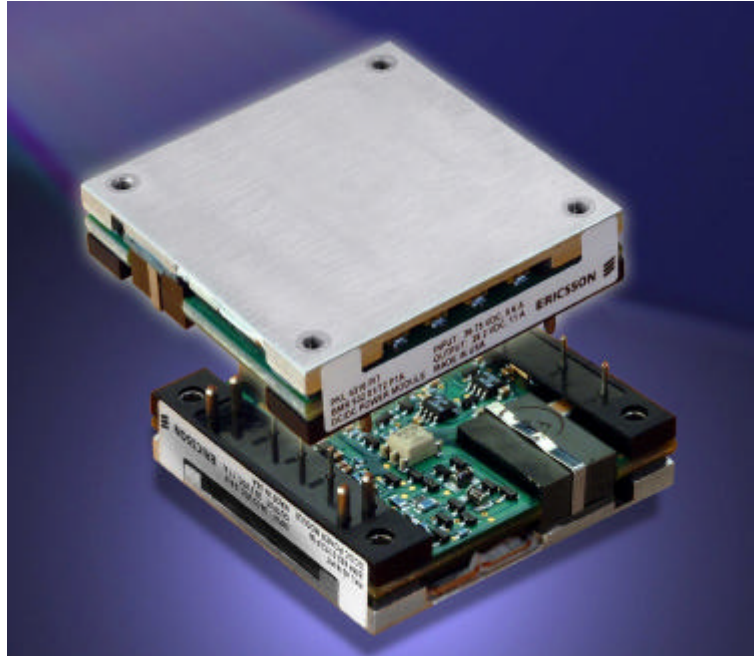


Advanced Data Sheet

310W DC/DC Power Module

48V Input, 28.2V Output

- High Efficiency, 90% Typ. at 11A (full load)
- High Power Density, 106.7 W/in³
- Fast Dynamic Response, 100 μ s, \pm 750 mV_{peak} 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/in³ 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's 28 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.



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

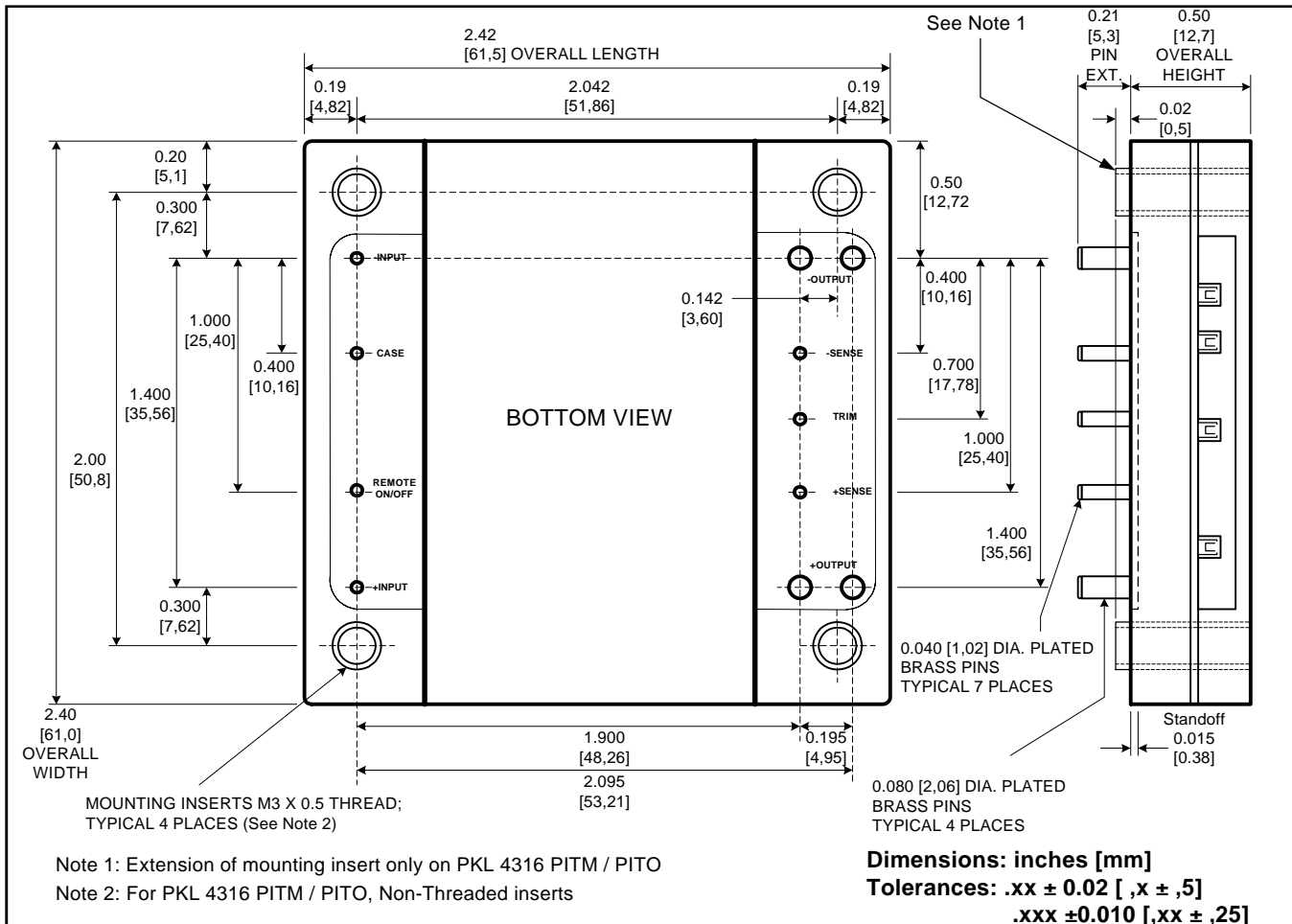
Aluminum base plate with stainless standoffs.

