

MAX5913/MAX5914

**+48V Quad Hot Swap Controller for IEEE802.3af
Compliant Power-Over-LAN Systems**

MAX5913/MAX5914 +48V Quad Hot Swap Controller for IEEE802.3af Power-Over-LAN Systems

- Provides Power Over LAN for IEEE802.3af compliant systems.
- Improves system reliability
- Reduces time to market
- Reduces board space, cost and system design time
- Requires external circuit for discovery and classification

Application Overview

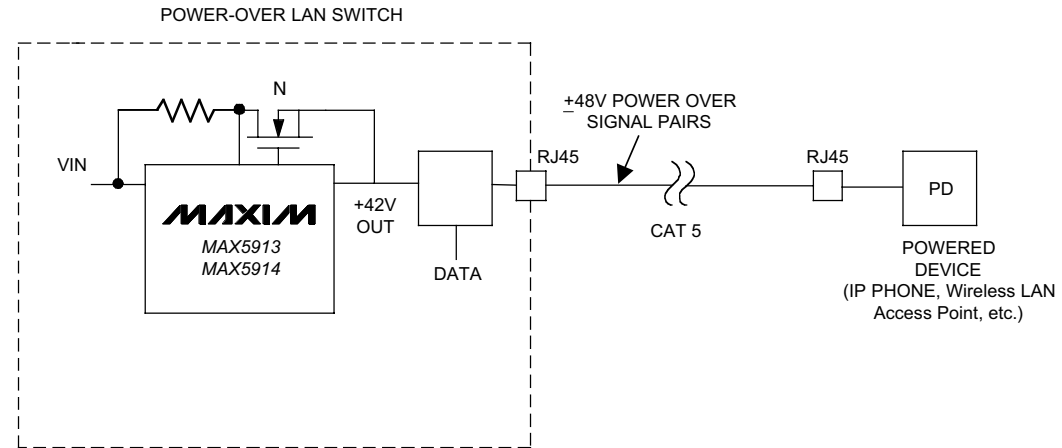


Figure 1: Power sent over signal pairs.

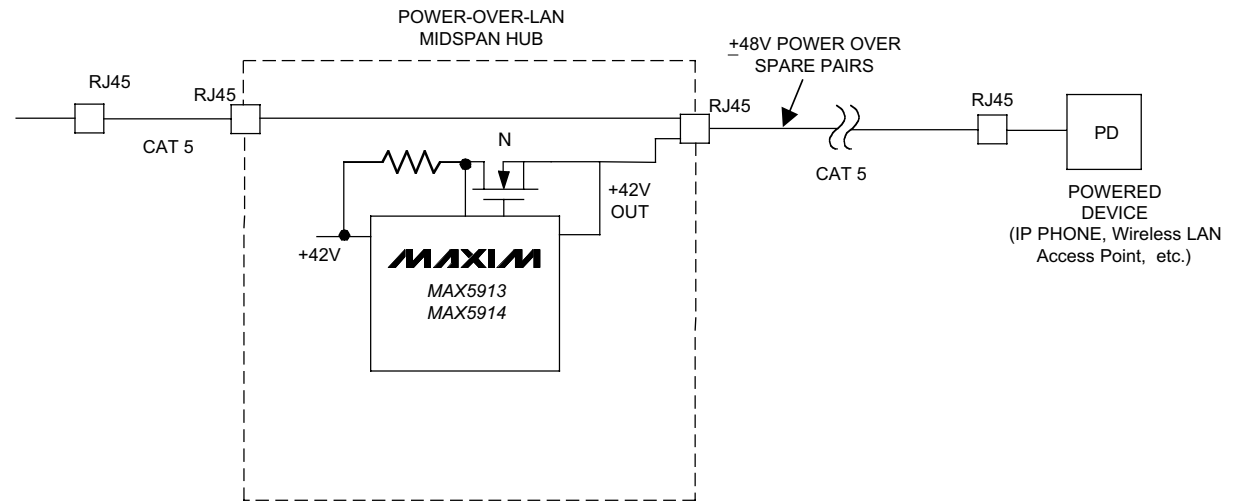
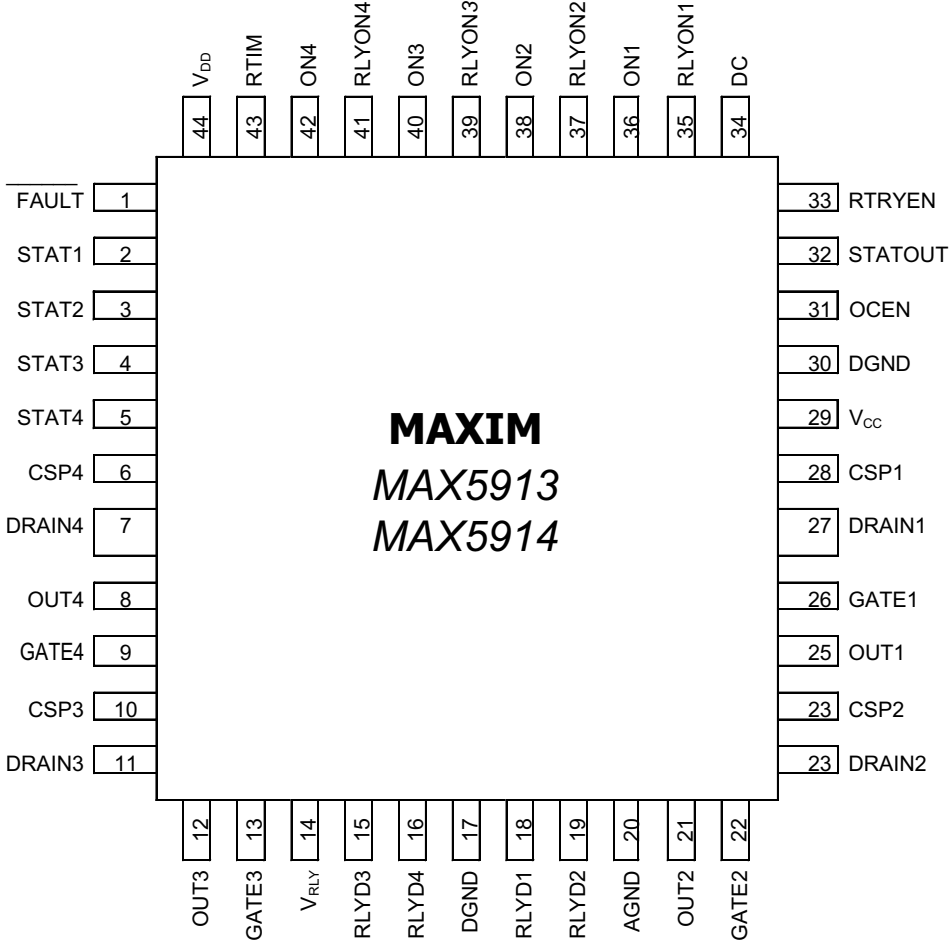


