

## Advanced Specification 75-150W DC/DC Power Modules 48 V Input; 12V @ 6.3-12.5A Output

- High Efficiency 93% Typ at full load
- Fast Dynamic Response, 100us, +/- 150 mVpeak Typ
- Heatsinks available as an option for extended operation
- MTBF > 3 million hours in accordance with Bellcore TR-332
- High power density, up to 55 W/in<sup>3</sup>
- Wide input voltage range (34-75V) according to ETSI Specifications
- Industry standard footprint & pin-out
- 1,500 Vdc isolation voltage
- Max case temperature +100°C
- UL 1950/UL<sub>C</sub> 1950 Recognized
- Demonstrated compliance with isolation requirements equivalent to Basic Insulation per UL 60950
- TUV to EN60 950 Type Approved



The PKJ series represents a "third generation" of High Density DC/DC Power Modules providing greater than 90% efficiency. Ericsson uses proprietary drive and control circuits with planar magnetics and low resistivity multilayer PCB technology, and advanced patented topology with active synchronous rectification in an industry standard half brick package with unparalleled performance.

The product features fast dynamic response times and low output ripple, which are important parameters when supplying high quality DC power to low voltage logics and Wireless applications. The PKJ converter's excellent high efficiency and advanced design are well suited for limited board space and high dynamic load applications.

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

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.*

## Connections

Pin	Designation	Function
1	- IN	Negative Input
2	CASE	Connected to baseplate
3	RC	Remote Control to turn on and off the output
4	+ IN	Positive Input
5	- OUT	Negative Output
6	- SEN	Negative Remote Sense
7	TRIM	Output Voltage Adjust
8	+ SEN	Positive Remote Sense
9	+ OUT	Positive Output

## Weight

Maximum 85 g

## Case

Aluminum baseplate with metal standoffs.

## Pins

Pin material: Brass

Pin plating: Tin/Lead over Nickel.

