


**Power Integrations[®] RDR-91
12V 1A Flyback converter based
on *TinySwitch™-III TNY278PG***

Original Vs TSLE20212 comparative test

| | Original |  | |
|---|---------------|---|-------------------|
| 230Vac input, full load | | | |
| 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 | 81,3% | 83,8% | % |
| Temperatures | | | |
| Ambient | 25,5 | 23,6 | °C |
| Transf. Winding Trise | 44,2 | 38,0 | °C |
| Transf. Core Trise | 36,9 | 37,9 | °C |
| Controller Trise | 40,0 | 30,7 | °C |
| Efficiency average 90-115-230-264Vac (full load) | | | |
| | 80,7 | 82,9 (+2,7pp) | % |
| Transformer | | | |
| L x W x H | 2,16X2,59X2,1 | 2,09X2,48X1,6 | cm |
| overall footprint | 5,5944 | 5,18 (-7%) | cm ² |
| overall volume | 11,74824 | 8,29 (-29%) | cm ³ |
| weight | 17,8 | 12,0 (-33%) | gr |
| power density | 1,02 | 1,45 (+42%) | W/cm ³ |

TEST CONDITIONS

Test performed on Power Integrations[™] 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

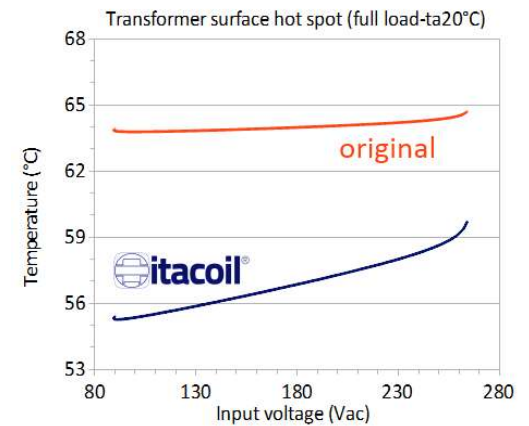
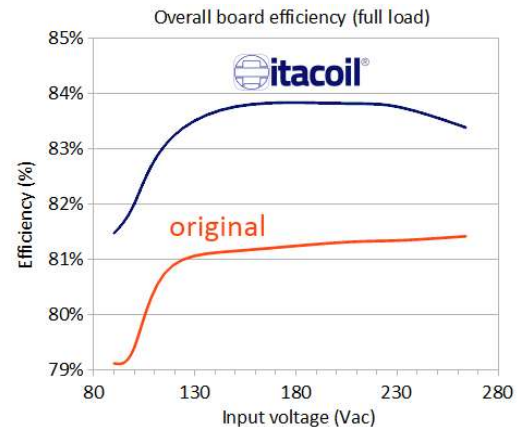
(*) the output diode D7 should be replaced in 24V output converters

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

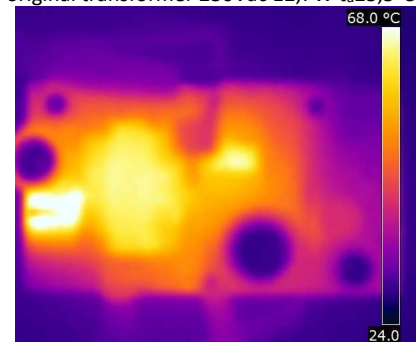
- L1 1) code SLD0608102 (Ø7) - T_{rise} (12,7W) : 40°C @90Vac, 34°C @115Vac
2) code SLD0810102 (Ø9,5) - T_{rise} (12,7W) : 26°C @90Vac, 21°C @115Vac
L2 various similar items are coming soon

BENEFITS OF TRANSFORMER DESIGN BY ITACOIL[®] PROPRIETARY SOFTWARE

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



original transformer 230Vac 12,7W t_a25,5°C



Itacoil transformer 230Vac 12,7W t_a23,6°C