Figure 2: Power sent over spare pairs.

Pin Configurations:

TOP VIEW



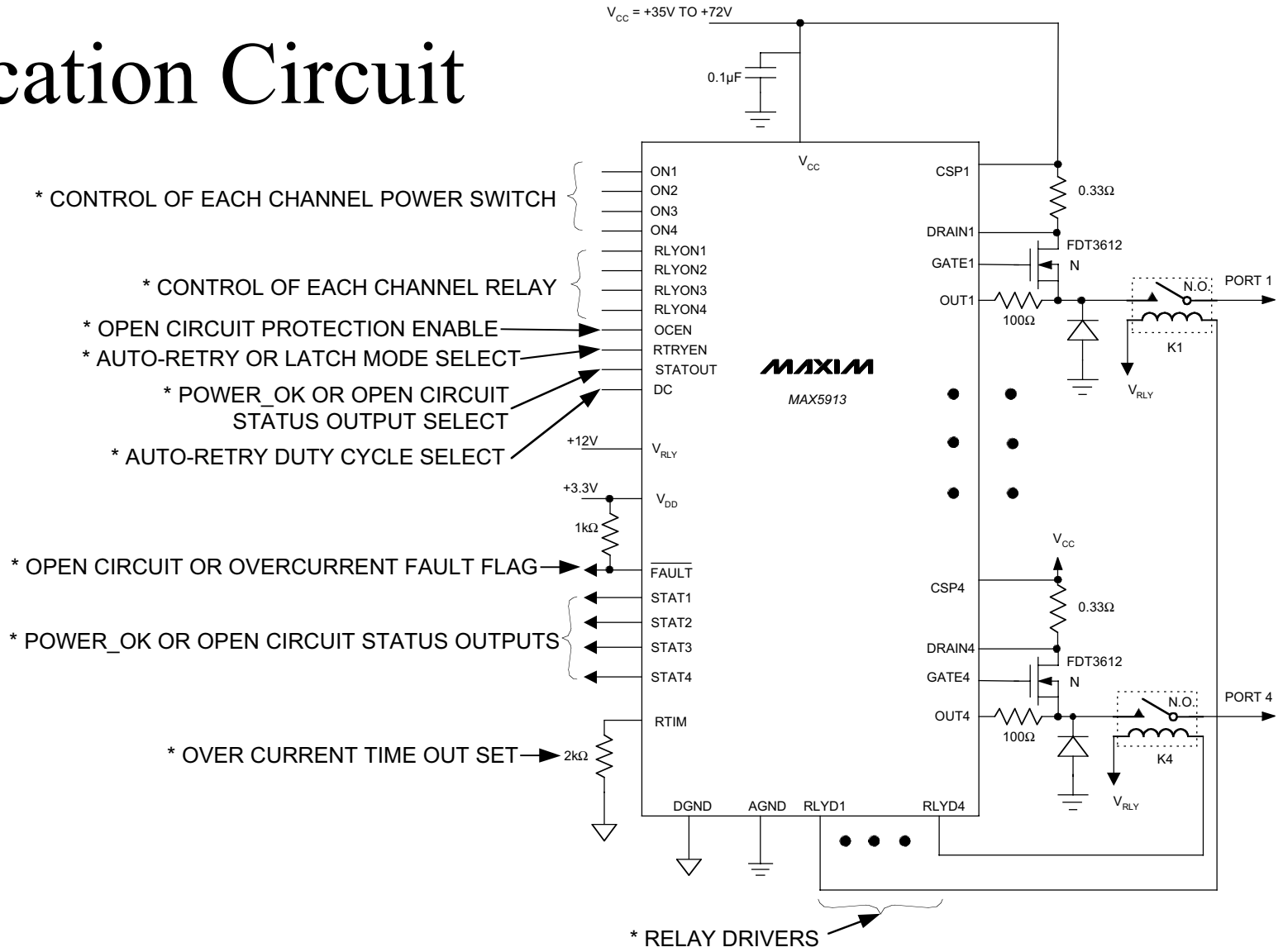
Key Features:

- Operating Input Voltage Range: +35V to +72V
- 2.7mA (Typical) Quiescent Current
- Four Independent Power Switch Controllers
- On-Board Charge Pumps to Drive External N-Channel FETs
- Zero Current Detection
- Current Sense with External Resistor
- Programmable Current Limit Time Out

Key Features (Cont.):

- Foldback Current Limiting With Selectable Duty Cycle For Bullet Proof Operation
- +32V Default Input UVLO
- Selectable Latch Or Auto-Retry Fault Management
- Power_OK, OC, & FAULT Status Report
- On Chip +12V, 100mA Voltage Relay Drivers
- Extended temp range - 40°C to +85°C operation
- 44-pin MQFP package

Application Circuit



Functional Diagram Of One Channel

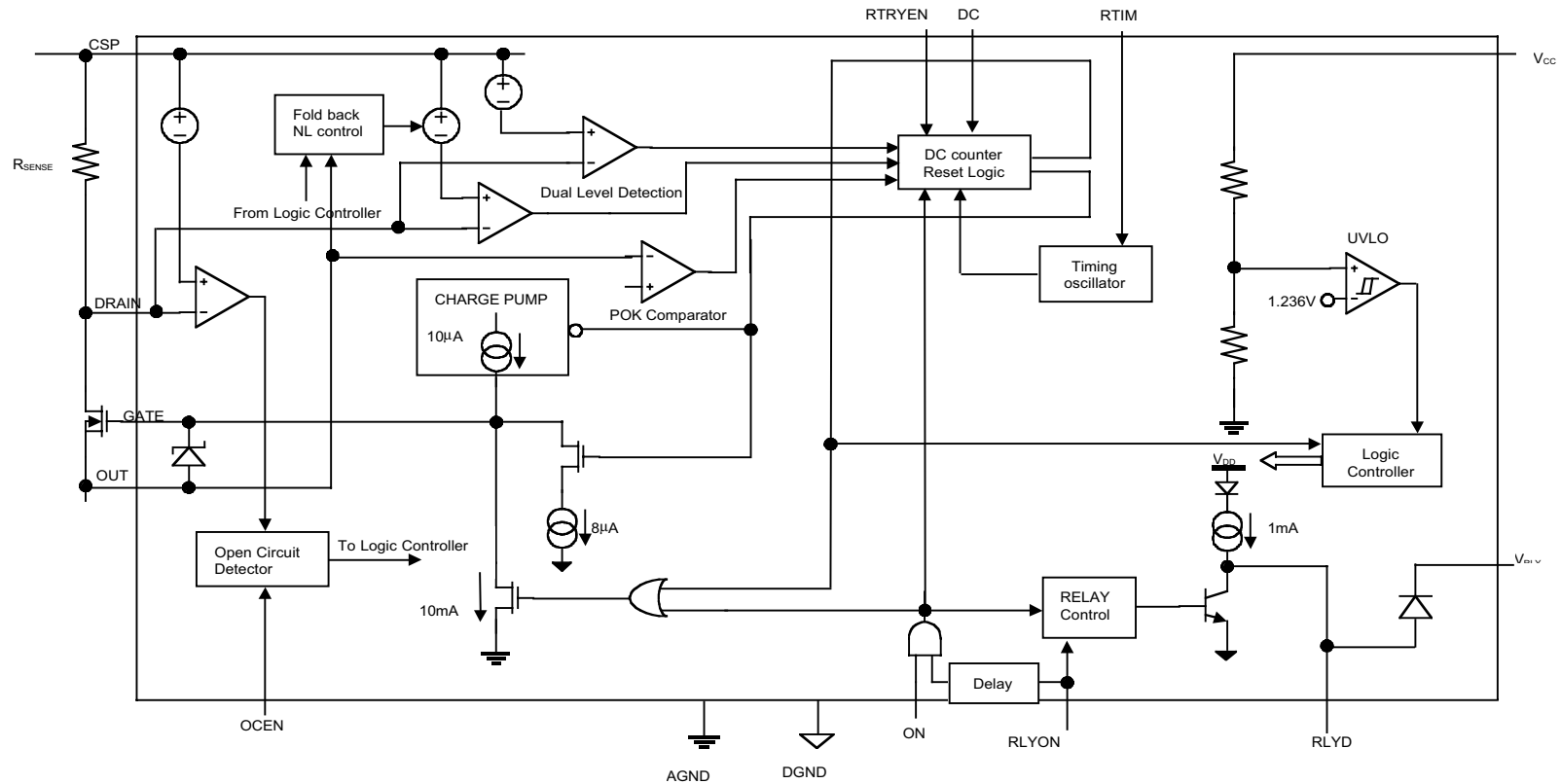


Figure 3

Key Features Detail:

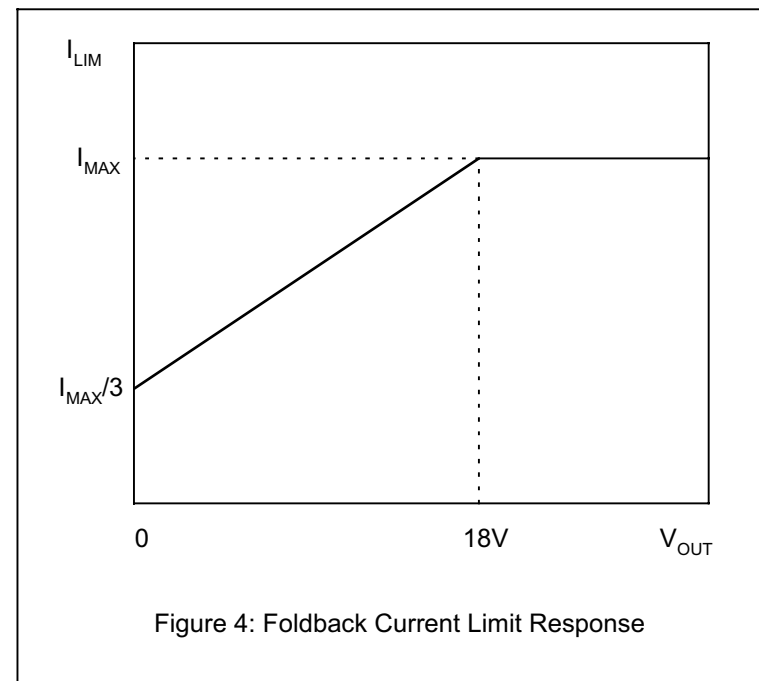
- Default Under Voltage Lock Out
 - Turn On Threshold Voltage From 29V To 35V
 - 3V Hysteresis
 - 25.6ms (Typical) Deglitch Delay

Key Features Detail :

- Inrush Current Limit With Programmable Time Out
 - Current Limit Threshold, 142.5mV
 - A Resistor On RTIM Sets The Current Limit Time Out, T_O . $T_O = 6.4\text{ms}$ for $\text{RTIM} = 2 \text{ k}\Omega$.
 $T_O = 128\text{ms}$ for $\text{RTIM} = 40 \text{ k}\Omega$.
- Advantage:
 - Inrush Current Limit Is Adjustable
 - Time Out Is Adjustable To Support Turning On Into Different Load

Key Features Detail:

- Inrush Current Limit Foldback
 - Activates When I_{LIM} Is Reached
- Advantage:
 - Reduces The External FET Power Dissipation During An Output Overload Or Short Circuit Condition

