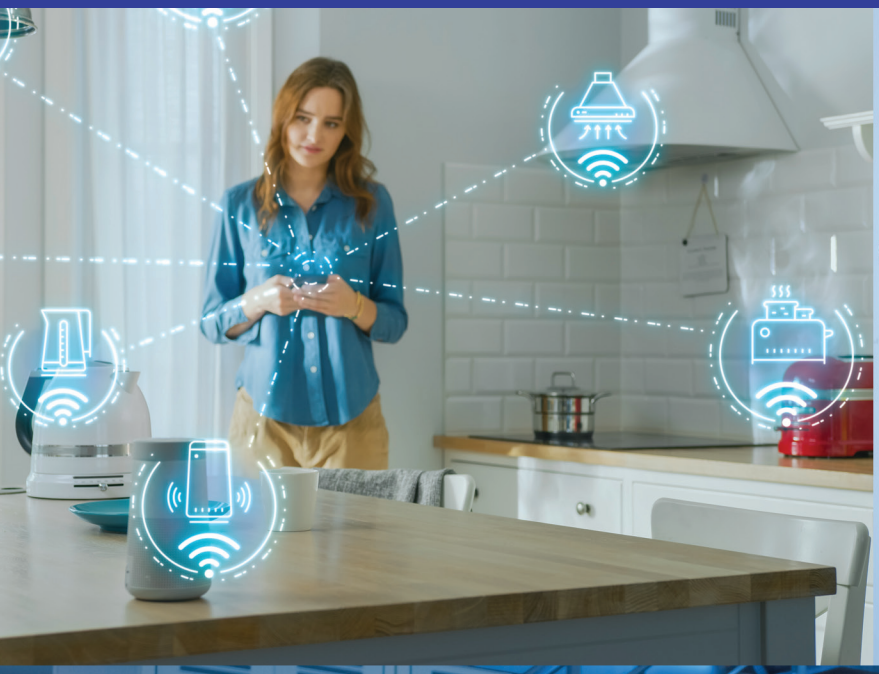
GreenFET

Product Selection Guide



renesas.com/loadswitches

GreenFET
ULTRA-LOW RDS_{ON} LOAD SWITCH SELECTION GUIDE

Renesas' GreenFET family of high-performance load switches are designed and optimized for all high-side power rail control applications from 0.25 V to 5.5 V where the load currents range from 1 A to 9 A. Using Renesas' proprietary MOSFET design, all GreenFET load switches achieve ultra-stable RDS_{ON} across wide input and supply voltage ranges. Combining Renesas' proprietary MOSFET IP and advanced assembly techniques, these advanced state-of-the-art products are available in ultra-small pcb footprints from 0.56 mm^2 to 4 mm^2 and exhibit low thermal resistances for high-current operation.

Compared to discrete GreenFET circuit implementations, Renesas' GreenFET products combine high-performance nFET or pFET structures, high-current handling capability, charge pumps, as well as multiple protection and control circuits into space-efficient single and dual channel products. The combination of all these advanced features directly results in BOM (bill-of-material) component and cost reductions as well as increasing system reliability and reduced board size.

All of Renesas' GreenFET low-voltage load switches are designed and fully characterized over the commercial (0 °C to 70 °C), extended commercial (-20 °C to 70 °C), industrial (-40 °C to 85 °C), or extended industrial (-40 °C to 125 °C) temperature range. Consistent with generating very low thermal gradients, Renesas integrated power control switches are available in low thermal resistance, STDFN/STQFN RoHS-compliant packaging or wafer-level chip scale packaging (WLCSP).

Key features in the GreenFET family of high-performance load switches products include:

- High-performance Low RDS_{ON} nFET & pFET MOSFETs
- From as low as 4 mΩ
- Internal protection features:
  - Built-in supply undervoltage lockout protection
  - Fixed and capacitor/resistor-adjustable inrush current control
  - Fixed and resistor-adjustable current limit protection
  - Built-in short-circuit current protection
  - Built-in thermal shutdown protection with auto restart
  - Reverse-current blocking using bulk wwitch or back-to-back FETs
  - Reverse-voltage detection (selected part numbers)
  - Fast V_{OUT} discharge (V_{OUT} discharge delete options available)
- Active HIGH ON-OFF control (Active-LOW ON-OFF control available)
- Open-drain signaling (selected part numbers)
- Open-drain power good signaling (selected part numbers)
- Wafer-level chip-scale packaging (selected part numbers)
- UL2367 certified (selected part numbers)

