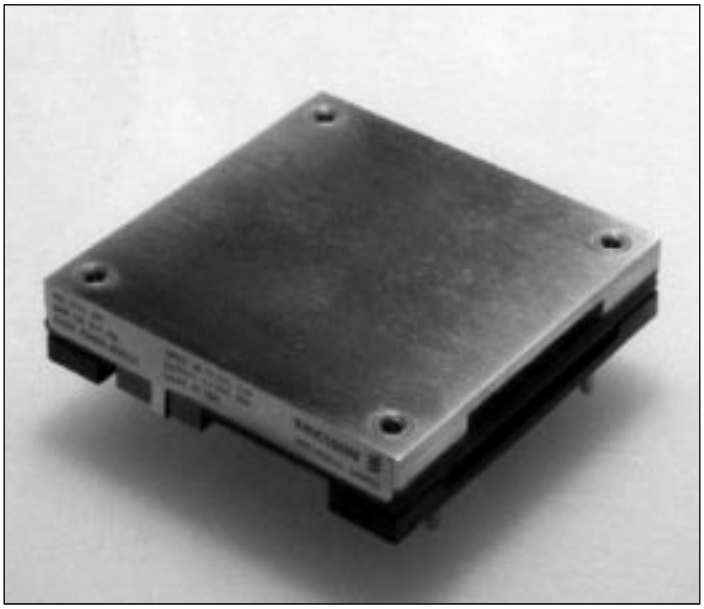
Advanced Specification
50-60A DC/DC Power Modules
48V Input, 1.8V Output

- *High efficiency 87% Typ (60A) at full load*
- *High power density, 37.2 W/in^3, (1.8V @ 60A)*
- *Fast dynamic response, 200µs, ± 200 mVpeak Typ*
- *Low output ripple, 80 mVp-p Typ*
- *Parallelable with no external components*
- *Wide input voltage range (36-75V)*
- *1,500Vdc isolation voltage*
- *Max case temperature +100ºC*
- *Designed to meet UL 1950 and EN 60950*



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 37.2 W/in^3 at 87% efficiencies (1.8V @ 60A) 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.

ERICSSON

General

Connections

Designation	Function
-INPUT	Negative input. Connected to base plate
CASE REMOTE	Remote control (primary).
ON/OFF	To turn-on and turn-off the output
+INPUT	Positive input
-OUTPUT	Negative output, (two pins)
-SENSE	Negative remote sense
TRIM	Output voltage adjust
+SENSE	Positive remote sense
+OUTPUT	Positive output, (two pins)

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

Weight
100 grams

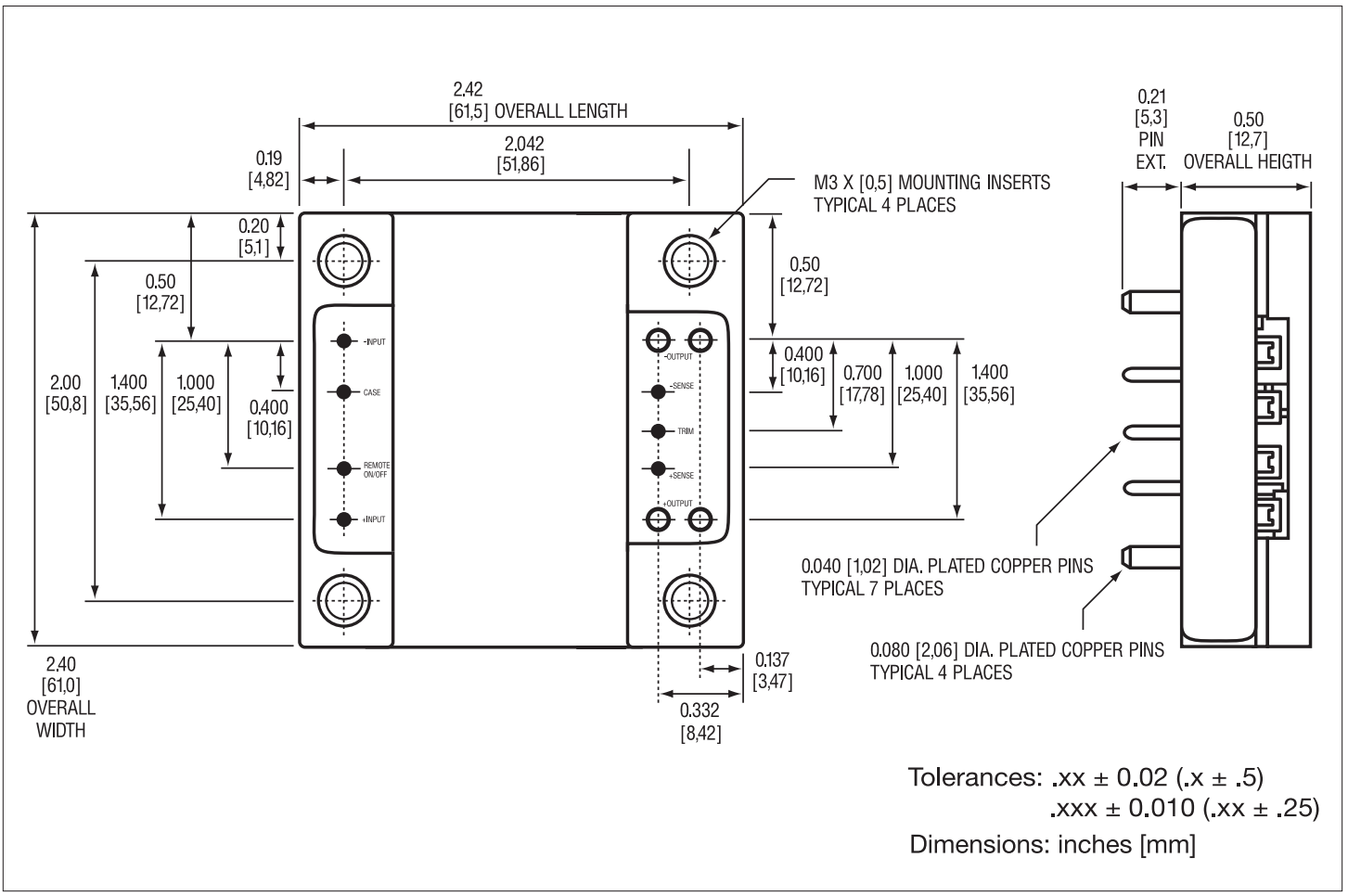
Case
Aluminum baseplate with metal standoffs.

