


**Power Integrations<sup>®</sup> RDR-91  
12V 1A Flyback converter based  
on TinySwitch<sup>™</sup>-III TNY278PG**

**Original Vs TSLE20212 comparative test**

	Original		
<b>230Vac input, full load</b>			
Input voltage	229,91	229,92	Vac
Input power	15,60	15,15	W
Input current			Arms
Output voltage	12,55	12,53	V
Output current	1,010	1,014	A
Output power	12,68	12,71	W
Efficiency	<b>81,3%</b>	<b>83,8%</b>	%
<b>Temperatures</b>			
Ambient	25,5	23,6	°C
Transf. Winding T <sub>rise</sub>	44,2	38,0	°C
Transf. Core T <sub>rise</sub>	36,9	37,9	°C
Controller T <sub>rise</sub>	40,0	30,7	°C
<b>Efficiency average 90-115-230-264Vac (full load)</b>			
	80,7	82,9 (+2,7%)	%
<b>Transformer</b>			
L x W x H	2,16X2,59X2,1	2,09X2,48X1,6	cm
overall footprint	5,59	5,18 (-7%)	cm <sup>2</sup>
overall volume	11,75	8,29 (-29%)	cm <sup>3</sup>
weight	17,8	12,0 (-33%)	gr
power density	1,02	1,45 (+42%)	W/cm <sup>3</sup>

**TEST CONDITIONS**

Test performed on Power Integrations<sup>™</sup> RDK-91 demo-board, flyback converter based on TNY278PG. ([demo-board user guide](#))  
The demo transformer TSLE20212 has been connected by wire leads due to the different pin layout.  
No component to be modified using the Itacoil transformer.

**TEST RESULTS**

The following improvements have been achieved with TSLE20212 transformer:

- same primary inductance, reduced leakage inductance and power loss
- much better efficiency, temperature, dimensions
- reduced mosfet voltage stress and chip thermal stress
- the TSLE20212 transformer can be used for either 12V-1A or 24V-0,5A converters by secondary windings series/parallel (\*)
- no change in no load power consumption

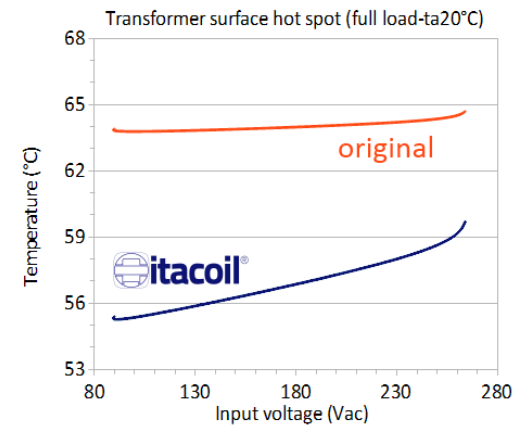
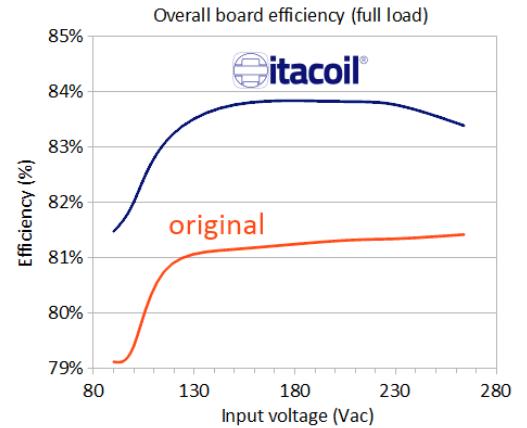
(\*) the output diode D7 should be replaced in 24V output converters

**AVAILABLE REPLACEMENT COMPONENTS FOR "L1-1mH" AND "L2-ferrite bead"**

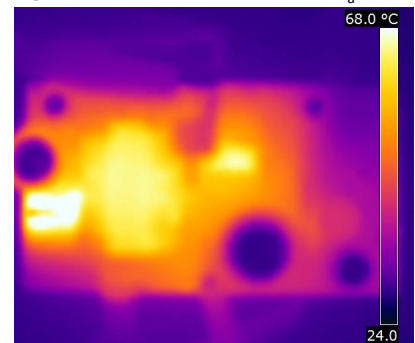
- L1 1) code SLD0608102 (Ø7) - T<sub>rise</sub> (12,7W) : 40°C @90Vac, 34°C @115Vac  
2) code SLD0810102 (Ø9,5) - T<sub>rise</sub> (12,7W) : 26°C @90Vac, 21°C @115Vac  
L2 various similar items are coming soon

**BENEFITS OF TRANSFORMER DESIGN BY ITACOIL<sup>®</sup> PROPRIETARY SOFTWARE**

- smaller components
- reduced power loss and costs improvement
- best efficiency
- **first time success of your project**



original transformer 230Vac 12,7W t<sub>a</sub>25,5°C



Itacoil transformer 230Vac 12,7W t<sub>a</sub>23,6°C