Applications:

- Smartphones and fitness bands
- Notebook and tablet PCs
- Enterprise networking
- Enterprise multifunction copiers/printers
- Enterprise computing
- Set-top boxes
- HDDs and SSDs
- PCIe/PCI adapter cards
- Portable consumer electronics
- General-purpose, high-side power-rail switching/control

Single N-Channel Load Switches

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	VD/VIN Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M1717V	4 mm^2 load switch with charge pump, ramp control, output discharge, protection, and PG signal output	5	4	0	VDD	2.5 – 5.5	Capacitor	UVLO, ACL(R), SCL, TSD	No	PG	Yes	-40 to +85	STQFN-16 (1.6 x 2.5)
SLG59M1709V	4 mm^2 load switch with charge pump, ramp control, and protection	4	4	0	VDD	2.5 – 5.5	Capacitor	UVLO, ACL, SCL, TSD	No	No	No	-40 to +85	STQFN-16 (1.6 x 2.5)
SLG59M1713V	4 mm^2 load switch with charge pump, ramp control, output discharge, and protection	2	4	0	VDD	2.5 – 5.5	Capacitor	UVLO, ACL, SCL, TSD	No	No	Yes	-40 to +85	STQFN-16 (1.6 x 2.5)
SLG59M1568V	3 mm^2 load switch with charge pump, ramp control, output discharge, and protection	9	7	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1456V	3 mm^2 load switch with charge pump, ramp control, output discharge, and protection	5	8	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-20 to +70	TDFN-8 (1.5 x 2.0)
SLG59M1457V	3 mm^2 load switch with charge pump, output discharge, and protection	6	8	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M1496V	3 mm^2 load switch with charge pump, ramp control, output discharge, and protection	5	8	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M1600V	3 mm^2 load switch with reverse-current blocking, charge pump, ramp control, output discharge, and protection	9	8	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1655V	3 mm^2 load switch with reverse-current blocking, charge pump, ramp control and protection	9	8	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	No	-40 to +85	STDFN-14 (1.0 x 3.0)

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Single N-Channel Load Switches (continued)

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M301V	3 mm² load switch with charge pump, ramp control, output discharge, and protection	4	9	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M307V	3 mm² load switch with charge pump, ramp control, and output discharge	4	8	0	VDD	1.5 – 5.5	Capacitor	No	No	No	Yes	-20 to +85	TDFN-8 (1.5 x 2.0)
SLG59M308V	3 mm² load switch with charge pump, ramp control, output discharge, and protection	3	8	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +70	TDFN-8 (1.5 x 2.0)
SLG59M309V	3 mm² load switch with charge pump, ramp control, and protection	4	8	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	No	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M1657V	3 mm² load switch with charge pump, ramp control, and protection	4	8	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	No	-40 to +125	TDFN-8 (1.5 x 2.0)
SLG59M1614V	3 mm² load switch with charge pump, ramp control, and output discharge	4	9	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M1470V	3 mm² fast turn on, nano-power current consumption load switch	6	10	0	VDD – 1.5 V	3.0 – 5.25	No	No	No	No	Yes	-40 to +85	TDFN-9 (1.5 x 2.0)
SLG59M1685C	0.82 mm² load switch with charge pump, ramp control, output discharge, and protection	2	10	1	4	–	Internally Fixed	UVLO, ACL, SCL, TSD	No	No	Yes	-40 to +85	WLCSP-6L (0.71 x 1.16)
SLG59M1707V	4 mm² load switch with charge pump, I_{DS} current monitor output, output discharge, and protection	4	13	0	VDD	2.5 – 5.5	Internally Fixed	UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +125	STQFN-16 (1.6 x 2.5)
SLG59M1571V	1 mm² low-voltage load switch with reverse-current blocking, charge pump, output discharge, protection, and 4-pin package	1	15	0	2	–	No	TSD, RCB	No	No	Yes	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1714V	4 mm² load switch with reverse-current blocking, charge pump, I_{DS} current monitor output, output discharge, and protection	4	15	0	VDD	2.5 – 5.5	Internally Fixed	UVLO, ACL(R), SCL, TSD, RCB	Yes	FAULT	Yes	-40 to +85	STQFN-16 (1.6 x 2.5)
SLG59M1551V	1 mm² low voltage load switch with charge pump, output discharge, protection, and 4-pin package	2	16	0	2	–	No	TSD	No	No	Yes	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1556V	1 mm² low voltage load switch with charge pump, protection, and 4-pin package	2	16	0	2	–	No	TSD	No	No	No	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1658V	1.6 mm² load switch with charge pump, ramp control, output discharge, and protection	3	17	0	VDD	2.5 – 5.5	Capacitor	UVLO, ACL, SCL, TSD	No	No	Yes	-40 to +125	STDFN-8 (1.0 x 1.6)
SLG59M1448V	1.6 mm² load switch with charge pump, ramp control, output discharge, and protection	3	17	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	STDFN-8 (1.0 x 1.6)
SLG59M1545V	1.6 mm² load switch with charge pump, ramp control, and protection	3	17	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	No	-20 to +70	STDFN-8 (1.0 x 1.6)
SLG59M1598V	1.6 mm² load switch with charge pump, ramp control, output discharge, and protection	3	17	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	STDFN-8 (1.0 x 1.6)
SLG59M1746C	0.82 mm² load switch with output discharge	1	18	0	2	2.7 – 3.6	Internally Fixed	No	No	No	Yes	-40 to +85	WLCSP-6L (0.71 x 1.16)
SLG59M1515V	1.6 mm² fast turn on load switch with ramp control, and output discharge	2	20	0	VDD – 1.5 V	2.5 – 5.5	Capacitor	TSD	No	No	Yes	-40 to +85	STDFN-8 (1.0 x 1.6)
SLG59M610V	3 mm² load switch with reverse-current blocking, charge pump, ramp control, output discharge, and protection	4	22	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD, RCB	No	No	Yes	-40 to +85	TDFN-8 (1.5 x 2.0)

