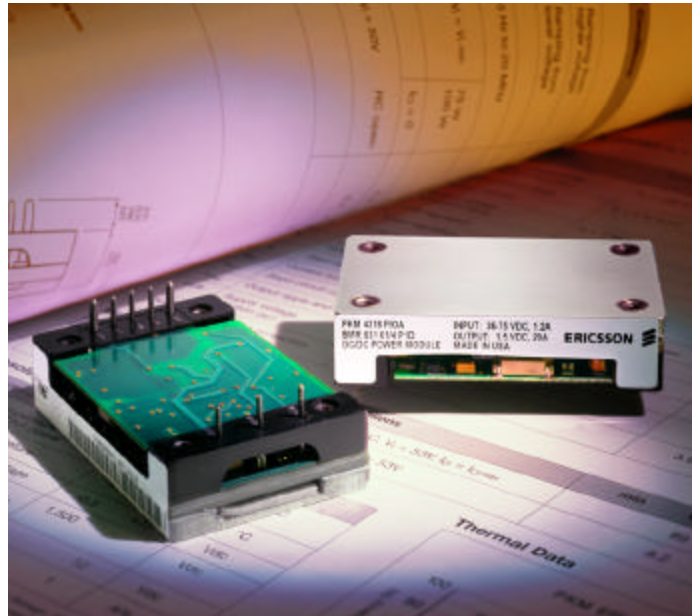


Advanced Specification 126W DC/DC Power Module 48 V Input; 12V Output

- High Efficiency 90% Typ
- Fast Dynamic Response, 150us, +/- 100 mV_{peak} Typ
- Heatsinks available as an option for extended operation
- Low Output Ripple, 75mV_{p-p} Typ
- High power density, 76.2 W/in³
- Wide input voltage range (36-75V) according to ETSI Specifications
- Industry standard footprint & pin-out
- 1,500 Vdc isolation voltage
- Max case temperature +100°C
- UL 1950/UL_C 1950 Recognized Pending
- Demonstrated compliance with isolation requirements equivalent to Basic Isolation



The PKM 4000 series of DC/DC power modules represents another Ericsson "industry first" achievement in the continued development of our "third generation" of high density, high efficiency DC/DC power modules in an industry standard quarter brick package with unparalleled performance. The PKM 4113 PI module is a new addition to the series family with 76.2W/in³ at 90% efficiency. These breakthrough features have been achieved by using the most advanced patented topology, utilizing integrated magnetics and synchronous rectification on a low resistivity multilayer PCB.

The product features fast dynamic response times and low output ripple, which are important parameters when supplying low voltage logics. The PKM 4000 series is especially suited for limited board space and high dynamic load applications

Ericsson's PKM 4000 Power Modules address the converging "New Telecoms" market by specifying the input voltage range in accordance with ETSI specifications. Included in the PKM 4000 series are over-voltage protection, under voltage protection, over temperature protection, soft-start, and short circuit protection. The PKM 4000 Series also offers the flexibility of using an optional heatsink when needed, enabling reduced airflow, extended reliability, and higher ambient temperature operation.

These modules are manufactured using highly automated manufacturing lines with a world-class quality commitment which is reflected in our standard five-year warranty. Ericsson Inc., Microelectronics has been an ISO 9001 certified supplier since 1991.



For a complete product program please reference the back cover.

General

Connections

Pin	Designation	Function
1	- IN	Negative Input
2	ON/OFF	Remote control (primary). To turn on and turn off the output.
3	+ IN	Positive Input.
4	- OUT	Negative Output.
5	- SEN	Negative Remote Sense
6	Trim	Output Voltage Adjust
7	+ SEN	Positive Remote Sense
8	+ OUT	positive Output

Weight

Maximum 55 g

Case

Aluminum baseplate with metal standoffs.

