



芯昇电子PoE芯片解决方案

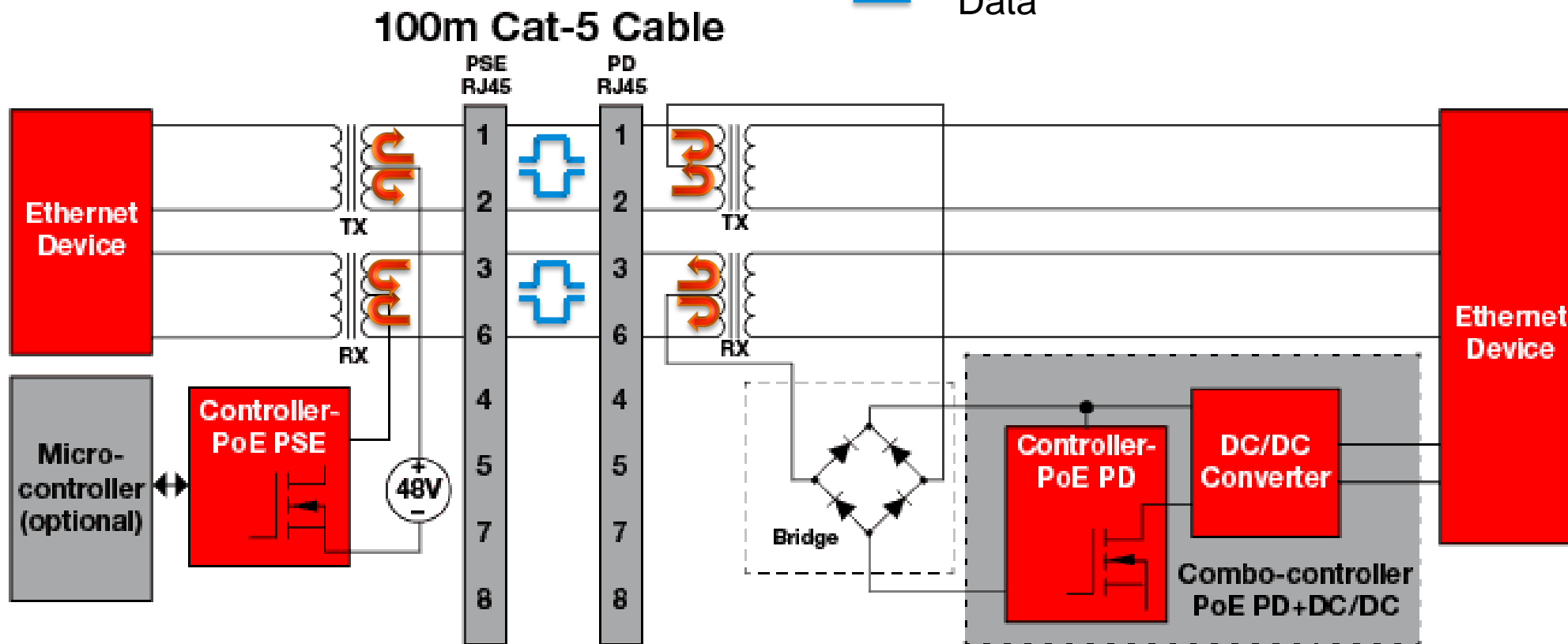
浙江芯昇电子技术有限公司



创新实现超越 品质打动世界

数据差分传输，电力共模传输

— Power
— Data



PoE供电设备 (PSE) 控制器

| 器件 | 器件描述 | 端口数 | 最大绝对 V_{IN} (V) | 工作温度(°C) | 支持的PoE标准 | 工作模式 | 通信接口 | 功率FET | 封装 |
|--------|---|-----|-------------------|----------|-------------|-----------|------------------|-------|-------|
| XS2180 | 四路 IEEE 802.3 at/af PoE PSE 控制器 | 4 | 85 | -40~85 | 802.3 at/af | 自动、半自动、手动 | I ² C | 外部 | QFN32 |
| XS2181 | 四路 IEEE 802.3 at/af PoE PSE 控制器 | 4 | 85 | -40~85 | 802.3 at/af | 自动、半自动、手动 | I ² C | 外部 | QFN32 |
| XS2184 | 集成FET的四路 IEEE 802.3 at/af PoE PSE 控制器 | 4 | 85 | -40~85 | 802.3 at/af | 自动、半自动、手动 | I ² C | 内部 | QFN48 |
| XS2186 | 具有集成FET的八路 IEEE 802.3 at/af PoE PSE 控制器 | 8 | 85 | -40~85 | 802.3 at/af | 自动、半自动、手动 | I ² C | 内部 | QFN48 |

PoE受电设备 (PD) 控制器

| 器件 | 器件描述 | 最大绝对 $V_{IN}(V)$ | 工作温度(°C) | 支持的PoE标准 | 支持的最高分类 | 功率等级(W) | 浪涌电流限制(mA) | 电流限制(mA) | 封装 |
|---------|-----------------------------|---------------------|----------|----------------|---------|---------|------------|----------|--------------|
| XS2100S | IEEE 802.3 at/af PoE PD 控制器 | 100 | -40~85 | 802.3 at/af | 4 | 25 | 150 | 800 | SOP8 |
| XS2101D | IEEE 802.3 at/af PoE PD 控制器 | 100 | -40~85 | 802.3 at/af | 4 | 25 | 150 | 800 | DFN10 |
| XS2103D | IEEE 802.3 at/af PoE PD 控制器 | 100 | -40~85 | 802.3 at/af | 4 | 25 | 150 | 880 | DFN10 |
| XS2103S | IEEE 802.3 at/af PoE PD 控制器 | 100 | -40~85 | 802.3 at/af | 4 | 25 | 150 | 880 | SOP8 |
| XS2104S | IEEE 802.3 at/af PoE PD 控制器 | 100 | -40~85 | 802.3 at/af | 4 | 25 | 150 | 880 | SOP8 |
| XS2105D | IEEE 802.3 af PoE PD 控制器 | 100 | -40~85 | 802.3 af | 3 | 13 | 150 | 480 | DFN10 |
| XS2105S | IEEE 802.3 af PoE PD 控制器 | 100 | -40~85 | 802.3 af | 3 | 13 | 150 | 480 | SOP8 |
| XS2106S | IEEE 802.3 af PoE PD 控制器 | 100 | -40~85 | 802.3 af | 3 | 13 | 150 | 480 | SOP8 |
| XS2108 | IEEE 802.3 bt PoE PD 控制器 | 100 | -40~85 | 802.3 bt/at/af | 8 | 71 | 100 | 1600 | DFN10/MSOP10 |

PoE受电设备端 (DC/DC) 控制器

| 器件 | 器件描述 | 外围拓扑 | 最大绝对 $V_{IN}(V)$ | 工作温度(°C) | 工作模式 | 保护模式 | 工作频率 | 功率FET | 封装 |
|--------|----------------------------|---------|---------------------|----------|-------------|------------------|--------|-------|-------|
| XS2809 | 原边控制方式, 集成200V功率管的DC/DC控制器 | Flyback | 30 | -20~85 | PWM+PFM+PBM | OCP/OLP/OVP/OTP | 70KHz | 内置 | SOP7L |
| XS2801 | 原边控制方式, 集成200V功率管的DC/DC控制器 | Flyback | 25 | -40~85 | PWM+PFM | OCP/OVP/OTP/UVLO | 120KHz | 内置 | SOP7L |

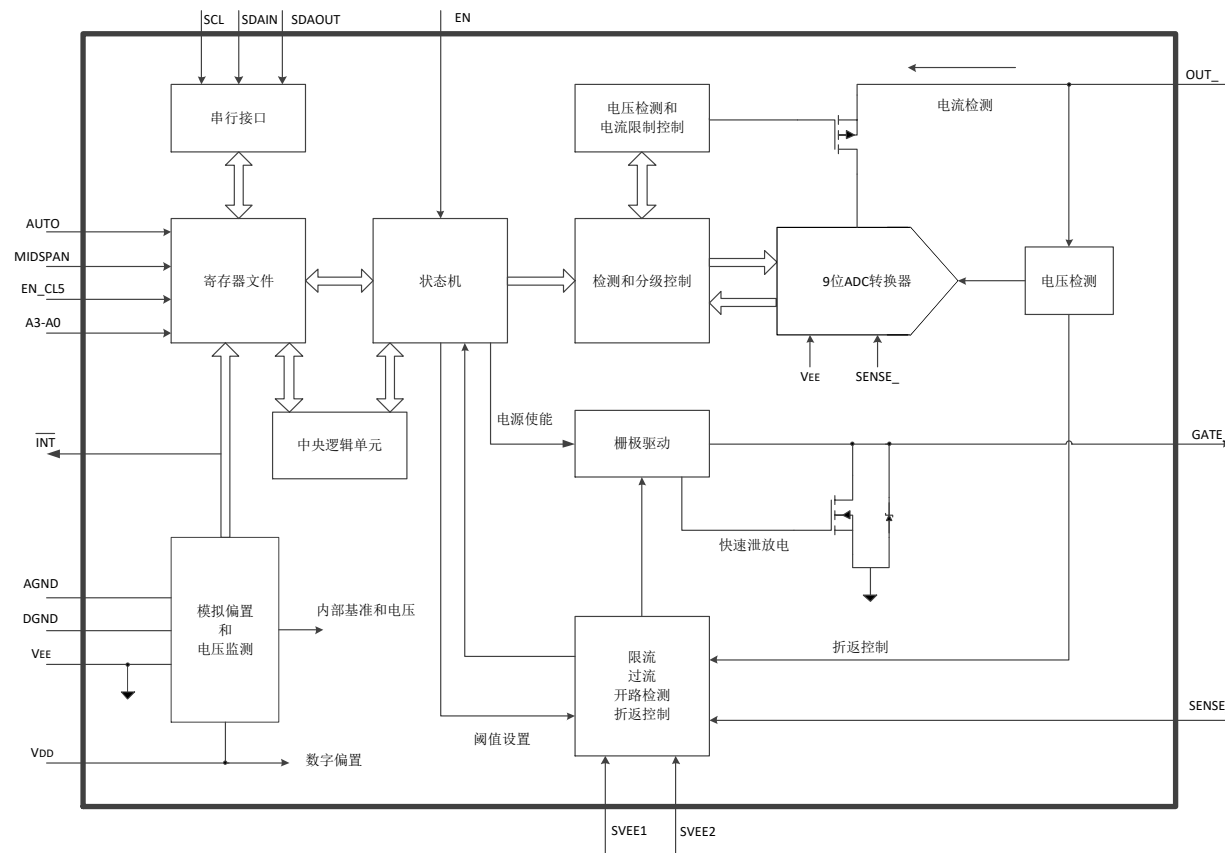
PoE受电设备端 (PD+DC/DC) 控制器

| 器件 | 器件描述 | 最大绝对 $V_{IN}(V)$ | 工作温度(°C) | 支持的PoE标准 | 支持的最高分类 | 功率等级(W) | 浪涌电流限制(mA) | 电流限制(mA) | 封装 |
|--------|---|---------------------|----------|-------------|---------|---------|------------|----------|-------------|
| XS2120 | 集成PD、DC/DC、MOS支持IEEE 802.3 af标准 | 100 | -40~85 | 802.3 at/af | 4 | 13 | 150 | 800 | QFN32 |
| XS2121 | 集成PD、DC/DC、MOS支持IEEE 802.3 af标准 | 100 | -40~85 | 802.3 af | 3 | 13 | 150 | 480 | QFN32/SOP16 |
| XS2123 | 集成PD、DC/DC、MOS支持IEEE 802.3 af标准 180KHz | 100 | -40~85 | 802.3 af | 3 | 13 | 150 | 480 | SOP16 |