Pins
Pin material: Copper Alloy
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			µF
I_{Imax}	Maximum input current	$V_I = V_{I\ min}$	125 W 150 W			5.5 6.5	A
P_{Ii}	Input idling power		$I_O = 0$		6		W
P_{RC}	Input stand-by power (turned off with RC)	V_I = 50V	RC open		0.6		W
TRIM	Maximum input voltage on trim pin					6	Vdc

Mechanical Data



PKL 4118 PIT T_C = -40...+100°C, V_I = 36...75 V dc unless otherwise specified.

Output

Characteristics		Conditions	Output			Unit
			min	typ	max	
V_{Oi}	Output voltage initial setting and accuracy	T_C = +25°C, V_I = 53V, I_O = I_{Omax}	1.77	1.8	1.83	V
	Output adjust range	I_O = 0 to I_{Omax}	1.44		2.0	V
I_O	Output current		0		60	A
V_O	Output voltage tolerance band	I_O = 0 to I_{Omax}	1.71		1.89	V
	Line regulation	I_O = I_{Omax}		5	15	mV
	Load regulation	V_I = 53V, I_O = 0 to I_{Omax}		5	15	mV
V_{tr}	Load transient voltage deviation	Load step = 0.25 x I_{Omax} dI/dt = 1A/µs		±200		mV_{peak}
t_{tr}	Load transient recovery time			200		µs
t_s	Start-up time	From V_I connection to V_O = 0.9 x V_{Onom}		20	30	ms
I_{lim}	Current limit threshold	V_O = 0.96 V_{Onom} @ T_C<100°C	61	66	71	A
I_{SC}	Short circuit current			70	75	A
V_{Oac}	Output ripple and noise	I_O = I_{Omax} f ≤ 20 MHz		80	150	mVp-p
SVR	Supply voltage rejection (ac)	f<1kHz	-50			dB
OVP	Over voltage protection	Vin = 50V	2.2	2.5	2.9	V

Miscellaneous

Characteristics		Conditions	min	typ	max	Unit
η	Efficiency	T_A = +25°C, V_I = 53V, I_O = I_{Omax}		87		%
P_d	Power dissipation	I_O = I_{Omax}, V_I = 53V		16.1		W

Absolute Maximum Ratings

Characteristics		min	max	Unit
TC	Case temperature @ max output power	-40	+100	°C
T_S	Storage temperature	-40	+125	°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	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.

PKL 4918 PIT T_C = -40...+100°C, V_I = 36...75 V dc unless otherwise specified.

Output

Characteristics		Conditions	Output			Unit
			min	typ	max	
V_{Oi}	Output voltage initial setting and accuracy	T_C = +25°C, V_I = 53V, I_O = I_{Omax}	1.77	1.8	1.83	V
	Output adjust range	I_O = 0 to I_{Omax}	1.44		2.0	V
I_O	Output current		0		50	A
V_O	Output voltage tolerance band	I_O = 0 to I_{Omax}	1.71		1.89	V
	Line regulation	I_O = I_{Omax}		5	15	mV
	Load regulation	V_I = 53V, I_O = 0 to I_{Omax}		5	15	mV
V_{tr}	Load transient voltage deviation	Load step = 0.25 x I_{Omax} dI/dt = 1A/µs		±200		mV_{peak}
t_{tr}	Load transient recovery time			200		µs
t_s	Start-up time	From V_I connection to V_O = 0.9 x V_{Onom}		20	30	ms
I_{lim}	Current limit threshold	V_O = 0.96 V_{Onom} @ T_C<100°C	51	56	61	A
I_{SC}	Short circuit current			60	65	A
V_{Oac}	Output ripple and noise	I_O = I_{Omax} f ≤ 20 MHz		80	150	mVp-p
SVR	Supply voltage rejection (ac)	f<1kHz	-50			dB
OVP	Over voltage protection	Vin = 50V	2.2	2.5	2.9	V

Miscellaneous

Characteristics		Conditions	min	typ	max	Unit
η	Efficiency	T_A = +25°C, V_I = 53V, I_O = I_{Omax}		88		%
P_d	Power dissipation	I_O = I_{Omax}, V_I = 53V		12.3		W

Absolute Maximum Ratings

Characteristics		min	max	Unit
TC	Case temperature @ max output power	-40	+100	°C
T_S	Storage temperature	-40	+125	°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
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Product Program

V_I	V_O/I_O	P_{Omax}	Ordering Number
48/60 V	1.8V/60A	108W	PKL 4118 PIT
48/60 V	1.8V/50A	90W	PKL 4918 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 4118 PIT
Positive remote on/off logic	P	PKL 4118 PIPT
Lead length of 0.145" ± 0.010"	LA	PKL 4118 PITLA

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Advanced Specification

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