Pins

Pin Material: Brass

Pin Plating: Tin/Lead over Nickel

Mechanical Data



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	$V_I = V_{Imin} = 36 V$			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	$I_O = 0, T_C = -30...+95^\circ C$		6		W
P_{RC}	Input stand-by power	$T_C = -30...+95^\circ C, RC$ Open		0.4	0.6	W

Output

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

Characteristics		Conditions		Output			Unit
				min	typ	max	
V_{OI}	Output voltage initial	$T_C = +25^{\circ}\text{C}$, $I_O = I_{Omax} = 11\text{A}$, $V_I = 53\text{V}$	PKL4316PIT PKL4316PITM,PKL4316PITO	27.6	28.2	28.8	V
	Output adjust range			27.9	28.2	28.5	
V_O	Output voltage	Long term drift	$I_O = 0.1...1.0 \times I_{Omax}$	27.6	28.2	28.8	V
	Idling voltage	$I_O = 0\text{A}$		27.6	28.2	30.6	V
	Line regulation	$I_O = I_{Omax}$	$V_I = 36...75\text{V}$		14	56	mV
	Load regulation	$I_O = 0.1...1.0 \times I_{Omax}$			14	56	mV
t_{tr}	Load transient	$I_O = 0.1...1.0 \times I_{Omax}$, Load step $= 0.25 \times I_{Omax}$,			100		μs
V_{tr}	Load transient voltage	$Di/dt = 0.1\text{A}/\mu\text{s}$ $V_I = 53\text{V}$			± 0.75		V
t_r	Ramp-up time	$I_O = 0.1...1.0 \times I_{Omax}$,			20	40	ms
t_s	Start-up time	$I_O = 0.1...1.0 \times I_{Omax}$, $V_I = 53\text{V}$			20	40	ms
I_O	Output current			0		11	A
P_{Omax}	Max output power	Calculated at $V_O = V_{Otyp}$				310	W
I_{lim}	Current limiting	$T_C < T_{Cmax}$			13.2	15.4	A
I_{sc}	Short circuit current	$V_O = 0.2...0.5\text{V}$, $T_C = +25^{\circ}\text{C}$			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)	$f = 100\text{Hz}$ sine wave, $1V_{p-p}$, $V_I = 53\text{V}$		-50			dB

Miscellaneous

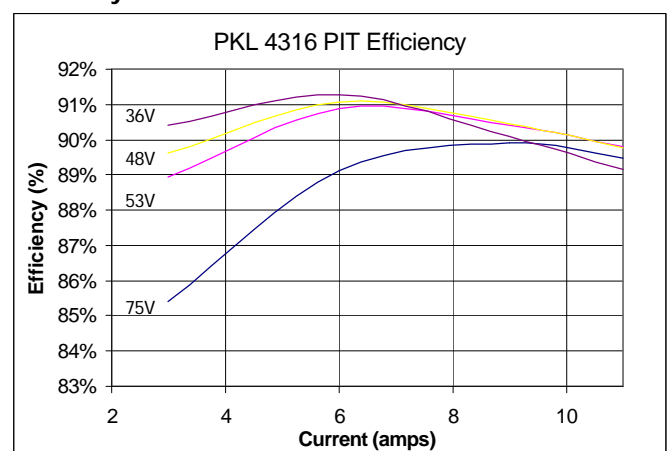
Characteristics		Conditions	min	typ	max	Unit
η	Efficiency	$I_O = I_{Omax}$, $V_I = 48\text{V}$, $T_C = +25^{\circ}\text{C}$		90		%
P_d	Power dissipation	$I_O = I_{Omax}$, $V_I = 48\text{V}$, $T_C = +25^{\circ}\text{C}$		30.7		W
f_s	Switching frequency	$I_O = 0...1.0 \times I_{Omax}$		130		kHz

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 Vdc	Input voltage	Continuous	-0.5 + 80	Vdc
		Transient (100ms)	+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^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



PKL 4316 PIT

Product Program

V_i	V_o/I_o	P_{Omax}	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 $0.145" \pm 0.010"$	LA	PKL4316PITLA
Setpoint accuracy to +/- 1%, Non-threaded standoff w/ increased length (0.02")	O	PKL4316PITO

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