



TW003 Simple Network Management Protocol Card Solution

September 2020

Simple Network Management Protocol Card Solution

■ Overview

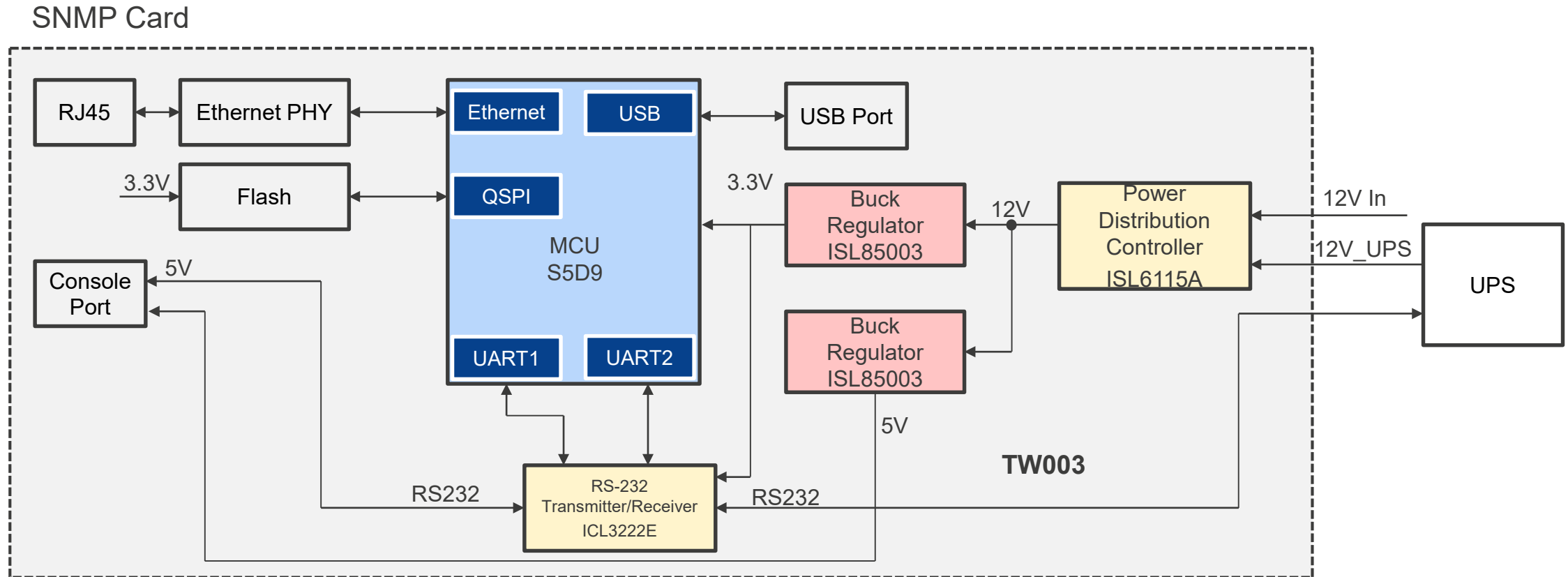
An uninterruptible power supply (UPS) is mainly used to provide uninterruptible power for equipment that requires a high stability of power. It is an important infrastructure in network systems. The simple network management protocol (SNMP) card solution is used to connect a UPS device with a serial port interface to the Ethernet. It connects the network and continuously collects the operation status data of the UPS. The UPS can alert the UPS fault via the SNMP. The S5D9 microcontroller (MCU) supports Ethernet, USB high-speed, Quad SPI, security, and safety features. The ISL6115A is a fully featured power distribution controller for +12V applications. This solution also features an integrated buck regulator and RS-232 transmitters/receivers.

