High Efficiency Receiver Controller for Wireless Power Systems

DESCRIPTION

The TS81001 is a power receiver communications and control unit for wireless charging applications. The TS81001 can support systems up to 40W+, and supports Qi® compliant and proprietary applications.

The TS81001 performs the necessary coding of packets to send commands to the transmitter to adjust the power level accordingly.

APPLICATIONS

- Qi® compliant and non-compliant wireless chargers for:
  - Cell Phones and Smartphones
  - GPS Devices
  - Digital Cameras
  - Tablets and eReaders
  - Portable Lighting
  - Toys

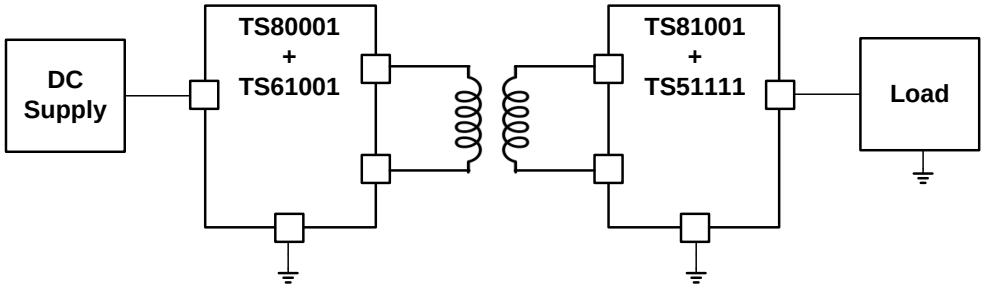
FEATURES

- Supports Qi® and proprietary charging applications
- Wireless power systems up to 40W+
- Support for fixed frequency, variable frequency and variable duty cycle architectures
- Supports indirect (fixed voltage) and single/multi-cell battery charging applications (>2.0V)
- Integrated controller and FLASH for communications and control
- High precision data converters
- Low external component count
- Available in 20 pin 3x3 QFN

SPECIFICATIONS

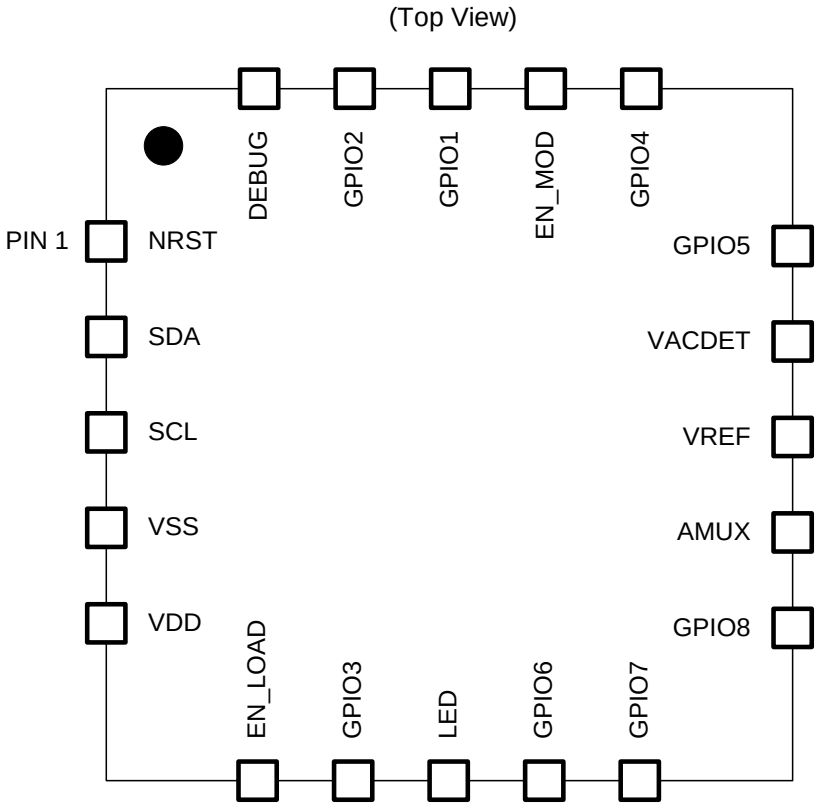
- 8-bit CPU Core, 16 MHz
- 8kBytes Flash, 1kByte SRAM
- 12-bit, A/D converter up to 1Msps (28 channels)
- 4 channel DMA
- 2 low-power comparators
- Two 16-bit timers,
- 8-bit timer
- 8 configurable analog general purpose IOs
- Charging status LED output
- I2C interface
- SPI interface
- 1.8 to 3.6 V operating voltage

TYPICAL APPLICATION



Copyright © 2013, Triune Systems, LLC
Triune Systems Proprietary and Confidential Information
DO NOT DUPLICATE

PINOUT



Copyright © 2013, Triune Systems, LLC
Triune Systems Proprietary and Confidential Information
DO NOT DUPLICATE