Pins

Pin material: Brass

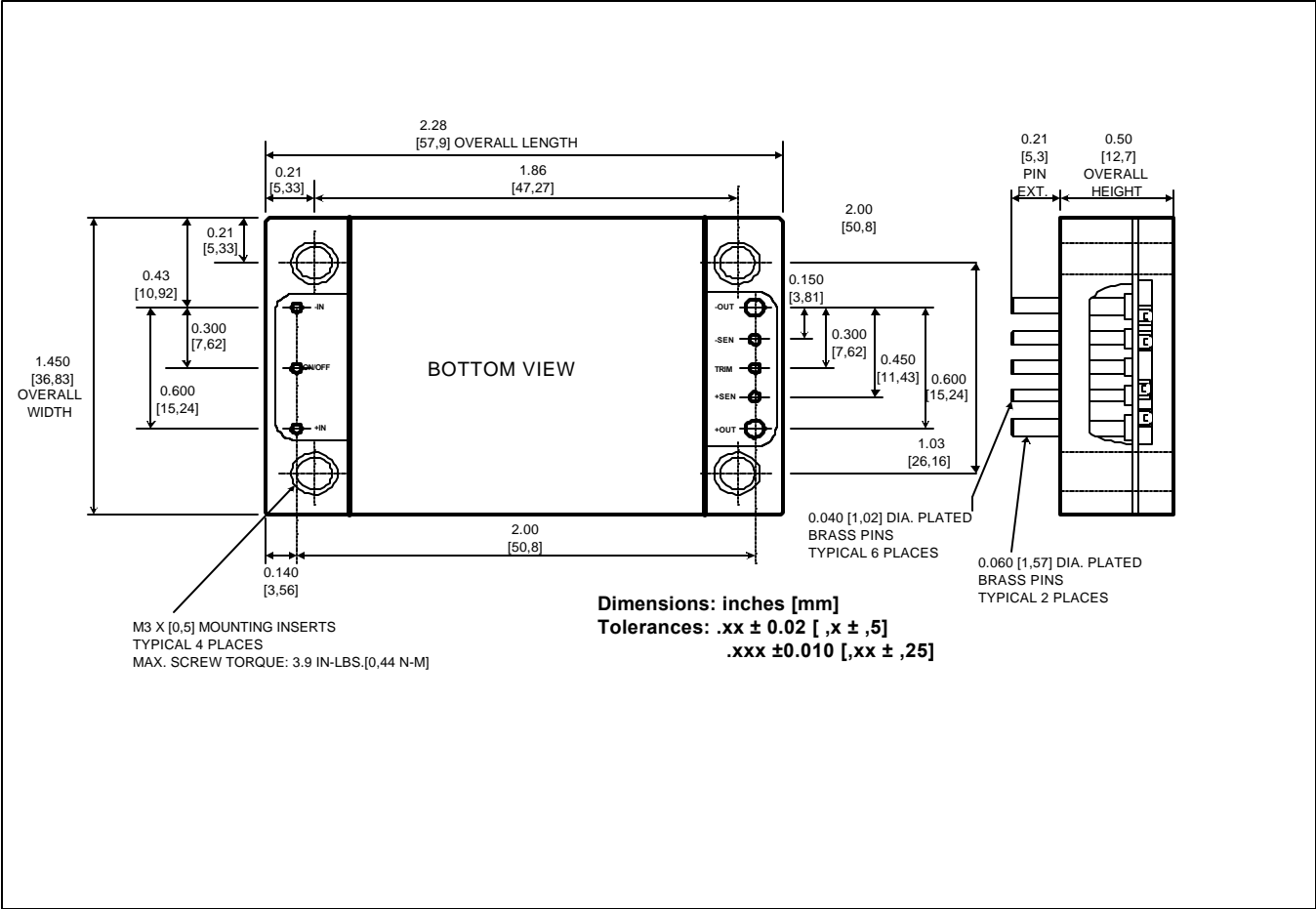
Pin plating: Tin/Lead over Nickel.

Input $T_C < T_{C\max}$

Characteristics		Conditions	min	typ	max	Unit
V_I	Input voltage range ¹⁾		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			2.8		μF
I_{Iac}	Reflected ripple current	5 Hz to 20 MHz		20		mA_{p-p}
$I_{I\max}$	Maximum input current	$V_I = V_{Imin}, V_I = 53V$ PKM 4113 PI			4.28	A
P_{Ii}	Input idling power	$I_O = 0, V_I = 53 V$		2.6	4.6	W
P_{RC}	Input stand-by power (turned off with RC)	$V_I = 53V, RC$ open		0.4	0.6	W
VTRIM	Maximum input				6	Vdc

Note:
1) The input voltage range 36...75 V meets the requirements in the European Telecom Standard prETS 300 132-2 for Normal input voltage range in 48 V and 60 V DC power systems, -40.5...-57.0 V and -50.0...-72.0 V respectively.