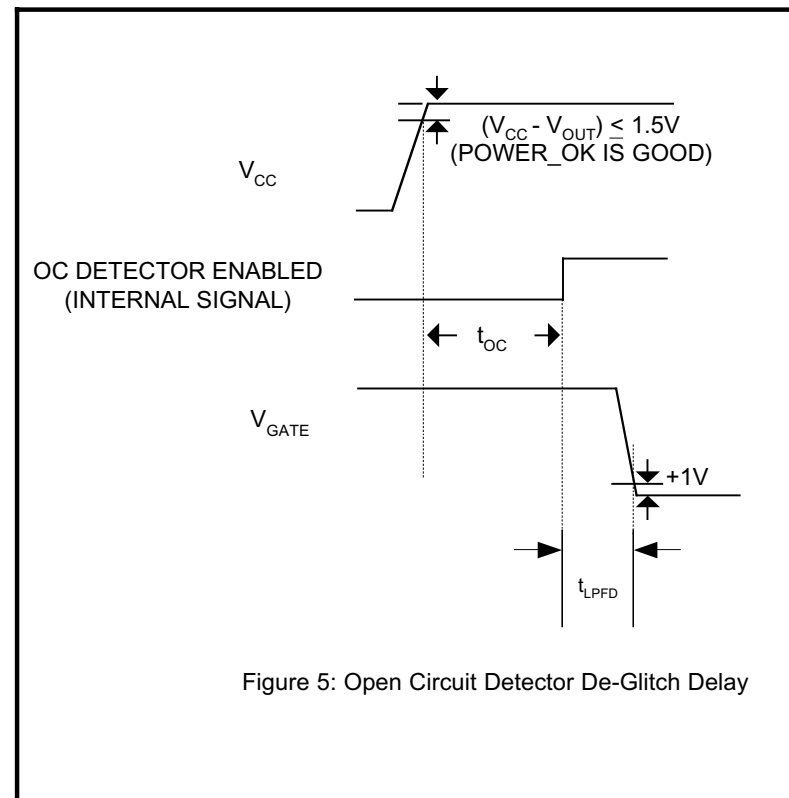


Key Features Detail :

- Selectable Auto-Retry Duty Cycle
 - Set DC Pin To Select 1%, 2%, or 4% Duty Cycle Auto-Retry
 - Minimum Wait Time Before Restart After A Current Limit Fault Shutdown Is Enforced Even In Latch Mode
- Advantage:
 - Bullet Proof Approach To Minimize The External FET Power Dissipation During A Prolonged Over Current Condition

Key Features Detail:

- Open Circuit Protection
 - Open Circuit Detection Threshold Is 2mV To 4mV.
 - $T_{OC} = 900ms$
 - $T_{LPFD} = 204ms$



Key Features Detail :

- Relay Driver Output
 - Drives External Relay
 - Relay Turns On 25.6ms Before The Power FET Turns On. Relay Turns Off 3.2ms After The Power FET Turns Off.
- Advantage
 - Prevents Arching Across Relay Contact During Turning On And Off.

Key Features Detail :

- Fault Management
 - FAULT: Indicates When Any Channel Has Either Open Circuit Or Over Current Fault.
 - STATx: STATx Is Selected By STAT_OUT To Display Either Power_OKx Or Port_Ocx
 - Power_OKx: Indicates when Output Power Is Good After Inrush Cycle Is Finished And There Is No Fault.
 - Port_OCx: Indicates That The Portx Current Is Below Its Theshold

Key Features Detail :

- Fault Management (Cont.)
 - RTRY_EN: Selects Either Auto-Retry Or Latch Mode After A Shutdown Fault
 - OC_EN: Selects Either Detect Or Ignore Open Circuit Condition.

Summary:

* Time To Market

- MAX5913/MAX5914 Is Available Now To Build IEE802.3af Compliant Power Sourcing Equipment

* IEEE802.3af Standard

- Meets 500 mA Maximum Load
- Provides Open Circuit Protection
- Provides Over Load And Short Circuit Protection

Summary:

* System Flexibility

- Programmable Output Current Limit
- Programmable Over Load Time Out
- Fault Latch Or Auto-Retry Selection
- Programmable Auto-Retry Duty Cycle
- Open Circuit Protection Enable/Disable

Summary:

* Product Robustness

- Current Foldback
- Programmable Time Out After Current Fault
- Current Limit Time Out Integrator Keeps The External FET In The Safe Operating Area While Maximizing Current Noise/Pulse Immunity. Supports Peak, Average, And RMS Current Limit.