

**Transformer comparative test  
original Vs Itacoil resonant transformer<sup>(1)</sup>**

		max rated load 76V 1,75A		
		ORIGINAL	itacoil®	
Input voltage		229,9	229,9	Vac
Input current		0,640	0,633	Aac
Input power		144,5	142,8	W
Output voltage		76,66	76,09	Vdc
Output current		1,743	1,752	Adc
Output power		133,6	133,3	W
Switching frequency		46,0	38,5	KHz
Converter Efficiency		92,5%	<b>93,4% (+0,9%)</b>	%
Power loss saving			<b>-1,42 (-13%)</b>	W
Temperatures		transf. / induct.		
Ambient		21,2	21,7	°C
T <sub>rise</sub>		57,8 / 77,6	57,4	°C
Dimensions		transf. and induct.		
overall footprint		13,84	<b>11,65 (-16%)</b>	cm <sup>2</sup>
overall volume		28,09	<b>24,81 (-12%)</b>	cm <sup>3</sup>

**TEST CONDITIONS AND NOTES**

- Test performed on Infineon® REF-ICL5102-U130W-CC resonant converter demo board with PFC stage based on ICL5102 controller. ([demo-board user guide](#))
- The original tank has traditional transformer + discrete resonant inductor. In the optimized tank they are replaced by a single integrated component.
- The Itacoil tank requires 2x4,7nF, C19 has been replaced by 4,7nF capacitor.
- Two resistors were replaced. R25=33k, R59=1k5 to meet the new frequency range.
- Due to the different dynamic behavior, a 33nF capacitor was added in parallel to R53 in order to avoid unstable running.
- Both min and max output voltage working conditions are reported on graphs.

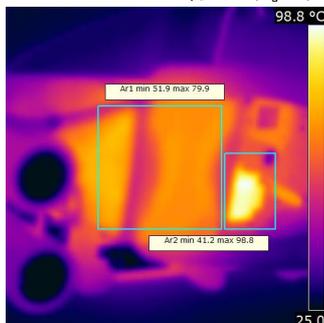
**TEST RESULTS**

The Itacoil transformer was designed for achieving higher efficiency and lower Trise at similar dimensions and with no need for a discrete resonant inductor. Furthermore the integrated transformer improves the pri/sec insulation.

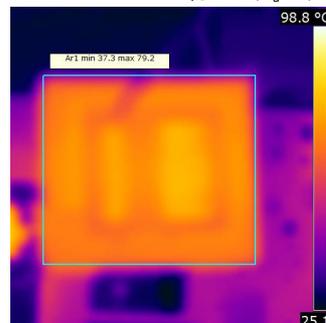
You can aim for different goals. As an exemple a very small and less expensive transformer with overall footprint of 7,2cm<sup>2</sup> and overall volume of 15,6cm<sup>3</sup> can be adopted where the best efficiency is not a must.

Since the PFC stage is unchanged, 13% overall power loss reduction means 20% approx power loss reduction on the LLC stage.

ORIGINAL COMPONENTS (@133W, t<sub>a</sub>=21,2°C)

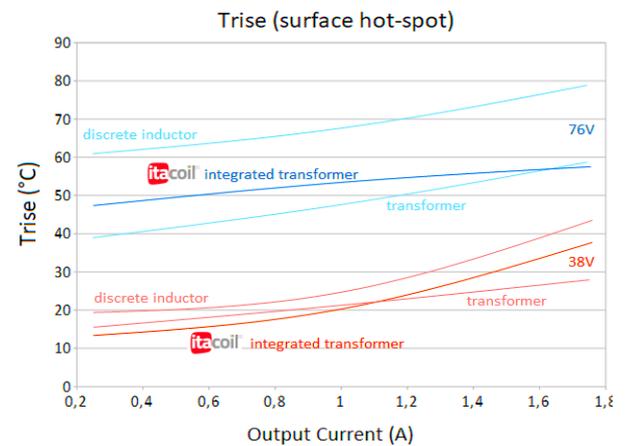
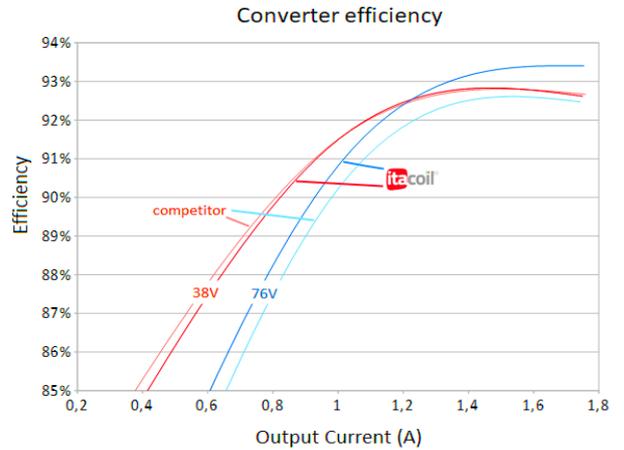


ITACOIL TRANSFORMER (@133W, t<sub>a</sub>=21,7°C)



**BENEFITS OF TRANSFORMER DESIGN BY ITACOIL® PROPRIETARY SOFTWARE**

- smaller and lighter components
- optimized power loss
- best LLC stage efficiency
- cost optimization
- **first time success of your project**



(1) Transformer for lab test purpose only, not available as product sampling. Optimized design provided on request.

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