Mechanical Data



PKM 4113 PI (126W)

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

Output

Characteristics		Conditions	Output			Unit
			min	typ	max	
V_{OI}	Output voltage initial setting and accuracy	$T_C = +25^{\circ}\text{C}$, $V_I = 53\text{V}$, $I_O = I_{Omax}$	11.8	12.0	12.2	V
	Output adjust range	$I_O = I_{Omax}$	9.6		13.3	V
V_O	Output voltage tolerance band	$I_O = 0$ to I_{Omax}	11.6		12.4	V
	Line regulation	$I_O = I_{Omax}$		3	10	mV
	Load regulation	$V_I = 53\text{V}$, $I_O = 0$ to I_{Omax}		3	10	mV
V_{tr}	Load transient voltage deviation	Load step = $0.25 \times I_{Omax}$ $di/dt = 1\text{A}/\mu\text{s}$		+/-100		mV
t_{tr}	Load transient recovery time			150		μs
t_s	Start-up time	From V_I connection to $V_O = 0.9 \times V_{Onom}$		30	40	ms
I_O	Output current		0		10.5	A
P_{Omax}	Max output power	At $V_O = V_{Onom}$			126	W
I_{lim}	Current limit threshold	$V_O = 0.96 V_{Onom}$ @ $T_C < 100^{\circ}\text{C}$	11.5	12.5	14.0	A
I_{sc}	Short circuit current			14.5	16.0	A
V_{Oac}	Output ripple & noise	$I_O = I_{Omax}$, $f < 20\text{MHz}$		75	100	mV _{p-p}
SVR	Supply voltage rejection (ac)	$f < 1\text{kHz}$	-53			dB
OVP	Over voltage protection	$V_I = 50\text{V}$		14.9	15.5	V

Miscellaneous

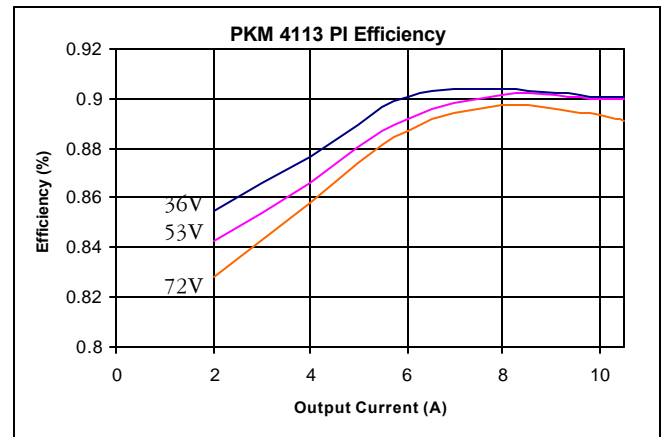
Characteristics		Conditions	min	typ	max	Unit
η	Efficiency	$I_O = I_{Omax}$, $V_I = 53\text{V}$, $T_C = +25^{\circ}\text{C}$		90		%
P_d	Power dissipation	$I_O = I_{Omax}$, $V_I = 53\text{V}$, $T_C = +25^{\circ}\text{C}$		14		W
f_s	Switching frequency	$I_O = 0...1.0 \times I_{Omax}$		150		kHz

Absolute Maximum Ratings

Characteristics		min	max	Unit
T_C	Maximum Operating Case Temperature	-40	+100	$^{\circ}\text{C}$
T_S	Storage temperature	-40	+125	$^{\circ}\text{C}$
V_I	Input voltage	- 0.5	+ 80	Vdc
V_{dc}	Continuous		+ 100	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 ² 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.

Thermal Data



Product Program

V_I	V_O/I_O max	P_O max	Ordering No.
48/60 V	12V/10.5A	126 W	PKM 4113 PI

The PKM 4113 PI DC/DC power module 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_O Adjust)	-	PKM 4113 PI
Positive remote on/off logic	P	PKM 4113 PIP
Lead length $0.145'' \pm 0.010''$	LA	PKM 4113 PILA

Information given in this Advanced Specification is believed to be accurate and reliable. No responsibility is assumed for the consequences of its use for any infringement of patents or other rights of third parties that may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Ericsson Microelectronics. These products are sold only according to Ericsson Microelectronics' general conditions of sale, unless otherwise confirmed in writing. Specifications are subject to change without notice.

Ericsson Inc., Microelectronics
1700 International Pkwy., Suite 200
Richardson, Texas 75081
Phone: 877-ERICMIC
www.ericsson.com/microelectronics

For sales contacts, please refer to our website
or call: 877-374-2642 or fax: 972-583-8355

The latest and most complete information can
be found on our website!

Advanced Specification

AE/LZT 108 5515 R1
© Ericsson Inc., Microelectronics, January 2002