■ System Benefits

- The S5D9 MCU features an Arm® Cortex-M4F core, runs on a 120MHz built-in Ethernet, USB, and TFT-LCDC with qualified SSP (Synergy Software Package)
- High performance buck regulator, ultra-precision oscillator and 2 channel $\pm 15\text{kV}$ ESD-protected RS-232 transmitters/receivers

TW003

Simple Network Management Protocol Card Solution



MCU / MPU Analog Power

Simple Network Management Protocol Card Solution

Device Category	P/N	Key Features
MCU	Synergy MCU R7FS5D97E3A01CFP#AA0	Leading performance 120-MHz Arm® Cortex®-M4 core, up to 2MB code flash memory, 640KB SRAM, Graphics LCD Controller, 2D Drawing Engine, Capacitive Touch Sensing Unit, Ethernet MAC Controller with IEEE 1588 PTP, USB 2.0 High-Speed, USB 2.0 Full-Speed, SDHI, Quad SPI, security and safety features, and advanced analog
Power	ISL85003FRZ	Efficient 3A synchronous buck regulator, Input voltage range 4.5V to 18V, adjustable output voltage as low as 0.8V
Analog	ICL3222EIAZ-T	2 channels, low power RS-232 transmitter/receiver, 1µA Supply-Current, +3V to +5.5V, 250kbps
	ISL6115AIBZ	Hot swap power controller targets +12V applications

TW003



S5D9 – Synergy MCU with Rich SW Pack

120MHz Arm® Cortex®-M4F

Integration with USB HS, Ethernet and TFT controller

120MHz Arm® Cortex®-M4F

- 1MB-2MB Flash + 640kB SRAM + 64kB Data Flash
- For mid-compute / performance-intensive, networked control applications with HMI
- Synergy Software Package SSP

Rich Interfaces

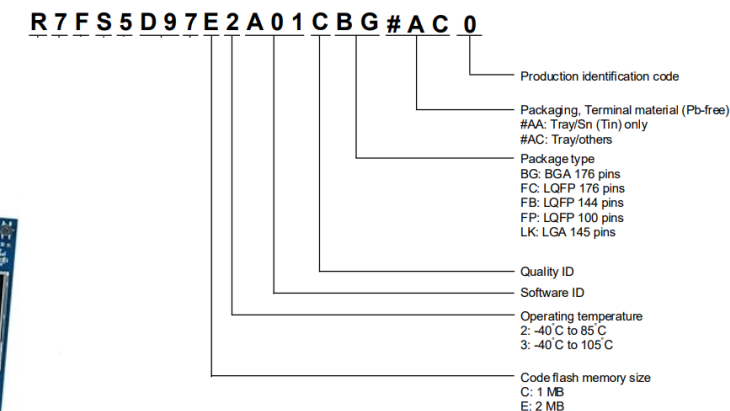
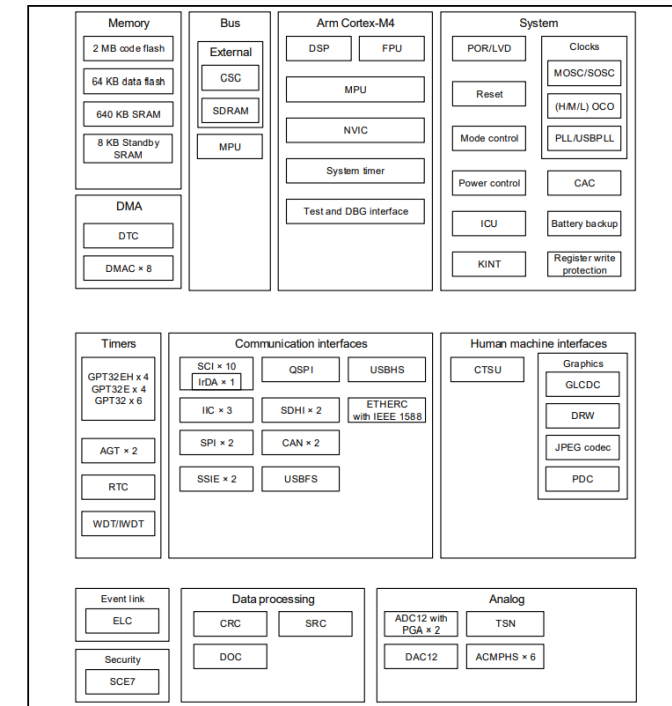
- TFT Controller w/ 2D Drawing Engine / Accelerator and JPEG decoder
- Capacitive Touch Sensing Unit
- Ethernet MAC Controller with DMA, IEEE 1588 PTP
- USB 2.0 High-Speed / Full-Speed, SDHI, Quad SPI, CAN 2.0, SCI (UART, Simple SPI, Simple I2C), SPI / I2C Multi-Master

