Si8457DB Chipscale P-Channel MOSFET With Industry-First On-Resistance of 35 mΩ at 1.8 V, ± 8 V $V_{GS}$ Rating in a 1.6 mm by 1.6 mm Outline

Vishay Intertechnology, Inc. (NYSE: VSH) introduces a new power MOSFET that will help decrease power consumption and extend battery usage in ultraportable electronics. The new chipscale MICRO FOOT® p-channel Si8457DB provides the industry's lowest on-resistance at a 1.8 V gate drive for any MOSFET with a 1.6 mm by 1.6 mm footprint and is the only such device with a $V_{GS} = ± 8$ V rating.

**Product Benefits:**
- Compact MICRO FOOT 1.6 mm by 1.6 mm package with low 0.6 mm profile saves space
- Highly efficient load switch optimizes battery power management
  - TrenchFET® p-channel Gen III technology provides extremely low on-resistance to lower battery power consumption
  - 19 mΩ at −4.5 V, 23.4 mΩ at −2.5 V, and 35 mΩ at −1.8 V
  - Rating at -1.8 V represents a 17 % improvement over next best device in DFN 1.6 mm square package
- Provides flexibility for gate drive designs
  - Working with 1.8 V, 3.3 V, and 5 V rails
  - $± 8$ V $V_{GS}$ provides an extra margin of safety in lithium ion battery-powered applications
- RoHS-compliant and halogen free

**Market Applications:**
- Battery switch and load switch in power management applications for ultraportable devices, including smartphones, tablets, wearable devices, and high-end notebook computers
The Key Specifications:
- Drain-source voltage: -12 V
- Gate-source voltage: ±8 V
- Maximum on-resistance:
  - 19 mΩ at −4.5 V
  - 23.4 mΩ at −2.5 V
  - 35 mΩ at −1.8 V

A Typical Load Switch Application Diagram for Si8457DB:

The Perspective:

The Si8457DB achieves its industry-first capabilities thanks to its extremely low on-resistance per area, which enables space savings while also helping to lower battery power consumption for mobile applications. The device’s low on-resistance means a very low voltage drop at DC and pulse peak currents, so less power is wasted as heat. The device’s on-resistance rating at −1.8 V simplifies the task of meeting design requirements such as accommodating low battery conditions or when the IC load brings down the gate-to-source voltage. Together, the device’s low on-resistance, ratings down to -1.8 V, and ±8 V VGS provide a combination of safety margin, gate drive design flexibility, and high performance for most lithium ion battery-powered applications.

The Si8457DB is a crucial building block in an efficient load switch for mobile power management. As a p-channel MOSFET it has the advantage of being able to switch on with no requirement for a charge pump in the circuit design, and it can work directly with numerous power management and controller ICs from various suppliers.

Availability: Samples and production quantities of the Si8457DB are available now, with lead times of 13 weeks for larger orders.

To access the product datasheet on the Vishay Web site, go to http://www.vishay.com/ppg?64267 (Si8457DB)

Contact:

The Americas
Vishay Americas
LVM_Americas@vishay.com

Europe
Vishay Electronic GmbH
LVM_Europe@vishay.com

Asia
Vishay Intertechnology Asia Pte Ltd.
LVM_Asia@vishay.com