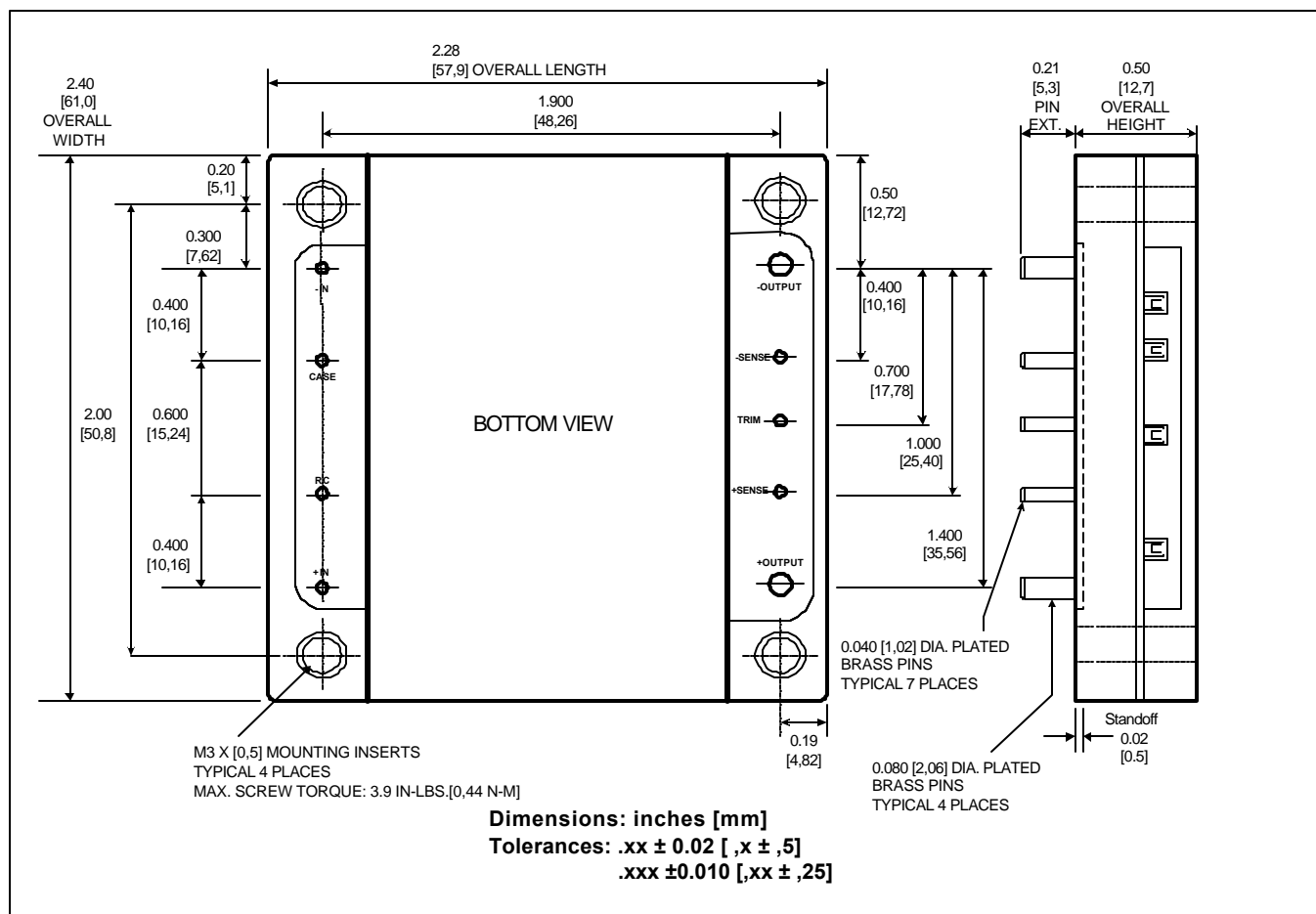
**Input**  $T_C < T_{C \max}$

Characteristics		Conditions	min	typ	max	Unit
V <sub>I</sub>	Input voltage range <sup>1)</sup>		34		75	Vdc
V <sub>Ioff</sub>	Turn-off input voltage	Ramping from higher voltage	31	33		Vdc
V <sub>Ion</sub>	Turn-on input voltage	Ramping from lower voltage		34	36	Vdc
C <sub>I</sub>	Input capacitance			2.8		μF
I <sub>Iac</sub>	Reflected ripple current	5 Hz to 20 MHz		20		mA <sub>P-p</sub>
I <sub>I max</sub>	Maximum input current	V <sub>I</sub> = 36V PKJ 4113A PIT PKJ 4113 PIT PKJ 4713 PIT			4.93 3.27 2.46	A A A
P <sub>Ii</sub>	Input idling power	I <sub>O</sub> =0, V <sub>I</sub> = 53 V		2.5	7.5	W
P <sub>RC</sub>	Input stand-by power (turned off with RC)	V <sub>I</sub> =53V, RC open		0.05	2.5	W
Trim	Maximum input voltage on trim pin				6.0	Vdc

**Note:**

1) The input voltage range 34...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