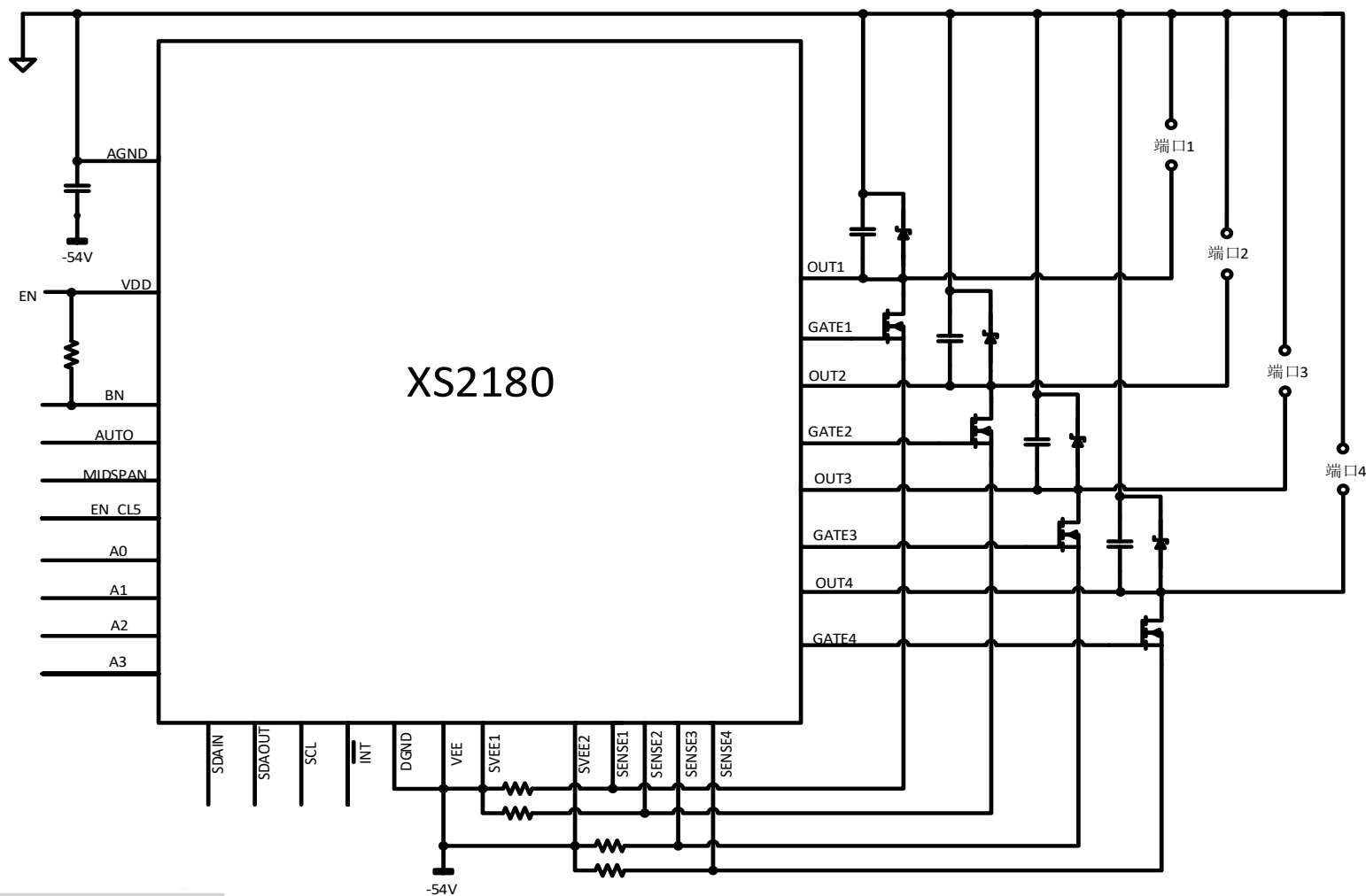
芯片特性

- 兼容于IEEE 802.3at/af
- 0.25Ω电流检测电阻
- 单端口输出可高达60W
- 9位端口电流和电压监测
- 3线串口, 兼容I²C
- 支持独立供电操作
- 遗留设备高电容检测
- 支持直流负载断开检测
- 支持全自动工作的同时支持软件编程操作
- 支持新二事件分级和功率PD设备Class5的检测和分级
- 输入欠压锁定、输出过压锁定、过温保护
- 32-PIN TQFN (5mm×5mm) 功率封装
- 应用于POE交换机等

功能框图

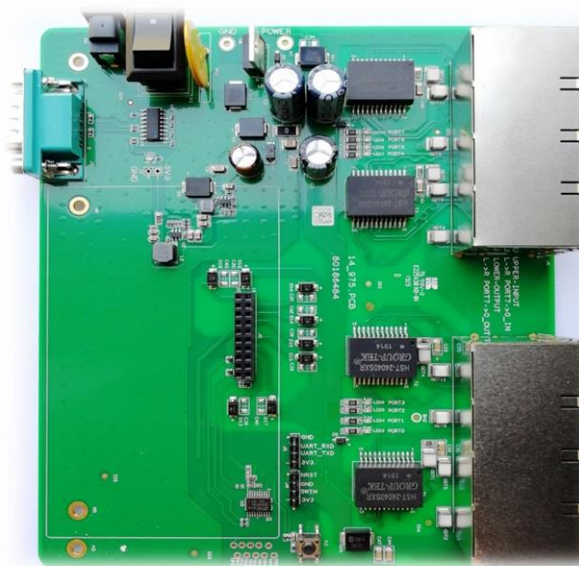


典型应用方案

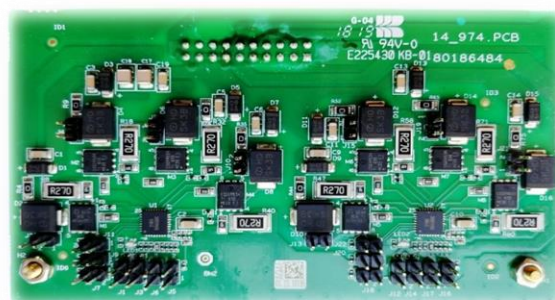


芯片八口评估板

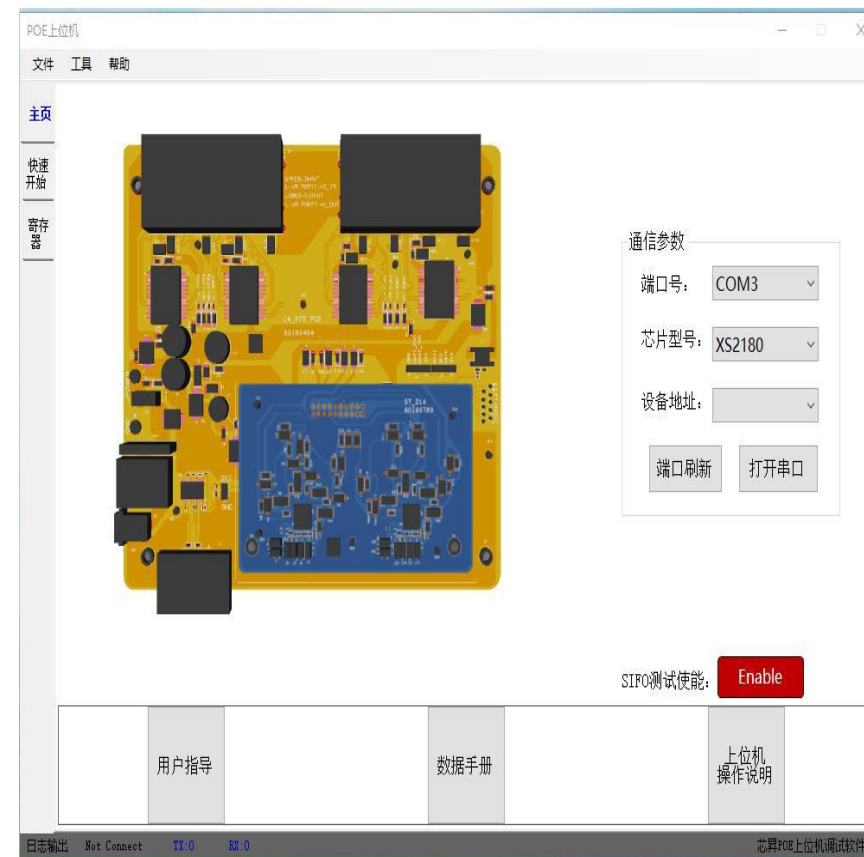
- PSE器件缺省为自动模式运行，所以无需通过I2C连接到操作员界面
- 八个兼容IEEE802.3 at/af标准的网口，支持100BASE-T的Type-1和Type-2设备
- 板上3.3V稳压器和片上集成3.3V LDO
- COM和UART两个I2C接口
- MCU程序烧写SWIM接口
- 网口运行状态LED指示
- 八个网口都通过共模4KV、差模2KV浪涌测试
- 100%通过Sifos IEEE 802.3 at/af标准测试



八通道PoE母板



XS2180/XS2181子板



自开发
上位机操作软件

PSE控制器产品-XS2180 -Sifos IEEE 802.3 at/af 实测



| PSE Conformance Test Suite | | Sifos Technologies 802.3at Conformance Report | | | | | | | |
|--------------------------------|----------------|---|-------|-----------------------|---------|-----------|------|------------|------|
| August 7 2019 11:29 AM | | version 4.2.05 | | | | | | | |
| Port Count..... | 1 | Test Mode: 15.4 Watt | | report version 4.2.00 | | | | | |
| Loop Count..... | 1 | Sifos Interop Index*: 100% | | | | | | | |
| PSE Tested: Unspecified Type-1 | | Error Log: None | | | | | | | |
| Chassis ID: 192.168.221.105 | PSA-3000 Ports | | Min | Max | Average | Low Limit | P/F | High Limit | P/F |
| TestLoop: 1 | 1-1 | UNITS | | | | | | | |
| Test: det v | | | | | | | | | |
| Open Circuit Det Voc= | 5.13 | volts | 5.13 | 5.13 | 5.13 | 2.8 | Pass | 30 | Pass |
| Peak Det Vvalid= | 9.31 | volts | 9.31 | 9.31 | 9.3 | 3.8 | Pass | 10 | Pass |
| Min Det Vvalid= | 4.15 | volts | 4.15 | 4.15 | 4.2 | 2.8 | Pass | 9 | Pass |
| Det Volt Step dVtest= | 5.16 | volts | 5.16 | 5.16 | 5.2 | 1 | Pass | 7.2 | Pass |
| Detection Slew= | 0.007 | V/usec | 0.007 | 0.007 | 0.007 | 0 | Pass | 0.1 | Pass |
| Good Sig Det Pulse= | 1 | edges | 1 | 1 | 1 | 1 | Pass | 9 | Pass |
| Backoff Voltage= | 0.1 | volts | 0.1 | 0.1 | 0.1 | 0 | Pass | 9 | Pass |
| Non 802 Step V= | 0 | volts | 0 | 0 | 0 | 0 | Pass | 0.1 | Pass |
| High Sig MaxV= | 9.4 | volts | 9.4 | 9.4 | 9.4 | 3.8 | Pass | 11 | Pass |
| Non 802 Discr ?= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass |
| Detect Strategy= | 1 | **** | 1 | 1 | 1 | 0 | Pass | 2 | Pass |
| Test: det i | | | | | | | | | |
| Init Current Isc= | 1.75 | mA | 1.75 | 1.75 | 1.75 | 0 | Pass | 5 | Pass |
| Det Current Isc= | 1.13 | mA | 1.13 | 1.13 | 1.13 | 0 | Pass | 5 | Pass |
| Test: det range | | | | | | | | | |
| Rgood Max= | 29 | Kohm | 29 | 29 | 29 | 26 | Pass | 32 | Pass |
| Rgood Min= | 17 | Kohm | 17 | 17 | 17 | 16 | Pass | 19 | Pass |
| Rmid det= | 29 | Kohm | 29 | 29 | 29 | 26 | Pass | 33 | Pass |
| Cgood Max= | 0.1 | uF | 0.1 | 0.1 | 0.1 | 0 | Pass | 10 | Pass |
| Rbad Cbad Stat= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass |
| Test: det time | | | | | | | | | |
| Backoff Time Tdbo= | 438 | msec | 438 | 438 | 438 | -1 | Pass | 1500 | Pass |
| Eff Backoff Tdbo eff= | 438 | msec | 438 | 438 | 438 | -1 | Pass | 1500 | Pass |
| Backoff Type= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass |
| Detection Time Tdet= | 285 | msec | 285 | 285 | 285 | 5 | Pass | 500 | Pass |
| Total Det Time= | 285 | msec | 285 | 285 | 285 | 5 | Pass | 1000 | Pass |
| Test: det rsource | | | | | | | | | |
| Regulated Vstep Zout= | 0 | KOhm | 0 | 0 | 0 | -0.1 | Pass | 12 | Pass |
| Test: class v | | | | | | | | | |
| Class Voltage Vclass= | 19.7 | volts | 19.7 | 19.7 | 19.7 | 15.5 | Pass | 20.5 | Pass |
| Vclass Min= | 17.7 | volts | 17.7 | 17.7 | 17.7 | 15.5 | Pass | 20.5 | Pass |
| Test: class time | | | | | | | | | |
| Event Count= | 1 | **** | 1 | 1 | 1 | 0 | Pass | 3 | Pass |
| Class Time Tpd= | 17.6 | msec | 17.6 | 17.6 | 17.6 | 6 | Pass | 75 | Pass |
| Test: class err | | | | | | | | | |
| Class lim= | 73 | mA | 73 | 73 | 73 | 51 | Pass | 100 | Pass |
| Pwr Cl lim= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 1 | Pass |
| Pwr Cl 55= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 1 | Pass |
| Test: pwrup time | | | | | | | | | |
| Pwr-On Rise Time Trise= | 25 | usec | 25 | 25 | 25 | 15 | Pass | 50000 | Pass |
| Power-On Time Tpon= | 15.6 | msec | 15.6 | 15.6 | 15.6 | 0 | Pass | 400 | Pass |

