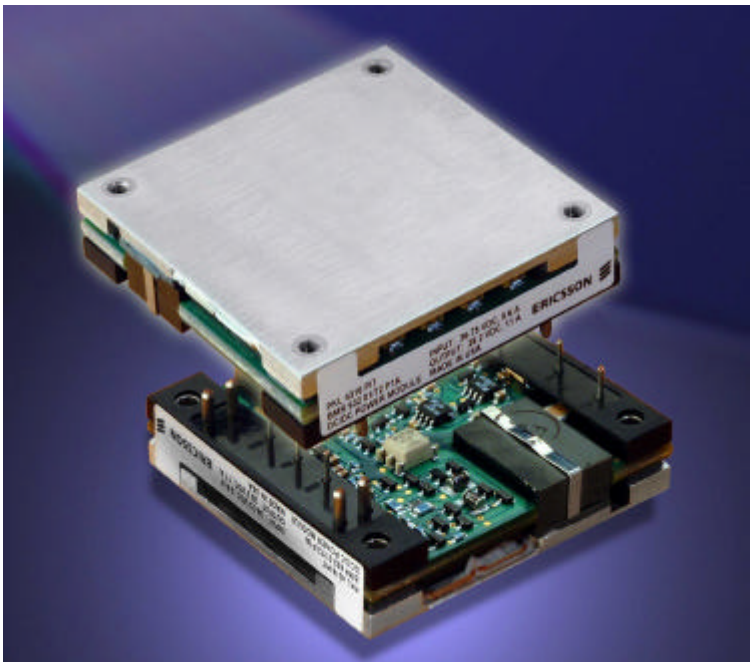
Advanced Data Sheet
310W DC/DC Power Module
48V Input, 28.2V Output

- High Efficiency, 90% Typ. at 11A (full load)
- High Power Density, 106.7 W/in^3
- Fast Dynamic Response, 100 µs, ±750 mVpeak Typ
- Low Output Ripple, 50 mVp-p Typ.
- Parallelable with no external components
- 1,500 V dc isolation voltage
- Max. case temperature +100°C
- Demonstrated compliance with isolation requirements equivalent to Basic Isolation per UL60 950
- UL/UL$_C$ 1950 and UL/UL$_C$ 60 950 Recognized
- MTBF > 3 million hours in accordance with Bellcore TR 332
- Input Transient Specification 100V, 100ms



The PKL 4000 series represents another one of Ericsson's "industry first" achievements in the continuing development of our "Third Generation" of high-density, high-efficiency power modules. The PKL 4316 PIT module packs 106.7 W/in^3 at 91% efficiency (28.2V @ 11A) in an industry standard footprint. The PKL 4000 package has been enhanced to include two additional output pins for motherboard connection reliability at this high power.
This product features fast dynamic response times and low output ripple, which are important parameters when supplying high quality DC power to wireless applications. The PKL 4000 Series also is especially well suited for limited board space and high dynamic load applications.

Ericsson's28 volt PKL 4316 PIT Power Module has been designed with the global wireless Telecomm market in mind, by specifying the input voltage range in accordance with ETSI specifications. 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.

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General

Connections

Pin	Designation	Function
1	-INPUT	Negative input
2	CASE	Connected to base plate
3	REMOTE ON/OFF	Remote control (primary) to turn-on and turn-off the output
4	+INPUT	Positive input.
5, 10	-OUTPUT	Negative output (two pins)
6	-SENSE	Negative remote sense
7	TRIM	Output voltage adjust
8	+SENSE	Positive remote sense
9, 11	+OUTPUT	Positive output (two pins)

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

Weight

110 grams

Case

Aluminum base plate with stainless standoffs.