PIN DESCRIPTION

QFN Pin #	Pin Symbol	Function	Description
1	NRST	Reset	Reset input
2	SDA	I2C Data	I2C data
3	SCL	I2C Clock	I2C clock
4	VSS	Power GND	Power GND
5	VDD	Input power	Input power supply
6	EN_LOAD	Load enable	Output FET enable (some systems)
7	GPIO3	Analog GPIO	Analog GPIO 3
8	LED	LED output	Charging LED control
9	GPIO6	Analog GPIO	Analog GPIO 6
10	GPIO7	Analog GPIO	Analog GPIO 7
11	GPIO8	Analog GPIO	Analog GPIO 8
12	AMUX	Analog GPIO	AMUX input from TS51111
13	VREF	Analog GPIO	VREF input from TS51111
14	VACDET	Analog GPIO	VACDET input from TS51111
15	GPIO5	Open-Drain GPIO	True Open-Drain GPIO 5
16	GPIO4	Open-Drain GPIO	True Open-Drain GPIO 4
17	EN_MOD	Analog GPIO	EN_MOD output to TS51111
18	GPIO1	Analog GPIO	Analog GPIO 1
19	GPIO2	Analog GPIO	Analog GPIO 2
20	DEBUG	Debug	Debug pin

Copyright © 2013, Triune Systems, LLC
Triune Systems Proprietary and Confidential Information
DO NOT DUPLICATE

APPLICATION SCHEMATIC

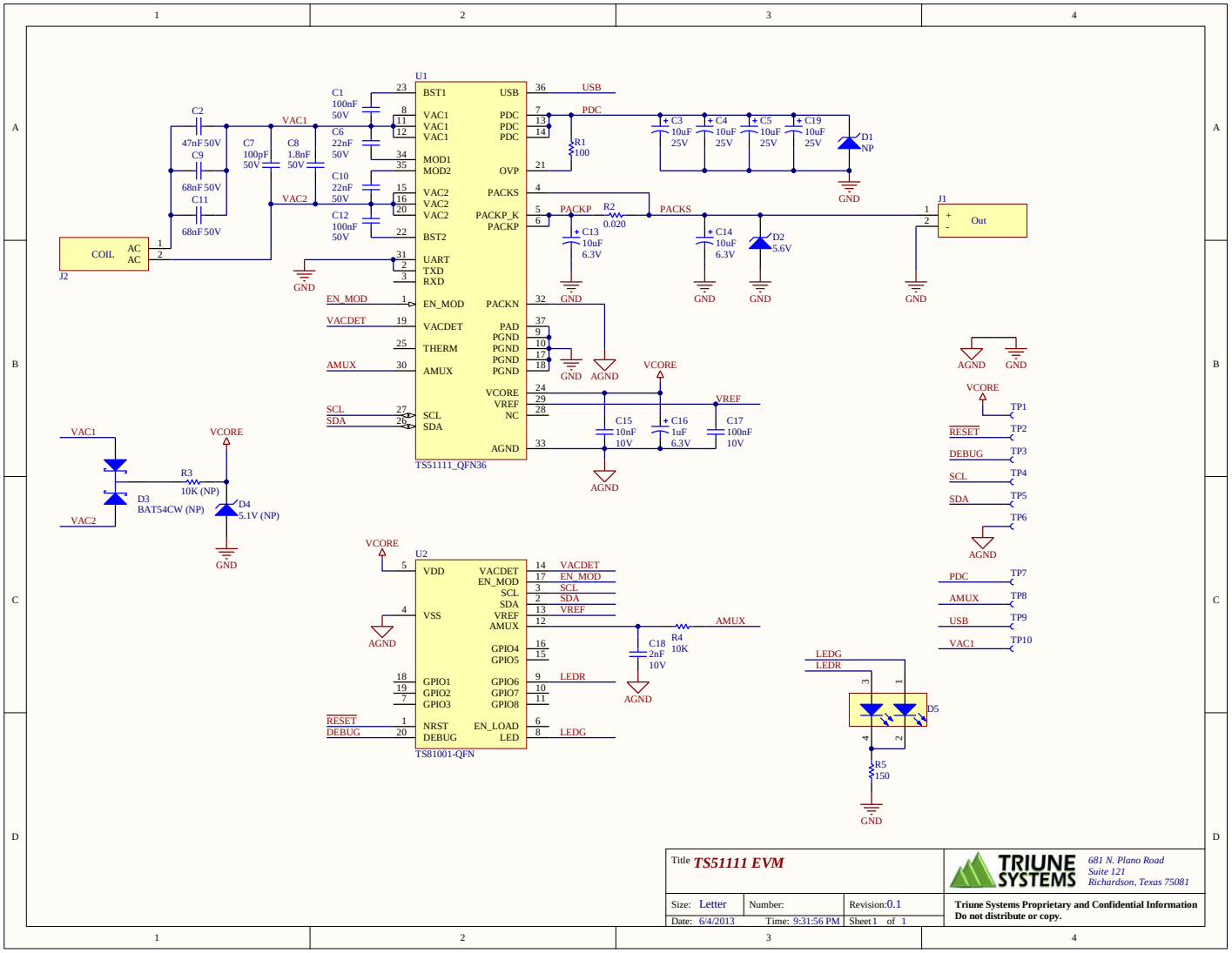
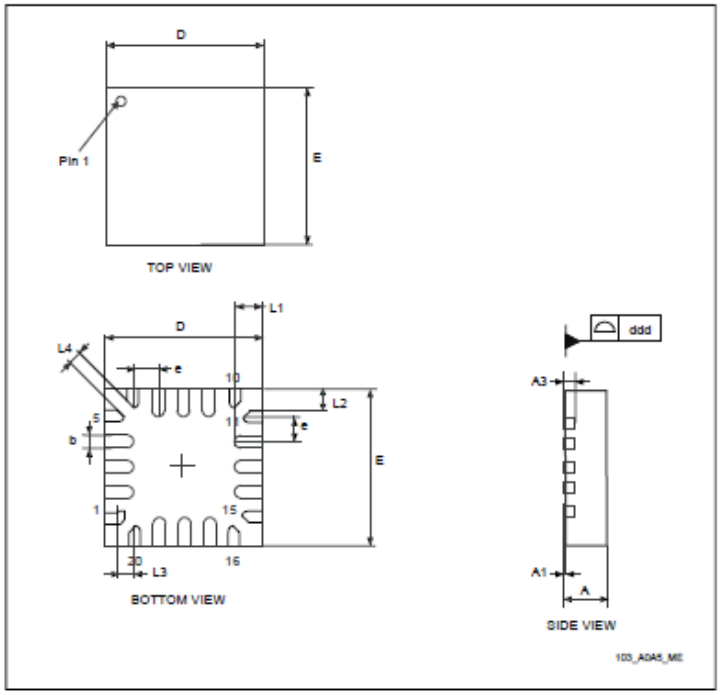