| PSE Conformance Test Suite | | Sifos Technologies 802.3at Conformance Report | | | | | | | |
|--------------------------------|----------------|---|-------|-----------------------|---------|-----------|------|------------|------|
| August 7 2019 11:12 AM | | version 4.2.05 | | | | | | | |
| Port Count..... | 1 | Test Mode: 30 Watt PHY | | report version 4.2.00 | | | | | |
| Loop Count..... | 1 | Sifos Interop Index*: 100% | | | | | | | |
| PSE Tested: Unspecified Type-2 | | Error Log: None | | | | | | | |
| Chassis ID: 192.168.221.105 | PSA-3000 Ports | | Min | Max | Average | Low Limit | P/F | High Limit | P/F |
| TestLoop: 1 | 1-1 | UNITS | | | | | | | |
| Test: det v | | | | | | | | | |
| Open Circuit Det Voc= | 5.13 | volts | 5.13 | 5.13 | 5.13 | 2.8 | Pass | 30 | Pass |
| Peak Det Vvalid= | 9.31 | volts | 9.31 | 9.31 | 9.3 | 3.8 | Pass | 10 | Pass |
| Min Det Vvalid= | 4.16 | volts | 4.16 | 4.16 | 4.2 | 2.8 | Pass | 9 | Pass |
| Det Volt Step dVtest= | 5.15 | volts | 5.15 | 5.15 | 5.2 | 1 | Pass | 7.2 | Pass |
| Detection Slew= | 0.007 | V/usec | 0.007 | 0.007 | 0.007 | 0 | Pass | 0.1 | Pass |
| Good Sig Det Pulse= | 1 | edges | 1 | 1 | 1 | 1 | Pass | 9 | Pass |
| Backoff Voltage= | 0.1 | volts | 0.1 | 0.1 | 0.1 | 0 | Pass | 2.8 | Pass |
| Non 802 Step V= | 0 | volts | 0 | 0 | 0 | 0 | Pass | 0.1 | Pass |
| High Sig MaxV= | 9.4 | volts | 9.4 | 9.4 | 9.4 | 3.8 | Pass | 11 | Pass |
| Non 802 Discr ?= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass |
| Detect Strategy= | 1 | **** | 1 | 1 | 1 | 0 | Pass | 2 | Pass |
| Test: det i | | | | | | | | | |
| Init Current Isc= | 1.75 | mA | 1.75 | 1.75 | 1.75 | 0 | Pass | 5 | Pass |
| Det Current Isc= | 1.09 | mA | 1.09 | 1.09 | 1.09 | 0 | Pass | 5 | Pass |
| Test: det range | | | | | | | | | |
| Rgood Max= | 29 | Kohm | 29 | 29 | 29 | 26 | Pass | 32 | Pass |
| Rgood Min= | 17 | Kohm | 17 | 17 | 17 | 16 | Pass | 19 | Pass |
| Rmid det= | 29 | Kohm | 29 | 29 | 29 | 26 | Pass | 33 | Pass |
| Cgood Max= | 0.1 | uF | 0.1 | 0.1 | 0.1 | 0 | Pass | 10 | Pass |
| Rbad Cbad Stat= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass |
| Test: det time | | | | | | | | | |
| Backoff Time Tdbo= | 438 | msec | 438 | 438 | 438 | -1 | Pass | 1500 | Pass |
| Eff Backoff Tdbo eff= | 438 | msec | 438 | 438 | 438 | -1 | Pass | 1500 | Pass |
| Backoff Type= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass |
| Detection Time Tdet= | 285 | msec | 285 | 285 | 285 | 5 | Pass | 500 | Pass |
| Total Det Time= | 285 | msec | 285 | 285 | 285 | 5 | Pass | 1000 | Pass |
| Test: det rsource | | | | | | | | | |
| Regulated Vstep Zout= | 0 | KOhm | 0 | 0 | 0 | -0.1 | Pass | 12 | Pass |
| Test: class v | | | | | | | | | |
| Class Voltage Vclass= | 17.2 | volts | 17.2 | 17.2 | 17.2 | 15.5 | Pass | 20.5 | Pass |
| Vclass Min= | 16.9 | volts | 16.9 | 16.9 | 16.9 | 15.5 | Pass | 20.5 | Pass |
| Mark Voltage Vmark= | 8.8 | volts | 8.8 | 8.8 | 8.8 | 7 | Pass | 10 | Pass |
| Mark Voltage Min= | 8.8 | volts | 8.8 | 8.8 | 8.8 | 7 | Pass | 10 | Pass |
| Test: class time | | | | | | | | | |
| Event Count= | 2 | **** | 2 | 2 | 2 | 2 | Pass | 3 | Pass |
| Event1 Tcle1= | 19.2 | msec | 19.2 | 19.2 | 19.2 | 6 | Pass | 30 | Pass |
| Event2 Tcle2= | 17.3 | msec | 17.3 | 17.3 | 17.3 | 6 | Pass | 30 | Pass |
| Mark Tme1= | 7.7 | msec | 7.7 | 7.7 | 7.7 | 6 | Pass | 12 | Pass |
| Mark Tme2= | 7.7 | msec | 7.7 | 7.7 | 7.7 | 6 | Pass | 376 | Pass |
| Test: class err | | | | | | | | | |
| Class lim= | 73 | mA | 73 | 73 | 73 | 51 | Pass | 100 | Pass |

可靠性测试

| 测试项 | 测试条件 | 样本数 | 标准 | 结果 |
|--------|---|-----|-------------|------|
| HTOL | Ta=125°C, Vcc=53V, 1000 Hrs | 77 | JESD22-A108 | PASS |
| HTST | Ta=150°C, 1000h | 45 | JESD22-A103 | PASS |
| 防潮等级L3 | Bake: 125°C, 24h; Soak: 30°C, 60%RH, 192; Reflow: 260°C, 3times | 231 | JESD22-A113 | PASS |
| TCT | -65°C ~ 150°C; Dwell=15min; 500/1000Cycles | 77 | JESD22-A104 | PASS |
| PCT | 121°C, 100%RH, 205 kPa, 96/168h | 77 | JESD22-A102 | PASS |
| uHAST | 130°C, 85%RH, 96h | 77 | JESD22-A118 | PASS |

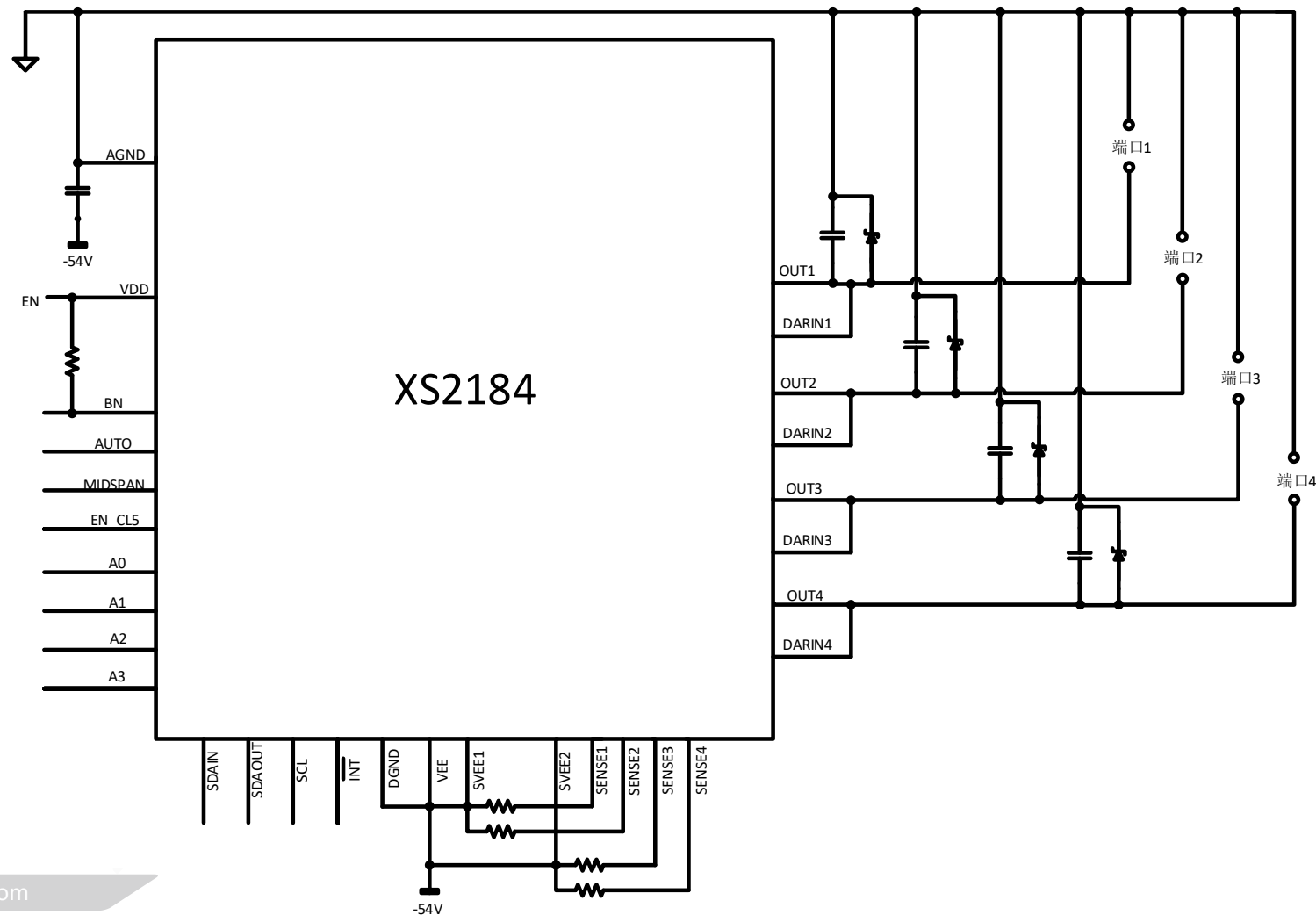
Demo板浪涌测试

| Case | 模式 | 浪涌电压 | 结果 |
|------|----|------|-------------------------------|
| 1 | 差模 | ±2KV | All Pass——功能、性能关键参数测试前后均无异常变化 |
| 2 | 共模 | 4KV | All Pass——功能、性能关键参数测试前后均无异常变化 |

ESD测试

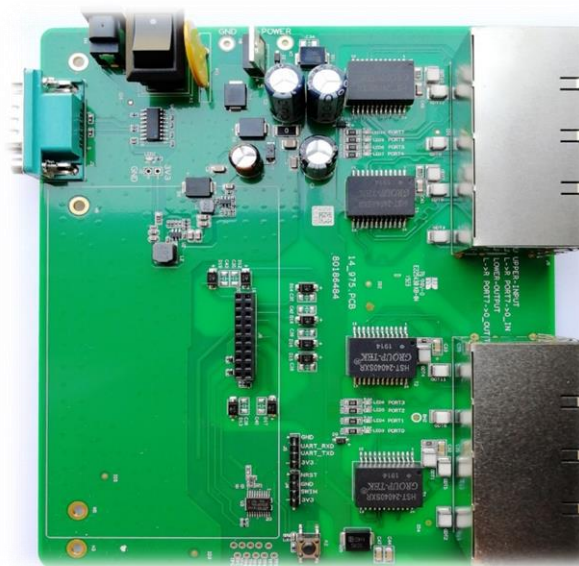
| 模式 | Reference | Minimum Pass Level | 结果 |
|-----|------------------------------|--------------------|-------------------------------|
| CDM | ESDA/JEDEC JS-002-2018 | ±1000V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| HBM | MIL-STD-883K / Method 3015.9 | ±2500V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| LU | JESD78E | ±200mA +85V | All Pass——功能、性能关键参数测试前后均无异常变化 |