Pins

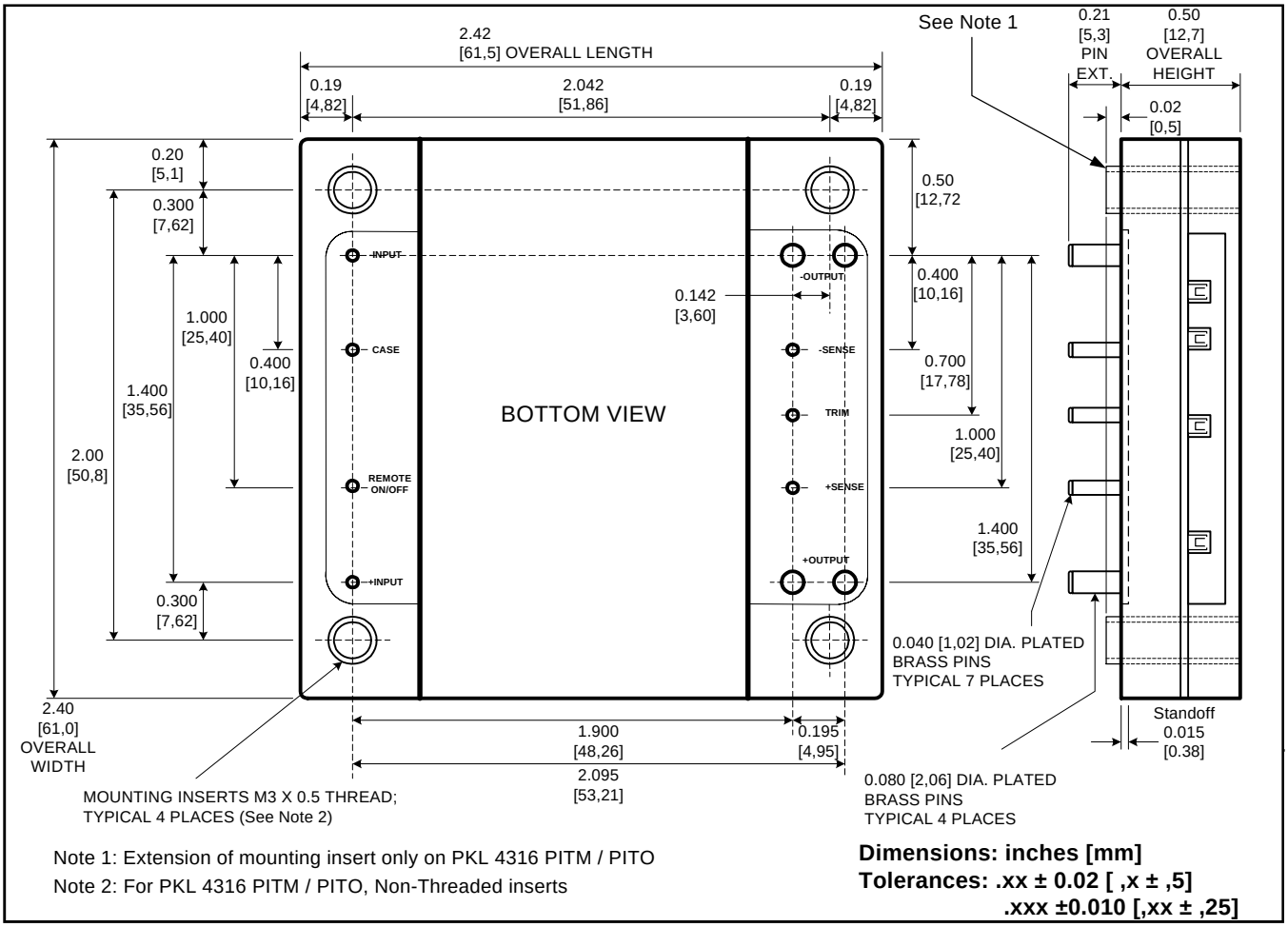
Pin Material: Brass

Pin Plating: Tin/Lead over Nickel

Input T_C <T_{Cmax} unless otherwise specified

Characteristics		Conditions	min	typ	max	Units
V_I	Input voltage range		36		75	V_{dc}
V_{Ioff}	Turn-off input voltage	Ramping from higher voltage	31	33		V_{dc}
V_{Ion}	Turn-on input voltage	Ramping from lower voltage		34	36	V_{dc}
$I_{I\ max}$	Max. Input Current	V_i = $V_i$min = 36 V			9.5	A_{dc}
$I_{I\ rush}$	Inrush Current	Except Charging of C_I			1	A_{dc}
C_I	Input capacitance		3.5			µF
P_{Ii}	Input idling power	I_O=0, T_C=–30…+95 °C		6		W
P_{RC}	Input stand-by power	T_C=–30…+95 °C, RC Open		0.4	0.6	W

Mechanical Data



Note 1: Extension of mounting insert only on PKL 4316 PITM / PITO

Note 2: For PKL 4316 PITM / PITO, Non-Threaded inserts

Dimensions: inches [mm]
Tolerances: .xx ± 0.02 [,x ± ,5]
.xxx ±0.010 [,xx ± ,25]