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Single N-Channel Load Switches (continued)

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M611V	3 mm² load switch with reverse-current blocking, charge pump, ramp control, and protection	4	22	1	V_{DD}	2.5 – 5.5	Capacitor	ACL, SCL, TSD, RCB	No	No	No	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M1563V	1.6 mm² load switch with reverse-current blocking, charge pump, and PG signal output	3	23	1	V_{DD}	1.5 – 5.5	Internally Fixed	TSD, RCB	No	PG	No	-40 to +85	STDFN-8 (1.0 x 1.6)
SLG59M1460V	1.6 mm² fast turn on and nano-power current consumption load switch	2	30	0	V_{DD} - 1.5 V	2.5 – 5.25	No	No	No	No	Yes	-20 to +70	STDFN-8 (1.0 x 1.6)
SLG59M1440V	1 mm² load switch with charge pump, ramp control, output discharge, protection, and 4-pin package	1	40	3	6	–	Resistor	TSD	No	No	Yes	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1495V	1 mm² load switch with charge pump, ramp control, output discharge, protection, and 4-pin package	1	80	3	6	–	Resistor	TSD	No	No	Yes	-20 to +70	STDFN-4 (1.0 x 1.0)
SLG59M1780V	4 mm² load switch with charge pump, ramp control, output discharge, and protection	4	4	0	VDD	2.5 – 5.5	Capacitor	UVLO, ACL, SCL, TSD	No	No	Yes	-40 to +85	STQFN-16 (1.6 x 2.5)

Single P-Channel Load Switches

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M1649V	1.6 mm² load switch with reverse-current blocking, reverse-voltage detection, and output discharge	4	23	2	6	–	No	UVLO, RCB, RVD	No	FAULT	Yes	-40 to +85	STDFN 8 (1.0 x 1.6)
SLG59M1557V	1 mm² load switch with output discharge	1	29	2	6	–	Internally Fixed	No	No	No	Yes	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1558V	1 mm² load switch without output discharge	1	29	2	6	–	Internally Fixed	No	No	No	No	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1736C	0.64 mm² load switch with controlled inrush current, and output discharge	2	33	3	6	–	No	Fixed ICL	No	No	Yes	-40 to +85	WLCSP-4 (0.8 x 0.8)
SLG59M1730C	0.64 mm² load switch with controlled inrush current, and output discharge	1	33	3	6	–	No	Fixed ICL	No	No	Yes	-40 to +85	WLCSP-4 (0.8 x 0.8)
SLG59M1748C	0.64 mm² load switch with reverse-current blocking, reverse-voltage detection, and ramp control	2	36	2	5	–	Internally Fixed	RCB, RVD	No	No	No	-40 to +85	WLCSP-4 (0.8 x 0.8)