典型应用方案

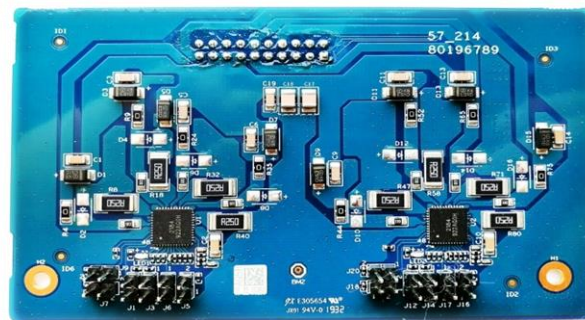


芯片八口评估板

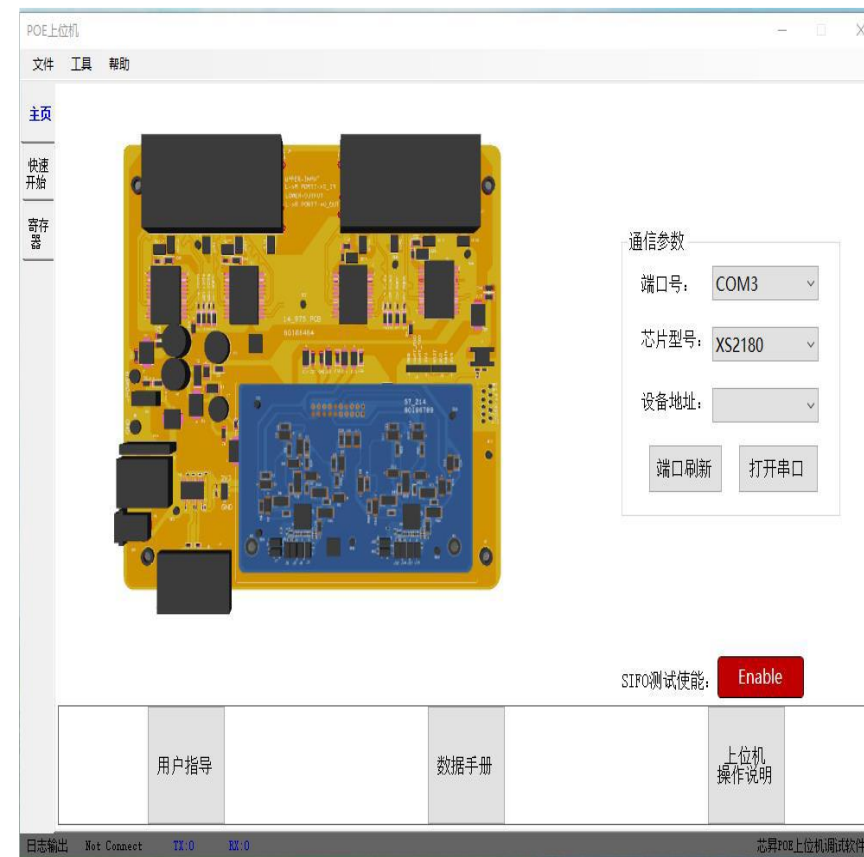
- PSE器件缺省为自动模式运行，所以无需通过I2C连接到操作员界面
- 八个兼容IEEE802.3 at/af标准的网口，支持100BASE-T的Type-1和Type-2设备
- 板上3.3V稳压器和片上集成3.3V LDO
- COM和UART两个I2C接口
- MCU程序烧写SWIM接口
- 网口运行状态LED指示
- 八个网口都通过共模4KV、差模2KV浪涌测试
- 100%通过Sifos IEEE 802.3 at/af标准测试



八通道PoE母板



XS2184/XS2185子板



自开发
上位机操作软件

PSE控制器产品-XS2184 -Sifos IEEE 802.3 at/af 实测



| PSE Conformance Test Suite | | Sifos Technologies 802.3at Conformance Report | | | | | | | | |
|--------------------------------|-------|---|-------|-------|-------|---------|-----------|-------|------------|-----|
| August 7 2019 12:05 PM | | version 4.2.05 report version 4.2.00 | | | | | | | | |
| Port Count..... 1 | | Test Mode: 15.4 Watt | | | | | | | | |
| Loop Count..... 1 | | Sifos Interop Index*: 100% | | | | | | | | |
| PSE Tested: Unspecified Type-1 | | Error Log: None | | | | | | | | |
| Chassis ID: 192.168.221.105 | | PSA-3000 Ports | | Min | Max | Average | Low Limit | P/F | High Limit | P/F |
| TestLoop: 1 | | 1-1 | UNITS | | | | | | | |
| Test: det v | | | | | | | | | | |
| Open_Circuit_Det_Voc= | 5.1 | volts | 5.1 | 5.1 | 5.1 | 2.8 | Pass | 30 | Pass | |
| Peak_Det_Vvalid= | 9.21 | volts | 9.21 | 9.21 | 9.2 | 3.8 | Pass | 10 | Pass | |
| Min_Det_Vvalid= | 4.11 | volts | 4.11 | 4.11 | 4.1 | 2.8 | Pass | 9 | Pass | |
| Det_Volt_Step_dVtest= | 5.1 | volts | 5.1 | 5.1 | 5.1 | 1 | Pass | 7.2 | Pass | |
| Detection_Slew= | 0.008 | V/usec | 0.008 | 0.008 | 0.008 | 0 | Pass | 0.1 | Pass | |
| Good_Sig_Det_Pulse= | 1 | edges | 1 | 1 | 1 | 1 | Pass | 9 | Pass | |
| Backoff_Voltage= | 0.1 | volts | 0.1 | 0.1 | 0.1 | 0 | Pass | 9 | Pass | |
| Non_802_Step_V= | 0 | volts | 0 | 0 | 0 | 0 | Pass | 0.1 | Pass | |
| High_Sig_MaxV= | 9.31 | volts | 9.31 | 9.31 | 9.3 | 3.8 | Pass | 11 | Pass | |
| Non_802_Discr_?= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass | |
| Detect_Strategy= | 1 | **** | 1 | 1 | 1 | 0 | Pass | 2 | Pass | |
| Test: det i | | | | | | | | | | |
| Init_Current_Isc= | 1.78 | mA | 1.78 | 1.78 | 1.78 | 0 | Pass | 5 | Pass | |
| Det_Current_Isc= | 1.09 | mA | 1.09 | 1.09 | 1.09 | 0 | Pass | 5 | Pass | |
| Test: det range | | | | | | | | | | |
| Rgood_Max= | 28 | Kohm | 28 | 28 | 28 | 26 | Pass | 32 | Pass | |
| Rgood_Min= | 16 | Kohm | 16 | 16 | 16 | 16 | Pass | 19 | Pass | |
| Rmid_det= | 28 | Kohm | 28 | 28 | 28 | 26 | Pass | 33 | Pass | |
| Cgood_Max= | 0.1 | uF | 0.1 | 0.1 | 0.1 | 0 | Pass | 10 | Pass | |
| Rbad_Cbad_Stat= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass | |
| Test: det time | | | | | | | | | | |
| Backoff_Time_Tdbo= | 430 | msec | 430 | 430 | 430 | -1 | Pass | 1500 | Pass | |
| Eff_Backoff_Tdbo_eff= | 430 | msec | 430 | 430 | 430 | -1 | Pass | 1500 | Pass | |
| Backoff_Type= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass | |
| Detection_Time_Tdet= | 283 | msec | 283 | 283 | 283 | 5 | Pass | 500 | Pass | |
| Total_Det_Time= | 283 | msec | 283 | 283 | 283 | 5 | Pass | 1000 | Pass | |
| Test: det rsource | | | | | | | | | | |
| Regulated_Vstep_Zout= | 0 | KOhm | 0 | 0 | 0 | -0.1 | Pass | 12 | Pass | |
| Test: class v | | | | | | | | | | |
| Class_Voltage_Vclass= | 19.6 | volts | 19.6 | 19.6 | 19.6 | 15.5 | Pass | 20.5 | Pass | |
| Vclass_Min= | 17.6 | volts | 17.6 | 17.6 | 17.6 | 15.5 | Pass | 20.5 | Pass | |
| Test: class time | | | | | | | | | | |
| Event_Count= | 1 | **** | 1 | 1 | 1 | 0 | Pass | 3 | Pass | |
| Class_Time_Ipdc= | 17.6 | msec | 17.6 | 17.6 | 17.6 | 6 | Pass | 75 | Pass | |
| Test: class err | | | | | | | | | | |
| Class_lim= | 72 | mA | 72 | 72 | 72 | 51 | Pass | 100 | Pass | |
| Pwr_Cl_lim= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 1 | Pass | |
| Pwr_Cl_55= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 1 | Pass | |
| Test: pwrup time | | | | | | | | | | |
| Pwr-On_Rise_Time_Trise= | 21 | usec | 21 | 21 | 21 | 15 | Pass | 50000 | Pass | |
| Power-On_Time_Tpon= | 19.5 | msec | 19.5 | 19.5 | 19.5 | 0 | Pass | 400 | Pass | |

| PSE Conformance Test Suite | | Sifos Technologies 802.3at Conformance Report | | | | | | | | |
|--------------------------------|-------|---|-------|-------|-------|---------|-----------|------|------------|-----|
| August 7 2019 11:49 AM | | version 4.2.05 report version 4.2.00 | | | | | | | | |
| Port Count..... 1 | | Test Mode: 30 Watt PHY | | | | | | | | |
| Loop Count..... 1 | | Sifos Interop Index*: 100% | | | | | | | | |
| PSE Tested: Unspecified Type-2 | | Error Log: None | | | | | | | | |
| Chassis ID: 192.168.221.105 | | PSA-3000 Ports | | Min | Max | Average | Low Limit | P/F | High Limit | P/F |
| TestLoop: 1 | | 1-1 | UNITS | | | | | | | |
| Test: det v | | | | | | | | | | |
| Open_Circuit_Det_Voc= | 5.1 | volts | 5.1 | 5.1 | 5.1 | 2.8 | Pass | 30 | Pass | |
| Peak_Det_Vvalid= | 9.21 | volts | 9.21 | 9.21 | 9.2 | 3.8 | Pass | 10 | Pass | |
| Min_Det_Vvalid= | 4.11 | volts | 4.11 | 4.11 | 4.1 | 2.8 | Pass | 9 | Pass | |
| Det_Volt_Step_dVtest= | 5.1 | volts | 5.1 | 5.1 | 5.1 | 1 | Pass | 7.2 | Pass | |
| Detection_Slew= | 0.007 | V/usec | 0.007 | 0.007 | 0.007 | 0 | Pass | 0.1 | Pass | |
| Good_Sig_Det_Pulse= | 1 | edges | 1 | 1 | 1 | 1 | Pass | 9 | Pass | |
| Backoff_Voltage= | 0.1 | volts | 0.1 | 0.1 | 0.1 | 0 | Pass | 2.8 | Pass | |
| Non_802_Step_V= | 0 | volts | 0 | 0 | 0 | 0 | Pass | 0.1 | Pass | |
| High_Sig_MaxV= | 9.3 | volts | 9.3 | 9.3 | 9.3 | 3.8 | Pass | 11 | Pass | |
| Non_802_Discr_?= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass | |
| Detect_Strategy= | 1 | **** | 1 | 1 | 1 | 0 | Pass | 2 | Pass | |
| Test: det i | | | | | | | | | | |
| Init_Current_Isc= | 1.78 | mA | 1.78 | 1.78 | 1.78 | 0 | Pass | 5 | Pass | |
| Det_Current_Isc= | 1.08 | mA | 1.08 | 1.08 | 1.08 | 0 | Pass | 5 | Pass | |
| Test: det range | | | | | | | | | | |
| Rgood_Max= | 28 | Kohm | 28 | 28 | 28 | 26 | Pass | 32 | Pass | |
| Rgood_Min= | 17 | Kohm | 17 | 17 | 17 | 16 | Pass | 19 | Pass | |
| Rmid_det= | 28 | Kohm | 28 | 28 | 28 | 26 | Pass | 33 | Pass | |
| Cgood_Max= | 0.1 | uF | 0.1 | 0.1 | 0.1 | 0 | Pass | 10 | Pass | |
| Rbad_Cbad_Stat= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass | |
| Test: det time | | | | | | | | | | |
| Backoff_Time_Tdbo= | 430 | msec | 430 | 430 | 430 | -1 | Pass | 1500 | Pass | |
| Eff_Backoff_Tdbo_eff= | 430 | msec | 430 | 430 | 430 | -1 | Pass | 1500 | Pass | |
| Backoff_Type= | 0 | **** | 0 | 0 | 0 | 0 | Pass | 0 | Pass | |
| Detection_Time_Tdet= | 281 | msec | 281 | 281 | 281 | 5 | Pass | 500 | Pass | |
| Total_Det_Time= | 281 | msec | 281 | 281 | 281 | 5 | Pass | 1000 | Pass | |
| Test: det rsource | | | | | | | | | | |
| Regulated_Vstep_Zout= | 0 | KOhm | 0 | 0 | 0 | -0.1 | Pass | 12 | Pass | |
| Test: class v | | | | | | | | | | |
| Class_Voltage_Vclass= | 17.1 | volts | 17.1 | 17.1 | 17.1 | 15.5 | Pass | 20.5 | Pass | |
| Vclass_Min= | 16.8 | volts | 16.8 | 16.8 | 16.8 | 15.5 | Pass | 20.5 | Pass | |
| Mark_Voltage_Vmark= | 8.7 | volts | 8.7 | 8.7 | 8.7 | 7 | Pass | 10 | Pass | |
| Mark_Voltage_Min= | 8.7 | volts | 8.7 | 8.7 | 8.7 | 7 | Pass | 10 | Pass | |
| Test: class time | | | | | | | | | | |
| Event_Count= | 2 | **** | 2 | 2 | 2 | 2 | Pass | 3 | Pass | |
| Event1_Tcle1= | 17.8 | msec | 17.8 | 17.8 | 17.8 | 6 | Pass | 30 | Pass | |
| Event2_Tcle2= | 17.8 | msec | 17.8 | 17.8 | 17.8 | 6 | Pass | 30 | Pass | |
| Mark_Tme1= | 7.8 | msec | 7.8 | 7.8 | 7.8 | 6 | Pass | 12 | Pass | |
| Mark_Tme2= | 8.5 | msec | 8.5 | 8.5 | 8.5 | 6 | Pass | 376 | Pass | |
| Test: class err | | | | | | | | | | |
| Class_lim= | 73 | mA | 73 | 73 | 73 | 51 | Pass | 100 | Pass | |