# PKJ 4113A PIT/PKJ 4113 PIT/PKJ 4713 PIT

$T_C = -40...+100^{\circ}\text{C}$ ,  $V_I = 36...75\text{V}$  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	11.8	12.0	12.2	V
	Output adjust range	$I_O = I_{Omax}$	All	9.6		13.3	V
$V_O$	Output voltage tolerance band	$I_O = 0$ to $I_{Omax}$	All	11.64		12.36	V
	Line regulation	$I_O = I_{Omax}$	All		3	10	mV
	Load regulation	$V_I = 53\text{V}$ , $I_O = 0$ to $I_{Omax}$	All		3	10	mV
$V_{tr}$	Load transient voltage deviation	Load step = $0.25 \times I_{Omax}$ $di/dt = 1\text{A}/\mu\text{s}$	All		+/-100		mV
$t_{tr}$	Load transient recovery time		All		150		$\mu\text{s}$
$t_s$	Start-up time	From $V_I$ connection to $V_O = 0.9 \times V_{Onom}$	All		30	50	ms
$I_O$	Output current		PKJ 4113A PIT PKJ 4113 PIT PKJ 4713 PIT	0 0 0		12.5 8.3 6.25	A
$P_{Omax}$	Max output power	At $V_O = V_{Onom}$	PKJ 4113A PIT PKJ 4113 PIT PKJ 4713 PIT			150 100 75	W
$I_{lim}$	Current limit threshold	$V_O = 0.96 V_{Onom}$ @ $T_C < 100^{\circ}\text{C}$	PKJ 4113A PIT PKJ 4113 PIT PKJ 4713 PIT	13.5 9.0 7.0	14.5 10.5 8.0	16.0 12.0 9.0	A
$I_{sc}$	Short circuit current		PKJ 4113A PIT PKJ 4113 PIT PKJ 4713 PIT		16.5 12.0 10.0	18.0 14.0 12.0	W
$V_{Oac}$	Output ripple & noise	$I_O = I_{Omax}$ , $f < 20\text{MHz}$	All		75	100	mV <sub>p-p</sub>
SVR	Supply voltage rejection (ac)	$f < 1\text{kHz}$	All	-53			dB
OVP	Over voltage protection	$V_I = 53\text{V}$	AI		14.9	15.5	V

## Miscellaneous

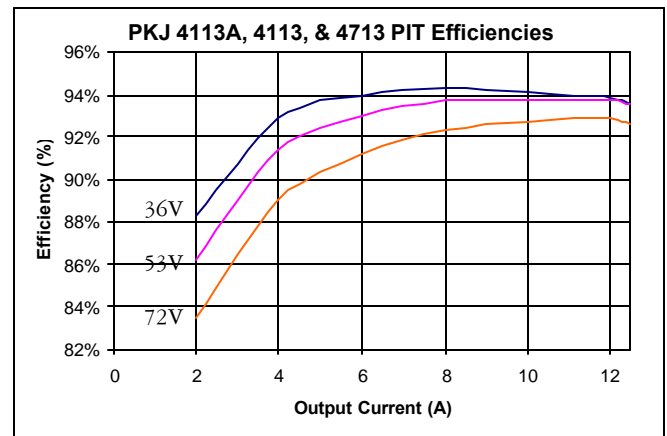
Characteristics	Conditions	Device	min	typ	max	Unit
$\eta$	Efficiency	$I_O = I_{Omax}$ , $V_I = 53\text{V}$ , $T_C = +25^{\circ}\text{C}$	All	93		%
$P_d$	Power dissipation	$I_O = I_{Omax}$ , $V_I = 53\text{V}$ , $T_C = +25^{\circ}\text{C}$	PKJ 4113A PIT PKJ 4113 PIT PKJ 4713 PIT	11.3 7.5 5.6		W
$f_s$	Switching frequency	$I_O = 0...1.0 \times I_{Omax}$	All	300		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: Continuous Transient (100ms)	-0.5 +80 +100	V dc V dc
$V_{ISO}$	Isolation voltage (input to output test voltage)	1,500	V dc
$V_{RC}$	Remote control voltage	15	V dc
$I^2t$	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.

## Typical Characteristics



## Product Program

$V_I$	$V_O/I_O$ max	$P_O$ max	Ordering No.
48/60 V	12V/12.5A 12V/8.3A 12V/6.25A	150 W 100 W 75 W	PKJ 4113A PIT PKM 4113 PIT PKM 4713 PIT

The PKJ 4113A PIT, PKJ 4113 PIT, and PKJ 4713 PIT DC/DC power modules are 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)	-	PKJ 4113 PIT
Positive remote on/off logic	P	PKJ 4113 PIPT
Lead length 0.145"± 0.010"	LA	PKJ 4113 PITLA

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Advanced Specification

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