Ideal Diode Controllers





Ideal diode controllers offer a simple low loss replacement to power Schottky diodes in high current applications. Linear Technology's family of high power ideal diodes uses N-channel MOSFETs to perform the function of a low forward voltage diode. This provides a more efficient solution and preserves precious board space by reducing the need for heat sinking. Linear control of the forward voltage drop across the MOSFET ensures smooth current delivery without oscillation, even under light loads. If a power source fails or is shorted, a fast <1µs turn-off minimizes reverse current transients. Ideal diode controllers are ideal for ORing supplies together to provide redundancy in the event of input failure or hard short. Additionally, ideal diodes can be used for output supply holdup during brief interruptions of input power.

LTC4359 Ideal Diode Controller with Reverse Input Protection

- Wide Operating Voltage Range: 4V to 80V, Operates During Cold Crank
- Reverse Voltage Protection to –40V
- On/Off Control of Forward Path
- Low Quiescent Current: 150µA
- Low Shutdown Current: 13µA
- –40°C to 125°C Operation



LTC4354 Negative Voltage Ideal Diode-OR Controller



- Less Than 1µs Turn-Off Time Limits Peak Fault Current
- -4.5V to -80V Operation
- Smooth Switchover without Oscillation
- No Reverse DC Current

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- Fault Output Indicates MOSFET Failure
- Selectable Fault Thresholds

LTC4370 2-Supply Diode-OR Current Balancing Controller

The LTC4370 enables two power supplies to share load current which spreads the heat to increase system reliability. Additional load-sharing benefits include faster recovery after supply failure, and the ability to operate supplies near their peak efficiency point.

12 ±0.3V · Eliminates Need for Active Control of Input Supplies ۱L No Share Bus Required Blocks Reverse Current No Shoot-Through Current During Start-Up or Faults OV to 18V High Side Operation ITC4370 Enable Inputs **CURRENT SHARING** 21 MOSFET On Status Outputs CONTROLLER Dual Ideal Diode Mode 12 ±0.3V . LTC4352 Low Voltage Ideal Diode Controller with Monitoring TO LOAD 2.9V TO 18V -ΙŧΓ OV to 18V Supply ORing or Holdup SOURCE VIN CPO GATE OUT Fast 0.5µs Gate Turn-On and Turn-Off Time Avoids MOSFET ON Load Droop and Reverse DC Current **STATUS** Vcc STATUS Undervoltage and Overvoltage Protection UV Open MOSFET Detect ITC4352 Status and Fault Outputs 0V FAULT ► FAULT Hot Swappable REV GND Reverse Current Enable Input Linear Technology N-Channel Ideal Diodes Function Part Number **ORing Range** Package LTC4354 -4.5V to -80V Dual Ideal Diode with Monitoring 3 × 2 DFN-8, SO-8 LTC4355 9V to 80V Dual Ideal Diode with Supply and Fuse Monitoring 4 × 3 DFN-14, SO-16, MSOP-16 LTC4357 9V to 80V Single Ideal Diode 2 × 3 DFN-6, MSOP-8 LTC4358 9V to 26.5V Single Ideal Diode with Internal 5A FET 4 × 3 DFN-14, TSSOP-16 0V to 18V Single Ideal Diode with Monitoring LTC4352 3 × 3 DFN-12, MSOP-12 LTC4353 OV to 18V Dual Ideal Diode with Enable Inputs 4 × 3 DFN-16, MSOP-16 LTC4370 OV to 18V Two Supply Diode-OR Current Balancing Controller 4 × 3 DFN-16, MSOP-16 Dual Ideal Diode and Single Hot Swap™ Controller LTC4227 2.9V to 18V 4 × 5 QFN-20, SSOP-16

Dual Ideal Diode and Hot Swap Controller

Single Ideal Diode, Reverse Input Protection

4 × 5 QFN-28, SSOP-28

2 × 3 DFN-6, MSOP-8

2.9V to 18V

4V to 80V

LTC4228

LTC4359

LTC4364