可靠性测试

| 测试项 | 测试条件 | 样本数 | 标准 | 结果 |
|---------|---|-----|-------------|------|
| Burnout | 1000+ Hrs, MOSFET开/闭: 120,000+次 | 20 | - | PASS |
| HTOL | Ta=125°C, Vcc=53V, 1000 Hrs | 77 | JESD22-A108 | PASS |
| HTST | Ta=150°C, 1000h | 45 | JESD22-A103 | PASS |
| 防潮等级L3 | Bake: 125°C, 24h; Soak: 30°C, 60%RH, 192; Reflow: 260°C, 3times | 231 | JESD22-A113 | PASS |
| TCT | -65°C ~ 150°C; Dwell=15min; 500/1000Cycles | 77 | JESD22-A104 | PASS |
| PCT | 121°C, 100%RH, 205 kPa, 96/168h | 77 | JESD22-A102 | PASS |
| uHAST | 130°C, 85%RH, 96h | 77 | JESD22-A118 | PASS |

Demo板浪涌测试

| Case | 模式 | 浪涌电压 | 结果 |
|------|----|------|-------------------------------|
| 1 | 差模 | ±2KV | All Pass——功能、性能关键参数测试前后均无异常变化 |
| 2 | 共模 | 4KV | All Pass——功能、性能关键参数测试前后均无异常变化 |

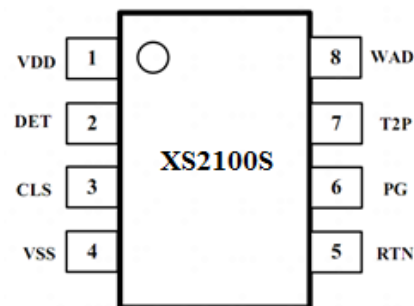
ESD测试

| 模式 | Reference | Minimum Pass Level | 结果 |
|-----|------------------------------|--------------------|-------------------------------|
| CDM | ESDA/JEDEC JS-002-2018 | ±1000V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| HBM | MIL-STD-883K / Method 3015.9 | ±2500V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| LU | JESD78E | ±200mA +85V | All Pass——功能、性能关键参数测试前后均无异常变化 |

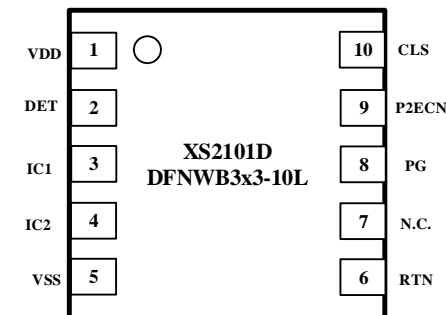
芯片特性

- 兼容于IEEE 802.3at/af
- 2级事件分级，并提供指示信号
- 简易的墙上适配器接口
- 0至4级PoE分级
- 100V绝对最大额定输入
- 150mA浪涌电流限制
- 正常工作期间电流限制800mA
- 电流限制和折返式保护
- 32V UVLO
- 过热保护
- DFN10与SOP8两种封装
- 广泛应用于无线AP、IP电话、IP摄像机等