Safety and Security features

Advanced analog features

Scalable from 100pin to 176pin packages

Part #	Memory	Temp. Range	Package
R7FS5D97...	→	→	→ See right





ISL85003 – Efficient 3A Synchronous Buck Regulator

Network and Communication Equipment, Industrial Control, Point-of-load Regulators

Flexible Power

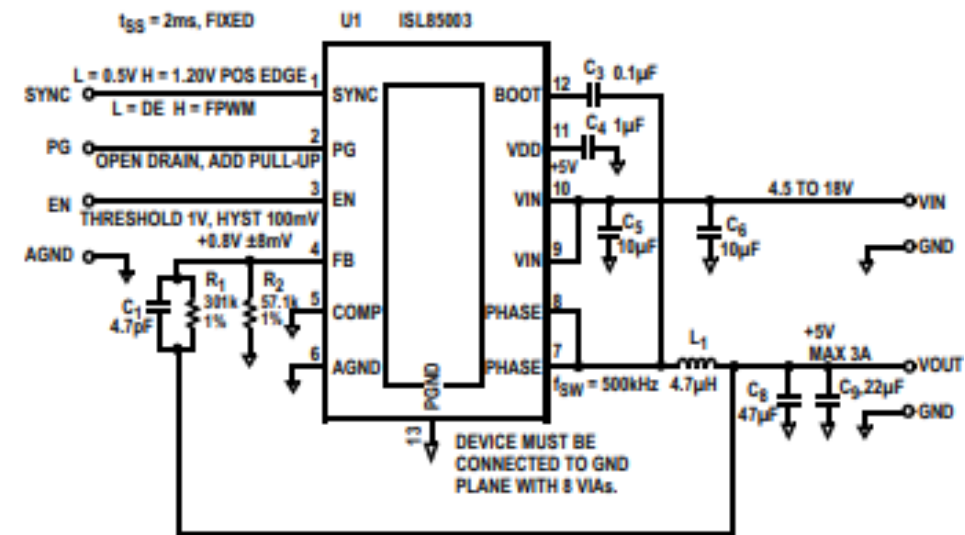
- Input voltage range 4.5V to 18V
- Adjustable output voltage as low as 0.8V
- DCM/CCM

High Efficiency and Accuracy

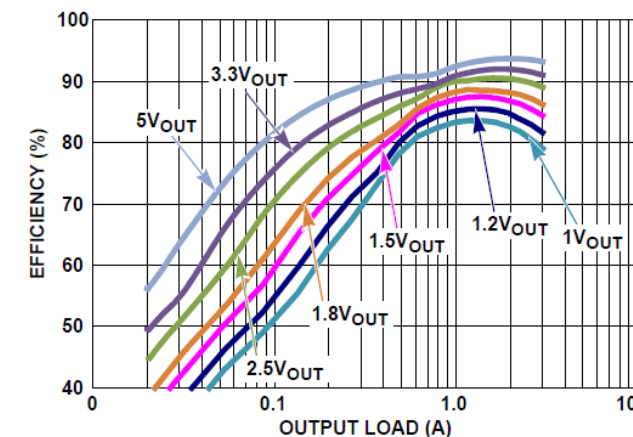
- Efficiency up to 95%
- High-side NFET $R_{ds(on)}$ of 65m Ω and low-side NFET $R_{ds(on)}$ of 45m Ω
- Precision 0.8V, $\pm 1\%$ accurate voltage reference

Built-in Protection

- Positive and negative overcurrent protection
- Overvoltage and thermal protection



Typical Operation Circuits



Efficiency vs Load, 12V_{IN} DCM

Part #	External clock synchronization	Programmable soft start	Package
ISL85003FRZ	Yes	No	12L 3x4mm DFN
ISL85003AFRZ	No	Yes	12L 3x4mm DFN

ICL3222 – Low Power RS-232 Transmitter/Receiver

1µA Supply-Current, +3V to +5.5V, 250kbp

Communication Speed

- 250kbps data rate min with 2 channels

Key Features

- Wide power supply range: single +3V to +5.5V
- Low supply current in power down state: 1uA
- ESD protection for RS-232 I/O pins to ±15kV (IEC61000)
- On-chip voltage converters require only four external 0.1µF capacitors