EN/LZT 108 5190 R1F

Output

T_C = -40...+100°C, V_I = 36...75V_{dc} unless otherwise specified

Characteristics		Conditions		Output min	Output typ	Output max	Unit
V_{Oi}	Output voltage initial	T_C = +25°C, I_O = I_{Omax} = 11A, V_I = 53V	PKL4316PIT	27.6	28.2	28.8	V
			PKL4316PITM,PKL4316PITO	27.9	28.2	28.5	
	Output adjust range			23.5		31	
V_O	Output voltage	Long term drift	I_O = 0.1...1.0 × I_{Omax}	27.6	28.2	28.8	V
	Idling voltage	I_O = 0A		27.6	28.2	30.6	V
	Line regulation	I_O = I_{Omax}	V_I = 36…75 V		14	56	mV
	Load regulation	I_O = 0.1…1.0 × I_{Omax}			14	56	mV
t_{tr}	Load transient	I_O = 0.1…1.0 × I_{Omax}, Load step =0.25 x I_{Omax}, Di/dt = 0.1A/µs V_I = 53 V			100		µs
V_{tr}	Load transient voltage				± 0.75		V
t_r	Ramp-up time	I_O = 0.1…1.0 × I_{Omax},			20	40	ms
t_s	Start-up time	I_O = 0.1…1.0 × I_{Omax}, V_I = 53 V			20	40	ms
I_O	Output current			0		11	A
P_{Omax}	Max output power	Calculated at V_O=$V_O$typ				310	W
I_{lim}	Current limiting	T_C<T_{Cmax}			13.2	15.4	A
I_{sc}	Short circuit current	V_O = 0.2…0.5 V, T_C =+25°C			15	16	A
V_{Oac}	Output ripple & noise		5 Hz…20MHz		50	130	mV_{p-p}
			0.15 …100 MHz		140		mV_{p-p}
SVR	Supply voltage rejection (ac)	f = 100 Hz sine wave, 1V_{p-p}, V_I = 53 V		-50			dB

Miscellaneous

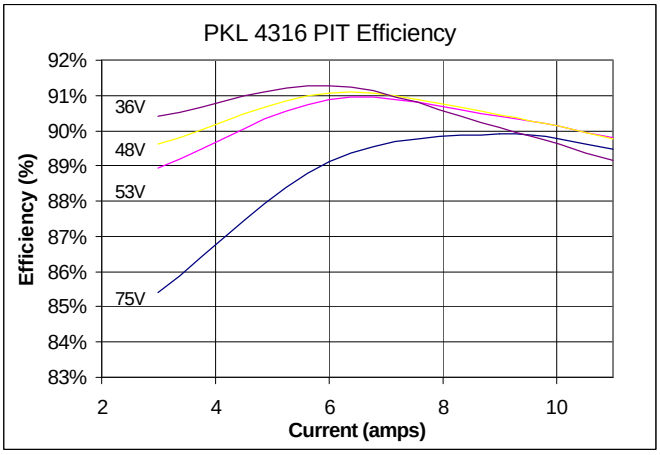
Characteristics		Conditions	min	typ	max	Unit
η	Efficiency	I_O = I_{Omax}, V_I = 48V, T_C = +25°C		90		%
P_d	Power dissapation	I_O = I_{Omax}, V_I = 48V, T_C = +25°C		30.7		W
f_s	Switching frequency	I_O = 0...1.0 x I_{Omax}		130		kHz

Absolute Maximum Ratings

Characteristics			min	max	Unit
T_C	Maximum Operating Case Temperature		-40	+100	°C
T_S	Storage temperature		-40	+125	°C
V_I Vdc	Input voltage	Continuous	-0.5	+ 80	Vdc
		Transient (100ms)		+100	V dc
V_{ISO}	Isolation voltage (input to output test voltage)		1,500		V dc
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.

Efficiency



Product Program

V_I	V_O/I_O	$P_O$max	Ordering Number
48/60V	28V/11A	310W	PKL4316PIT

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_o Adjust)	-	PKL4316PIT
Non-threaded standoff w/ increased length (0.02")	M	PKL4316PITM
Positive remote on/off logic	P	PKL4316PIPT
Lead length 0.145"± 0.010"	LA	PKL4316PITLA
Setpoint accuracy to +/- 1%, Non-threaded standoff w/ increased length (0.02")	O	PKL4316PITO

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

Advanced Data Sheet

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