封装

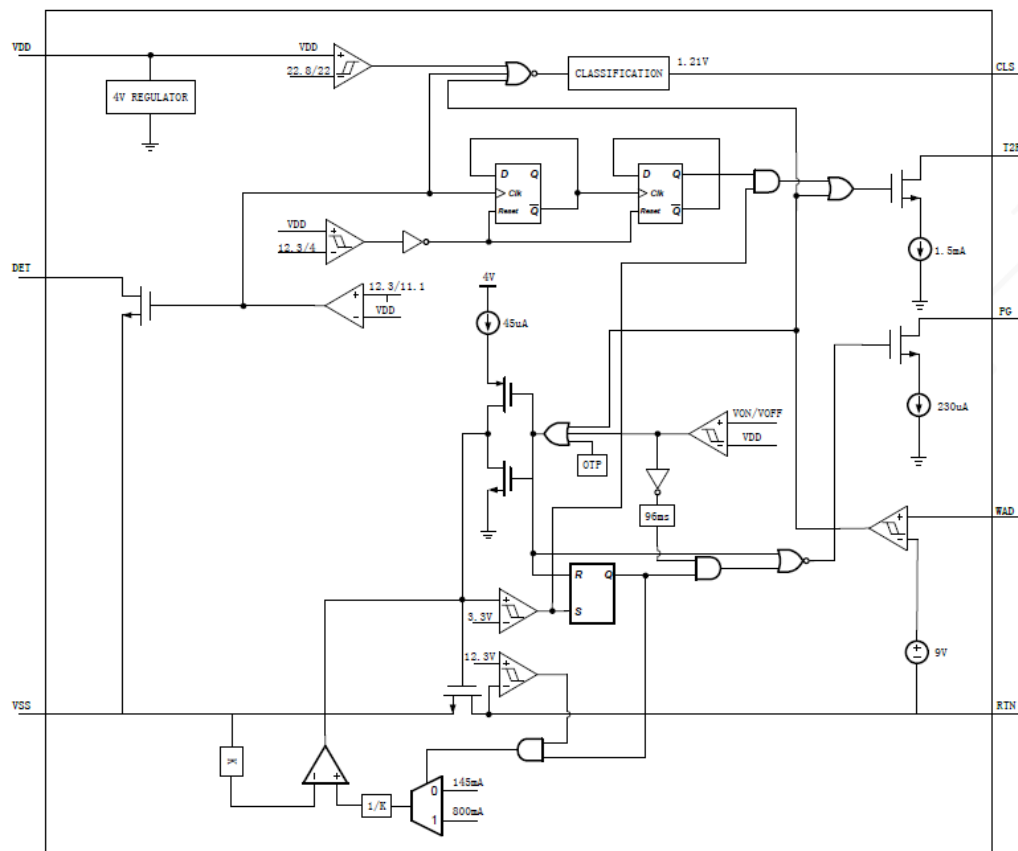


XS2100S-SOP8

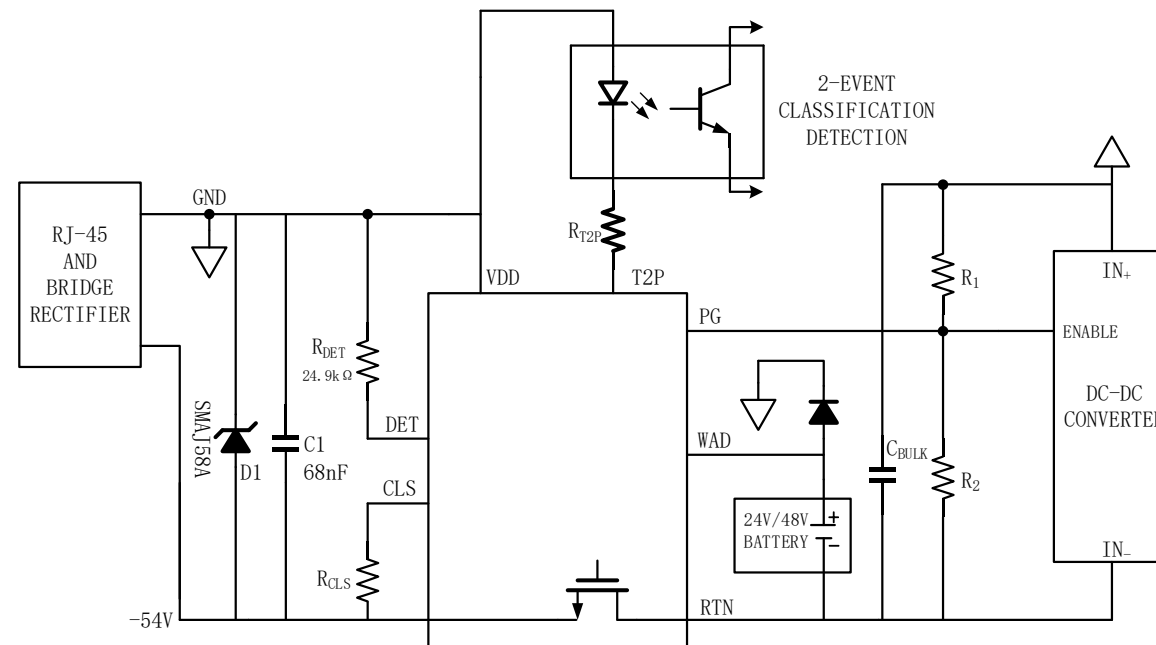


XS2101D-DFN10

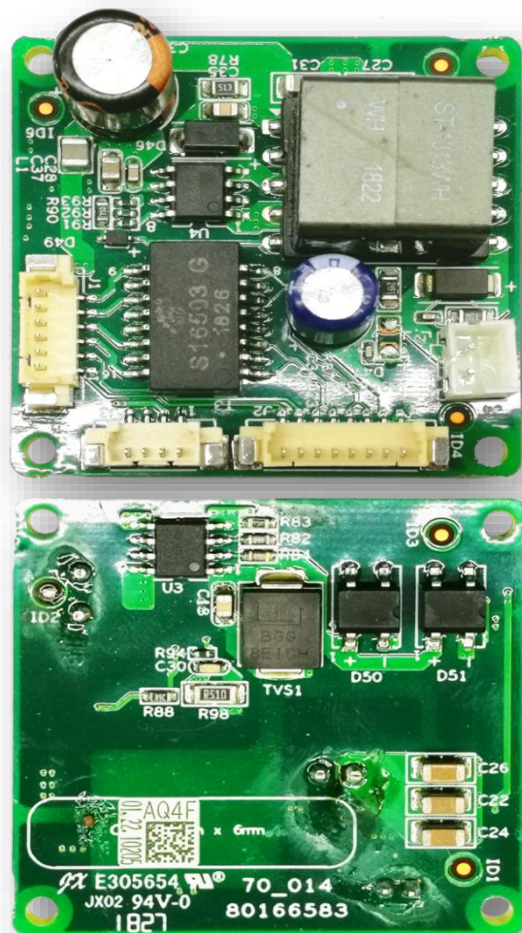
功能框图



典型应用方案



XS210xx评估板



Sifos IEEE 802.3 at/af 实测

| PDA-300 TEST RESULTS | | | | 802.3at PD Test Report | | | |
|----------------------------------|--------------|------------|-----------|------------------------|------------|------|--|
| Test Cycles: 1 | | | | Sifos Technologies | | | |
| Quadrants Tested: 4 | | | | firmware ver. 3.33 | | | |
| PD Tested: | | | | hardware ver. 2 | | | |
| | | | | report version 3.06 | | | |
| Parameters | Test Cycles: | Test Cycle | Low Limit | P/F | High Limit | P/F | |
| ALT-A, MDI Unpowered PD | | | | | | | |
| R_detect | 25.26 | Kohm | 23.70 | Pass | 26.30 | Pass | |
| C_detect | 0.069 | uF | 0.050 | Pass | 0.120 | Pass | |
| I_Class | 1.0 | mA | 0.0 | Pass | 4.0 | Pass | |
| Class | 0 | **** | 0 | Pass | 4 | Pass | |
| Type | 1 | **** | 1 | Pass | 2 | Pass | |
| V_on | 40.7 | Volts | 30.0 | Pass | 42.0 | Pass | |
| V_off | 33.6 | Volts | 30.0 | Pass | 37.0 | Pass | |
| Inrush E | 0.060 | W-s | 0.000 | Pass | 0.350 | Pass | |
| ALT-A, MDI Type-1 Grant | | | | | | | |
| Pclass_PD_1 | 1.41 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_1 | 2.00 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_1 | 41.8 | mA | 10.0 | Pass | 300.0 | Pass | |
| MPS_Load_1 | 23.9 | mA | 10.0 | Pass | 270.8 | Pass | |
| Average_Load_1 | 29.4 | mA | 2.3 | Pass | 270.8 | Pass | |
| ALT-A, MDI Type-2 Grant | | | | | | | |
| I_Mark | 0.5 | mA | 0.0 | Pass | 4.0 | Pass | |
| Pclass_PD_2 | 1.46 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_2 | 2.05 | Watts | 0.00 | Pass | 14.40 | Pass | |
| P_type-1 | 0.15 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_2 | 38.3 | mA | 10.0 | Pass | 266.7 | Pass | |
| MPS_Load_2 | 23.9 | mA | 10.0 | Pass | 240.7 | Pass | |
| Average_Load_2 | 27.2 | mA | 2.3 | Pass | 240.7 | Pass | |
| ALT-A, MDI-X Unpowered PD | | | | | | | |
| R_detect | 25.25 | Kohm | 23.70 | Pass | 26.30 | Pass | |
| C_detect | 0.069 | uF | 0.050 | Pass | 0.120 | Pass | |
| I_Class | 1.0 | mA | 0.0 | Pass | 4.0 | Pass | |
| Class | 0 | **** | 0 | Pass | 4 | Pass | |
| Type | 1 | **** | 1 | Pass | 2 | Pass | |
| V_on | 40.6 | Volts | 30.0 | Pass | 42.0 | Pass | |
| V_off | 32.5 | Volts | 30.0 | Pass | 37.0 | Pass | |
| Inrush E | 0.061 | W-s | 0.000 | Pass | 0.350 | Pass | |
| ALT-A, MDI-X Type-1 Grant | | | | | | | |
| Pclass_PD_1 | 1.41 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_1 | 2.07 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_1 | 43.3 | mA | 10.0 | Pass | 300.0 | Pass | |
| MPS_Load_1 | 25.0 | mA | 10.0 | Pass | 270.8 | Pass | |
| Average_Load_1 | 29.4 | mA | 2.3 | Pass | 270.8 | Pass | |
| ALT-A, MDI-X Type-2 Grant | | | | | | | |
| I_Mark | 0.5 | mA | 0.0 | Pass | 4.0 | Pass | |
| Pclass_PD_2 | 1.46 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_2 | 2.30 | Watts | 0.00 | Pass | 14.40 | Pass | |
| P_type-1 | 0.15 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_2 | 43.1 | mA | 10.0 | Pass | 266.7 | Pass | |
| MPS_Load_2 | 24.0 | mA | 10.0 | Pass | 240.7 | Pass | |
| Average_Load_2 | 27.3 | mA | 2.3 | Pass | 240.7 | Pass | |
| ALT-B, MDI Unpowered PD | | | | | | | |
| R_detect | 25.26 | Kohm | 23.70 | Pass | 26.30 | Pass | |
| C_detect | 0.068 | uF | 0.050 | Pass | 0.120 | Pass | |
| I_Class | 1.0 | mA | 0.0 | Pass | 4.0 | Pass | |
| Class | 0 | **** | 0 | Pass | 4 | Pass | |
| Type | 1 | **** | 1 | Pass | 2 | Pass | |

| | | | | | | | |
|--|-------|-------|-------|------|-------|------|--|
| ALT-B, MDI Type-1 Grant | | | | | | | |
| Pclass_PD_1 | 1.41 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_1 | 2.05 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_1 | 42.9 | mA | 10.0 | Pass | 300.0 | Pass | |
| MPS_Load_1 | 24.9 | mA | 10.0 | Pass | 270.8 | Pass | |
| Average_Load_1 | 29.4 | mA | 2.3 | Pass | 270.8 | Pass | |
| ALT-B, MDI Type-2 Grant | | | | | | | |
| I_Mark | 0.5 | mA | 0.0 | Pass | 4.0 | Pass | |
| Pclass_PD_2 | 1.46 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_2 | 2.20 | Watts | 0.00 | Pass | 14.40 | Pass | |
| P_type-1 | 0.15 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_2 | 40.9 | mA | 10.0 | Pass | 266.7 | Pass | |
| MPS_Load_2 | 23.7 | mA | 10.0 | Pass | 240.7 | Pass | |
| Average_Load_2 | 27.3 | mA | 2.3 | Pass | 240.7 | Pass | |
| ALT-B, MDI-X Unpowered PD | | | | | | | |
| R_detect | 25.26 | Kohm | 23.70 | Pass | 26.30 | Pass | |
| C_detect | 0.068 | uF | 0.050 | Pass | 0.120 | Pass | |
| I_Class | 1.0 | mA | 0.0 | Pass | 4.0 | Pass | |
| Class | 0 | **** | 0 | Pass | 4 | Pass | |
| Type | 1 | **** | 1 | Pass | 2 | Pass | |
| V_on | 40.6 | Volts | 30.0 | Pass | 42.0 | Pass | |
| V_off | 33.6 | Volts | 30.0 | Pass | 37.0 | Pass | |
| Inrush E | 0.061 | W-s | 0.000 | Pass | 0.350 | Pass | |
| ALT-B, MDI-X Type-1 Grant | | | | | | | |
| Pclass_PD_1 | 1.40 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_1 | 2.12 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_1 | 44.1 | mA | 10.0 | Pass | 300.0 | Pass | |
| MPS_Load_1 | 24.0 | mA | 10.0 | Pass | 270.8 | Pass | |
| Average_Load_1 | 29.3 | mA | 2.3 | Pass | 270.8 | Pass | |
| ALT-B, MDI-X Type-2 Grant | | | | | | | |
| I_Mark | 0.5 | mA | 0.0 | Pass | 4.0 | Pass | |
| Pclass_PD_2 | 1.48 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_2 | 2.37 | Watts | 0.00 | Pass | 14.40 | Pass | |
| P_type-1 | 0.17 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_2 | 43.9 | mA | 10.0 | Pass | 266.7 | Pass | |
| MPS_Load_2 | 22.9 | mA | 10.0 | Pass | 240.7 | Pass | |
| Average_Load_2 | 27.2 | mA | 2.3 | Pass | 240.7 | Pass | |
| Average-Over-Pairs Unpowered PD | | | | | | | |
| R_detect | 25.26 | Kohm | 23.70 | Pass | 26.30 | Pass | |
| C_detect | 0.069 | uF | 0.050 | Pass | 0.120 | Pass | |
| I_Class | 1.0 | mA | 0.0 | Pass | 4.0 | Pass | |
| Class | 0 | **** | 0 | Pass | 4 | Pass | |
| Type | 1 | **** | 1 | Pass | 2 | Pass | |
| V_on | 40.6 | Volts | 30.0 | Pass | 42.0 | Pass | |
| V_off | 33.1 | Volts | 30.0 | Pass | 37.0 | Pass | |
| Inrush E | 0.061 | W-s | 0.000 | Pass | 0.350 | Pass | |
| Average-Over-Pairs Type-1 Grant | | | | | | | |
| Pclass_PD_1 | 1.41 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_1 | 2.06 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_1 | 43.0 | mA | 10.0 | Pass | 300.0 | Pass | |
| MPS_Load_1 | 24.5 | mA | 10.0 | Pass | 270.8 | Pass | |
| Average_Load_1 | 29.4 | mA | 2.3 | Pass | 270.8 | Pass | |
| Average-Over-Pairs Type-2 Grant | | | | | | | |
| I_Mark | 0.5 | mA | 0.0 | Pass | 4.0 | Pass | |
| Pclass_PD_2 | 1.47 | Watts | 0.00 | Pass | 13.00 | Pass | |
| Ppeak_PD_2 | 2.23 | Watts | 0.00 | Pass | 14.40 | Pass | |
| P_type-1 | 0.16 | Watts | 0.00 | Pass | 14.40 | Pass | |
| Max_Load_2 | 41.6 | mA | 10.0 | Pass | 266.7 | Pass | |
| MPS_Load_2 | 23.6 | mA | 10.0 | Pass | 240.7 | Pass | |
| Average_Load_2 | 27.3 | mA | 2.3 | Pass | 240.7 | Pass | |

可靠性测试

| 测试项 | 测试条件 | 样本数 | 标准 | 结果 |
|--------|---|-----|-------------|------|
| HTOL | Ta=125°C, Vcc=53V, 1000 Hrs | 77 | JESD22-A108 | PASS |
| HTST | Ta=150°C, 1000h | 45 | JESD22-A103 | PASS |
| 防潮等级L3 | Bake: 125°C, 24h; Soak: 30°C, 60%RH, 192; Reflow: 260°C, 3times | 231 | JESD22-A113 | PASS |
| TCT | -65°C ~ 150°C; Dwell=15min; 500/1000Cycles | 77 | JESD22-A104 | PASS |
| PCT | 121°C, 100%RH, 205 kPa, 96/168h | 77 | JESD22-A102 | PASS |
| uHAST | 130°C, 85%RH, 96h | 77 | JESD22-A118 | PASS |

Demo板浪涌测试

| Case | 模式 | 浪涌电压 | 结果 |
|------|----|------|-------------------------------|
| 1 | 差模 | ±1KV | All Pass——功能、性能关键参数测试前后均无异常变化 |
| 2 | 共模 | 2KV | All Pass——功能、性能关键参数测试前后均无异常变化 |

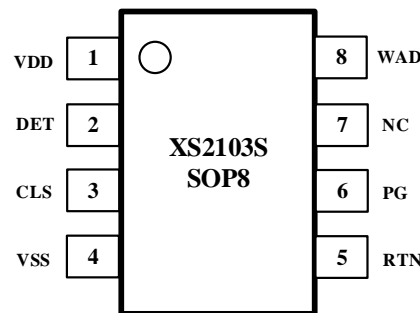
ESD测试

| 模式 | Reference | Minimum Pass Level | 结果 |
|-----|------------------------------|--------------------|-------------------------------|
| CDM | ESDA/JEDEC JS-002-2018 | ±1000V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| HBM | MIL-STD-883K / Method 3015.9 | ±2500V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| LU | JESD78E | ±200mA +85V | All Pass——功能、性能关键参数测试前后均无异常变化 |

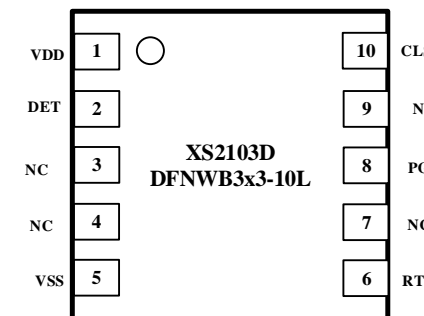
芯片特性

- 兼容于IEEE 802.3 at/af
- 2级事件分级
- 简易的墙上适配器接口
- 0至4级PoE分级
- 100V绝对最大额定输入
- 150mA最大浪涌电流限制
- 正常工作期间电流限制880mA
- 电流限制和折返式保护
- 32V UVLO
- 过热保护
- DFN10与SOP8两种封装
- 广泛应用于无线AP、IP电话、IP摄像机等