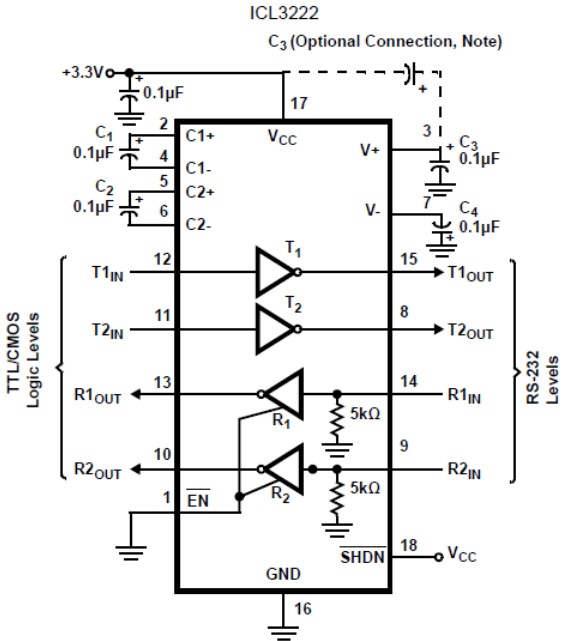
Good Connectivity

- RS-232 compatible with VCC = 2.7V
- pin compatible upgrade for 5V MAX242, and SP312A

Industry Standard

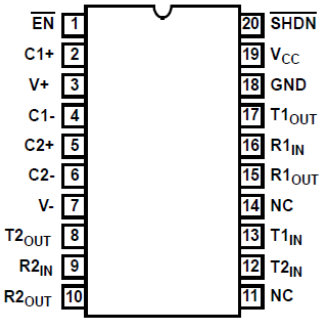
- Meets EIA/TIA-232 and V.28/V.24 specifications at 3V

Part #	Data Rate(bps)	No. of Tx.	No. of Tx.	Package
ICL3222CVZ	250k	2	2	20 Ld 6.5x4.4mm TSSOP
ICL3222CVZ-T	250k	2	2	20 Ld 6.5x4.4mm TSSOP



Typical Operating Circuits

ICL3222 (SSOP, TSSOP)
Top View



Pin out

ISL6115A – 12V Power Distribution Controllers

Power Distribution Control and Hot Plug Circuitry

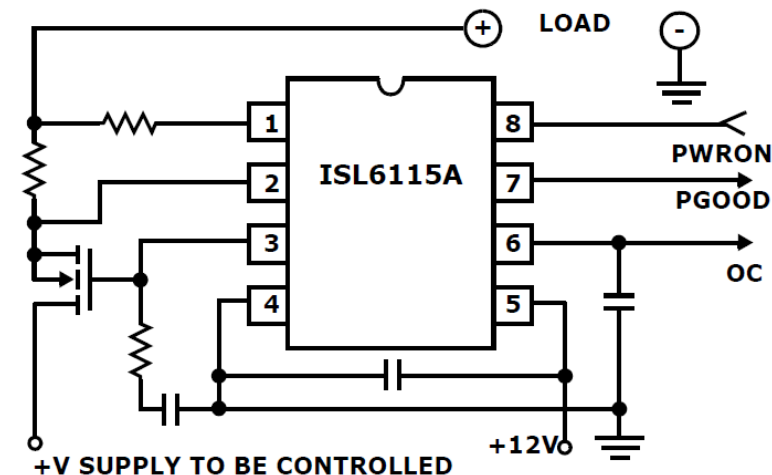
High Performance and Flexible Use

- HOT SWAP Single Power Distribution Control for +12V
- Rail-to-Rail Common Mode Input Voltage Range
- Enhanced Internal Charge Pump Drives N-Channel MOSFET gate to 6.5V above IC bias
- Programmable Current Regulation Level
- Programmable Current Regulation Time to Latch-Off
- Adjustable Turn-On Ramp and Protection During Turn-On

Enhanced Fail-Safe Design

- Overcurrent Fault Isolation and Undervoltage and Overcurrent Latch Indicators
- Two Levels of Overcurrent Detection Provide Fast Response to Varying Fault Conditions
- 1 μ s Response Time to Dead Short

Part #	Temp Range (°C)	Package
ISL6115AIBZ	-40 to +85	20 Ld SOIC
ISL6115ACBZ	0 to +70	20 Ld SOIC



Typical Application Circuit



ISL6115AEVAL1Z Evaluation Board

[Renesas.com](https://www.renesas.com)