Figure 1: TS81001 Application Schematic

Copyright © 2013, Triune Systems, LLC
Triune Systems Proprietary and Confidential Information
DO NOT DUPLICATE

PACKAGE DIMENSIONS

20-lead ultra thin fine pitch quad flat no-lead package outline (3x3)



1. Drawing is not to scale.

20-lead ultra thin fine pitch quad flat no-lead package (3x3) mechanical data

Dim.	mm			inches[1]		
	Min	Typ	Max	Min	Typ	Max
D		3.000			0.1181	
E		3.000			0.1181	
A	0.500	0.550	0.600	0.0197	0.0217	0.0236
A1	0.000	0.020	0.050	0.0000	0.0008	0.0020
A3		0.152			0.0060	
e		0.500			0.0197	
L1	0.500	0.550	0.600	0.0197	0.0217	0.0236
L2	0.300	0.350	0.400	0.0118	0.0138	0.0157
L3		0.150			0.0059	
L4		0.200			0.0079	
b	0.180	0.250	0.300	0.0071	0.0098	0.0118

Copyright © 2013, Triune Systems, LLC
Triune Systems Proprietary and Confidential Information
DO NOT DUPLICATE

ROHS AND REACH COMPLIANCE

Triune Systems is fully committed to environmental quality. All Triune Systems materials and suppliers are fully compliant with RoHS (European Union Directive 2011/65/EU), REACH SVHC Chemical Restrictions (EC 1907/2006), IPC-1752 Level 3 materials declarations, and their subsequent amendments. Triune Systems maintains certified laboratory reports for all product materials, from all suppliers, which show full compliance to restrictions on the following:

- Cadmium (Cd)
- Chlorofluorocarbons (CFCs)
- Chlorinate Hydrocarbons (CHCs)
- Halons (Halogen free)
- Hexavalent Chromium (CrVI)
- Hydrobromofluorocarbons (HBFCs)
- Hydrochlorofluorocarbons (HCFCs)
- Lead (Pb)
- Mercury (Hg)
- Perfluorocarbons (PFCs)
- Polybrominated biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDEs)

Copyright © 2013, Triune Systems, LLC
Triune Systems Proprietary and Confidential Information
DO NOT DUPLICATE

Legal Notices

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. "Typical" parameters which may be provided in Triune Systems data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for your application by your technical experts. TRIUNE SYSTEMS MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Triune Systems disclaims all liability arising from this information and its use. Triune System products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Triune Systems product could create a situation where personal injury or death may occur. Should the Buyer purchase or use Triune Systems products for any such unintended or unauthorized application, the Buyer shall indemnify and hold Triune Systems, and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Triune Systems was negligent regarding the design or manufacture of the part. No licenses are conveyed, implicitly or otherwise, under any Triune Systems intellectual property rights.

Trademarks

The Triune Systems® name and logo, MPPT-lite™, and nanoSmart® are trademarks of Triune Systems, LLC. in the U.S.A..

All other trademarks mentioned herein are property of their respective companies.

© 2013 Triune Systems, LLC. All Rights Reserved.