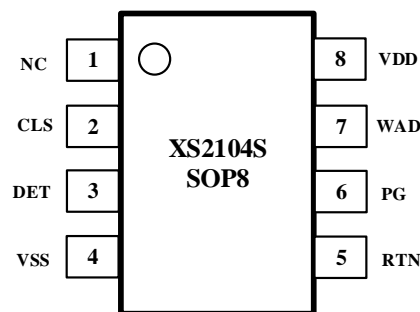
封装



XS2103S-SOP8



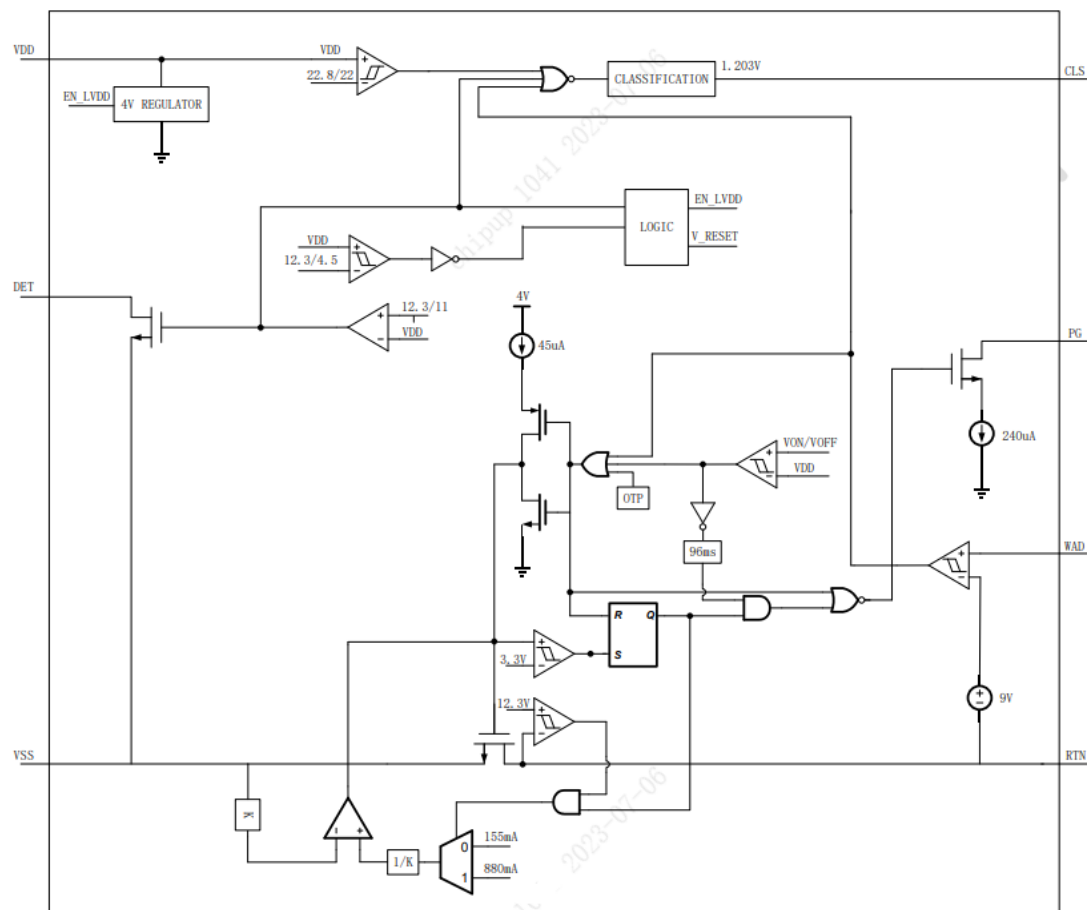
XS2103D-DFN10



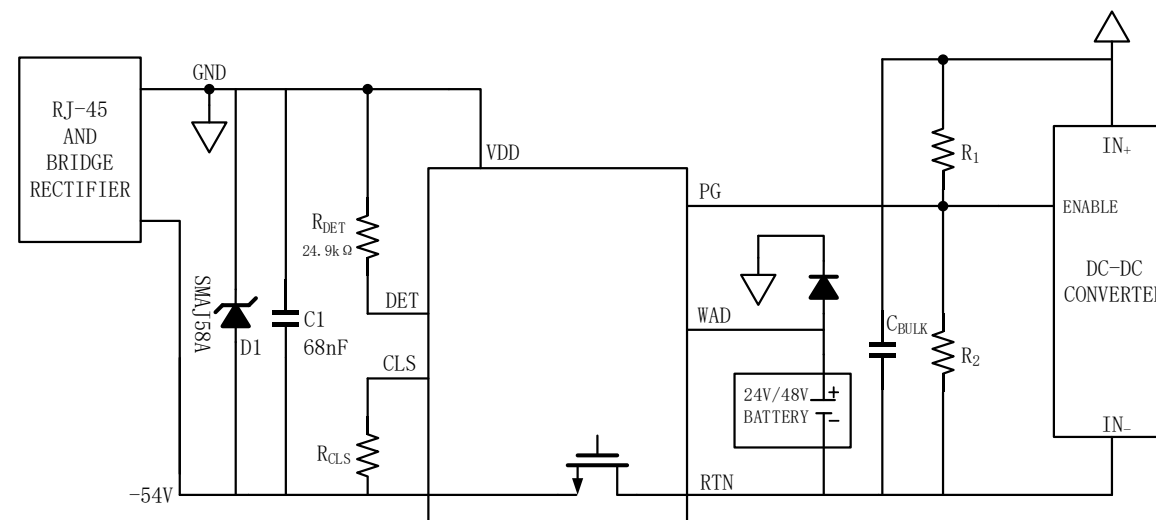
XS2104S-SOP8
兼容XX4924



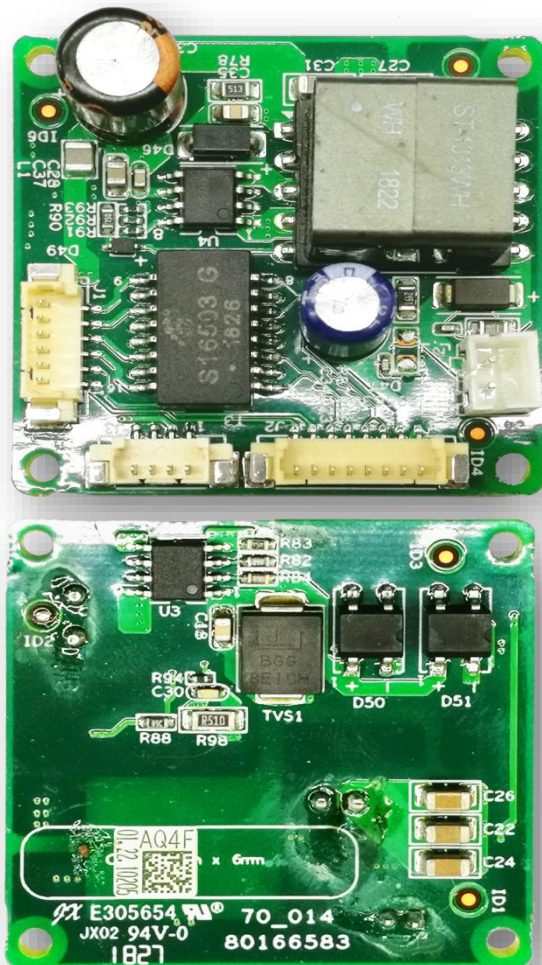
功能框图



典型应用方案



评估板



Sifos IEEE 802.3 at 实测

| PDA-600 AT TEST REPORT | | | | | | | | | |
|---|----------|---------------------------|--------|-----------------------|---------|-------------------------|-----------|--------------------|--|
| 5/24/2023 2:32 PM | | Coverage: ALTA MIX Type-1 | | Software Ver: 2.3.0.2 | | Sifos Technologies | | | |
| Product Tested: | | Cycles: | | Color Key: | | Type-2 PHY | | SDA Firmware: 2.03 | |
| UNDEFINED | | 1 | | PASS FAIL WARN INFO | | Type-2 LLDP | | Report Ver: 2.10 | |
| | | | | | | Serial Number: 604A0158 | | | |
| 9 Detection & Classification | | | | | | | | | |
| PSE Emulation: Pairs: A Polarity: MDI Det_Cycles: 3 | | | | | | | | | |
| Parameter | Cycle: 1 | Units | Min. | Max. | Average | Low Lim. | High Lim. | P/F | |
| Rdet | 25.00 | kohm | 25.00 | 25.00 | 25.00 | 23.70 | 26.30 | P | |
| Rdet_final | 25.02 | kohm | 25.02 | 25.02 | 25.02 | 23.70 | 26.30 | P | |
| Rdet_unpwr | >99.00 | kohm | 99.00 | 99.00 | 99.00 | <12.00 | >45.00 | P | |
| Rdet_at_Vmin | 24.96 | kohm | 24.96 | 24.96 | 24.96 | 23.70 | 26.30 | P | |
| Rdet_at_Vmax | 24.88 | kohm | 24.88 | 24.88 | 24.88 | 23.70 | 26.30 | P | |
| Rdet_Voffset | 1.1 | VDC | 1.1 | 1.1 | 1.1 | 0.0 | 1.9 | P | |
| Cdet | 0.07 | uF | 0.07 | 0.07 | 0.07 | 0.05 | 0.12 | P | |
| Cdet_final | 0.07 | uF | 0.07 | 0.07 | 0.07 | 0.05 | 0.12 | P | |
| 1 Event Classification | | | | | | | | | |
| Iclass | 38.9 | mA | 38.9 | 38.9 | 38.9 | 36.0 | 44.0 | P | |
| ClassNum | 4 | | 4 | 4 | | 0 | 4 | P | |
| Tclass | 0.0005 | sec | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0050 | P | |
| ClassStability | 1 | | | | | 1 | 1 | P | |
| Iclass_at_Vmin | 38.6 | mA | 38.6 | 38.6 | 38.6 | 36.0 | 44.0 | P | |
| Iclass_at_Vmax | 38.6 | mA | 38.6 | 38.6 | 38.6 | 36.0 | 44.0 | P | |
| 2 Event Classification | | | | | | | | | |
| Iclass_event1 | 38.9 | mA | 38.9 | 38.9 | 38.9 | 36.0 | 44.0 | P | |
| Iclass_event2 | 38.9 | mA | 38.9 | 38.9 | 38.9 | 36.0 | 44.0 | P | |
| MarkI | 0.42 | mA | 0.42 | 0.42 | 0.42 | 0.25 | 4.00 | P | |
| ClassNum2 | 4 | | 4 | 4 | | 0 | 4 | P | |
| Iclass_event1 | 0.0005 | sec | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0050 | P | |
| Iclass_event2 | 0.0005 | sec | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0050 | P | |
| ClassStability_event1 | 1 | | | | | 1 | 1 | P | |
| ClassStability_event2 | 1 | | | | | 1 | 1 | P | |
| 35 Power-Up / Down | | | | | | | | | |
| Parameter | Cycle: 1 | Units | Min. | Max. | Average | Low Lim. | High Lim. | P/F | |
| Inrush1 | -1.0 | mA | -1.0 | -1.0 | -1.0 | 0.0 | 400.0 | NA | |
| Inrush2 | 186.6 | mA | 186.6 | 186.6 | 186.6 | 0.0 | 400.0 | P | |
| IlimMinViolation | 0 | | 0 | 0 | 0 | 0 | 0 | P | |
| PmaxTdelay | 0.1 | W | 0.1 | 0.1 | 0.1 | 0.0 | 14.4 | P | |
| Inrush delayed | 0 | | 0 | 0 | 0 | 0 | 0 | P | |
| Von | 40.0 | VDC | 40.0 | 40.0 | 40.0 | 30.0 | 42.0 | P | |
| Voff | 32.6 | VDC | 32.6 | 32.6 | 32.6 | 30.0 | 42.0 | P | |
| Vhyst | 7.4 | VDC | 7.4 | 7.4 | 7.4 | 2.8 | 12.0 | INFO | |
| BackfeedV | 0.0 | VDC | 0.0 | 0.0 | 0.0 | 0.0 | 2.8 | P | |
| ClassRecover | 0 | | 0 | 0 | 0 | 0 | 0 | P | |
| SigRecoverTime | 0.0 | sec | 0.0 | 0.0 | 0.0 | 0.0 | 30.0 | P | |
| 48 MDI Powered Type-1 | | | | | | | | | |
| PSE Emulation: On Time: 10 sec Off Time: 10 sec Vport: -1.0 | | | | | | | | | |
| Parameter | Cycle: 1 | Units | Min. | Max. | Average | Low Lim. | High Lim. | P/F | |
| 50 MDI Powered Type-2 PHY | | | | | | | | | |
| PSE Emulation: On Time: 10 sec Off Time: 10 sec Vport: 54.0 | | | | | | | | | |
| Parameter | Cycle: 1 | Units | Min. | Max. | Average | Low Lim. | High Lim. | P/F | |
| MinI_2 | 1.2 | mA | 1.2 | 1.2 | 1.2 | 0.0 | 523.2 | P | |
| MaxI_2 | 57.2 | mA | 57.2 | 57.2 | 57.2 | 10.0 | 523.2 | P | |
| Vport_2 | 54.1 | VDC | 54.1 | 54.1 | 54.1 | 42.5 | 57.0 | INFO | |
| Ppeak_2 | 3.10 | W | 3.10 | 3.10 | 3.10 | 0.0 | 28.3 | P | |
| Pavg_2 | 0.39 | W | 0.39 | 0.39 | 0.39 | 0.0 | 25.5 | P | |
| MPSViolation_2 | 1 | | 1 | 1 | 1 | 0 | 0 | F | |
| TcutWindowViolation_2 | 0 | | 0 | 0 | 0 | 0 | 0 | P | |
| DutyCycleViolation_2 | 0 | | 0 | 0 | 0 | 0 | 0 | P | |
| 60 MDI Powered Type-2 LLDP | | | | | | | | | |
| PSE Emulation: On Time: -1 sec Off Time: 10 sec Vport: -1.0 | | | | | | | | | |
| Parameter | Cycle: 1 | Units | Min. | Max. | Average | Low Lim. | High Lim. | P/F | |

NOTE: Type-2 testing did not include LLDP, so PD Data Link Layer characteristics were not checked

可靠性测试

| 测试项 | 测试条件 | 样本数 | 标准 | 结果 |
|--------|---|-----|-------------|------|
| HTOL | Ta=125°C, Vcc=53V, 1000 Hrs | 77 | JESD22-A108 | PASS |
| HTST | Ta=150°C, 1000h | 45 | JESD22-A103 | PASS |
| 防潮等级L3 | Bake: 125°C, 24h; Soak: 30°C, 60%RH, 192; Reflow: 260°C, 3times | 231 | JESD22-A113 | PASS |
| TCT | -65°C ~ 150°C; Dwell=15min; 500/1000Cycles | 77 | JESD22-A104 | PASS |
| PCT | 121°C, 100%RH, 205 kPa, 96/168h | 77 | JESD22-A102 | PASS |
| uHAST | 130°C, 85%RH, 96h | 77 | JESD22-A118 | PASS |

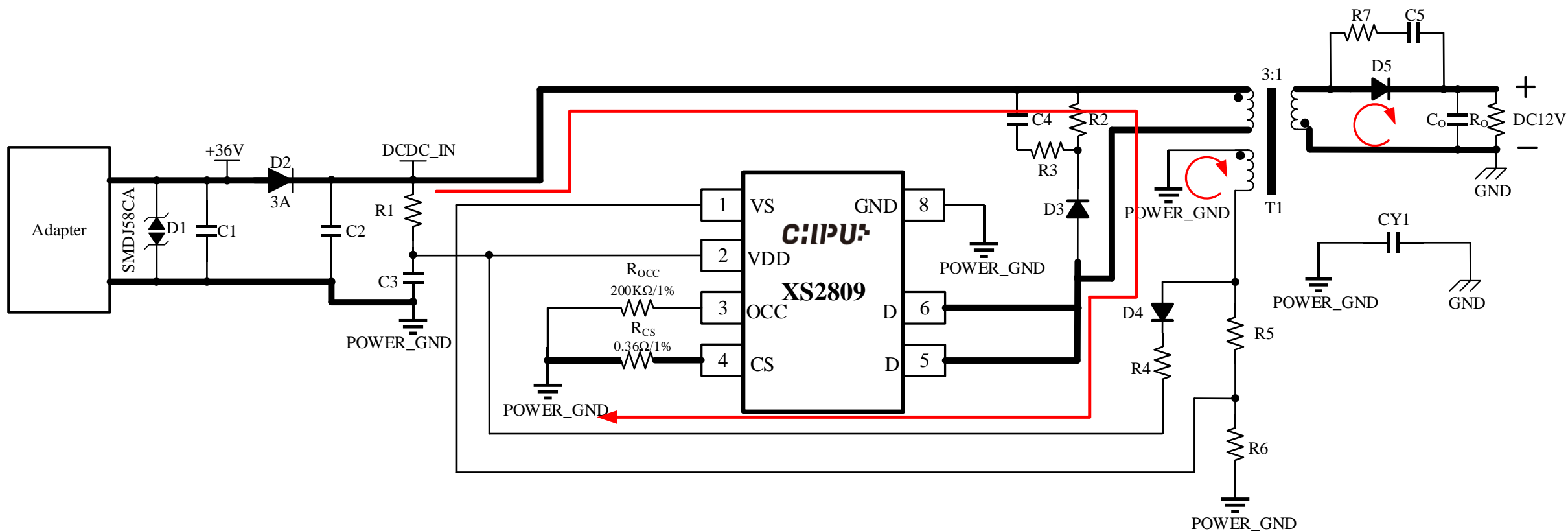
Demo板浪涌测试

| Case | 模式 | 浪涌电压 | 结果 |
|------|----|------|-------------------------------|
| 1 | 差模 | ±1KV | All Pass——功能、性能关键参数测试前后均无异常变化 |
| 2 | 共模 | 2KV | All Pass——功能、性能关键参数测试前后均无异常变化 |

ESD测试

| 模式 | Reference | Minimum Pass Level | 结果 |
|-----|------------------------------|--------------------|-------------------------------|
| CDM | ESDA/JEDEC JS-002-2018 | ±1000V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| HBM | MIL-STD-883K / Method 3015.9 | ±2500V | All Pass——功能、性能关键参数测试前后均无异常变化 |
| LU | JESD78E | ±200mA +85V | All Pass——功能、性能关键参数测试前后均无异常变化 |

典型应用方案



PD控制器特性

- 兼容IEEE 802.3at/af受电设备的完整电源接口
- 集成100V, 0.65Ω/800mA的功率MOS
- 150mA浪涌电流限制
- 墙上供电切换并输出信号指示
- 电流限制和折返式保护
- 过热保护
- 欠压保护

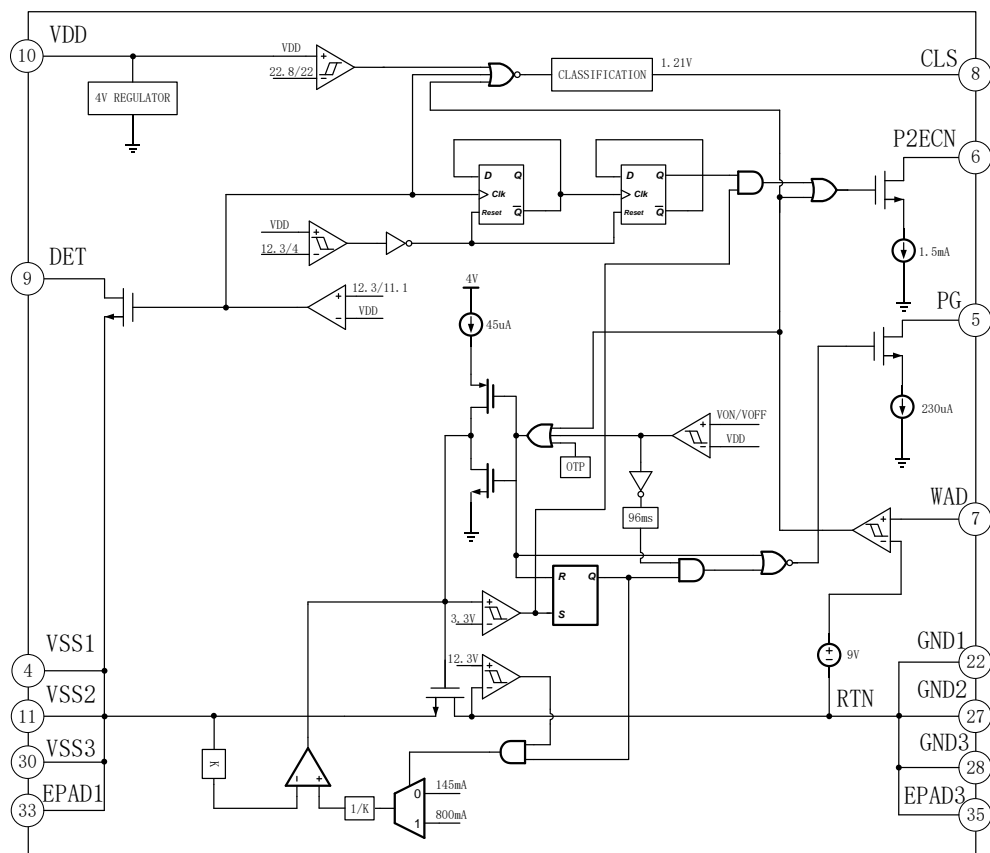
功率MOS特性

- 200V/5A功率MOS

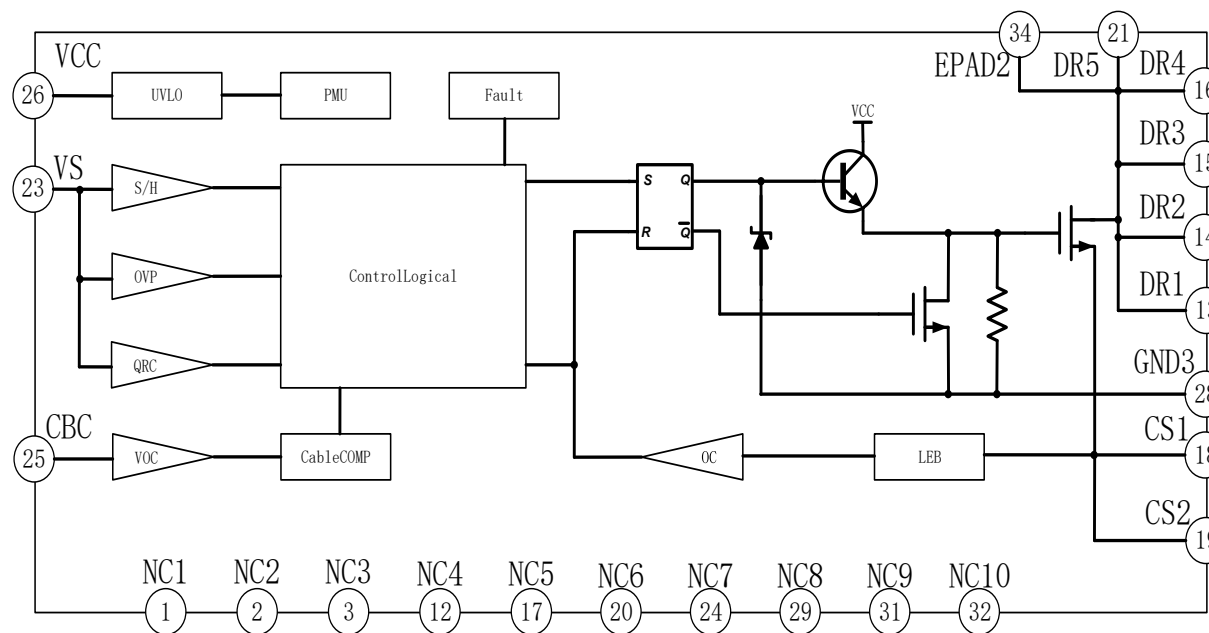
DC/DC控制器特性

- 原边控制模式
- 最高13W的峰值输出功率
- 输出电流精度±3%
- 输出电压精度±2%
- 内置有源周期谐振技术
- 支持输出短路/过压保护, 环路开路保护
- 过温保护
- 低开关损耗的谷底开关技术
- 低频启动特性控制优化启动性能

功能框图



PD控制器部分



DC/DC控制器部分



资料

- 规格书
- 参考设计
- DEMO评估板手册
- 可靠性报告
- Rohs报告



实物

- 芯片样品
- DEMO评估板
- 评估板相关SDK



技术

- 2小时反馈
- 6小时邮件支持
- 72小时现场支持

感谢聆听！