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ULTRA-LOW RDS_{ON} LOAD SWITCH SELECTION GUIDE

Dual N-Channel Load Switches

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M1804V	3 mm² UL2367-certified, dual-channel load switch with charge pump, ramp control, output discharge, and protection	5	15	0	VDD	2.5 – 5.0	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1527V	3 mm² dual-channel load switch with charge pump, ramp control, output discharge, and protection	5	15	0	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1603V	3 mm² dual-channel load switch with reverse-current blocking, charge pump, ramp control, output discharge, and protection	5	16	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1606V	3 mm² dual-channel load switch with reverse-current blocking, charge pump, ramp control, and protection	5	16	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	No	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1446V	1 mm² load switch with charge pump, ramp control, output discharge, and 4-pin package	1	40	0	VDD	2.5 – 5.5	Resistor	TSD	No	No	Yes	-40 to +85	STDFN 8 (1.0 x 1.6)
SLG59M1599V	1.6 mm² dual-channel load switch with charge pump, ramp control, and protection	1	40	0	VDD	2.5 – 5.5	Resistor	TSD	No	No	No	-40 to +85	STDFN 8 (1.0 x 1.6)
SLG59M1512V	1.6 mm² dual-channel load switch with charge pump, ramp control, output discharge, and protection	1	80	0	VDD	2.5 – 5.5	Resistor	TSD	No	No	Yes	-40 to +85	STDFN 8 (1.0 x 1.6)

Dual P-Channel Load Switches

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M1639V	1.6 mm² dual-channel load switch with reverse-current blocking, reverse-voltage detection, and active high ON-OFF control	2	45	2	6	–	No	UVLO, RCB, RVD	No	No	No	-40 to +85	STDFN 8 (1.0 x 1.6)
SLG59M1641V	1.6 mm² dual-channel load switch with reverse-current blocking, reverse-voltage detection, and active low ON-OFF control	2	45	2	6	–	No	UVLO, RCB, RVD	No	No	No	-40 to +85	STDFN 8 (1.0 x 1.6)

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ULTRA-LOW RDS_{ON} LOAD SWITCH SELECTION GUIDE

Reverse-Current Blocking Load Switches

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59M1600V	3 mm² load switch with reverse-current blocking, charge pump, ramp control, output discharge, and protection	9	8	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1655V	3 mm² load switch with reverse-current blocking, charge pump, ramp control and protection	9	8	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	No	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1571V	1 mm² low-voltage load switch with reverse-current blocking, charge pump, output discharge, protection, and 4-pin package	1	15	0	2	–	No	TSD, RCB	No	No	Yes	-40 to +85	STDFN-4 (1.0 x 1.0)
SLG59M1714V	4 mm² load switch with reverse-current blocking, charge pump, I_{DS} current monitor output, output discharge, and protection	4	15	0	VDD	2.5 – 5.5	Internally Fixed	UVLO, ACL(R), SCL, TSD, RCB	Yes	FAULT	Yes	-40 to +85	STQFN-16 (1.6 x 2.5)
SLG59M1603V	3 mm² dual-channel load switch with reverse-current blocking, charge pump, ramp control, output discharge, and protection	5	16	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	Yes	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M1606V	3 mm² dual-channel load switch with reverse-current blocking, charge pump, ramp control, and protection	5	16	0	VDD	2.5 – 5.5	Capacitor	TSD, RCB	No	No	No	-40 to +85	STDFN-14 (1.0 x 3.0)
SLG59M610V	3 mm² load switch with reverse-current blocking, charge pump, ramp control, output discharge, and protection	4	22	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD, RCB	No	No	Yes	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M611V	3 mm² load switch with reverse-current blocking, charge pump, ramp control, and protection	4	22	1	VDD	2.5 – 5.5	Capacitor	ACL, SCL, TSD, RCB	No	No	No	-40 to +85	TDFN-8 (1.5 x 2.0)
SLG59M1563V	1.6 mm² load switch with reverse-current blocking, charge pump, and PG signal output	3	23	1	VDD	1.5 – 5.5	Internally Fixed	TSD, RCB	No	PG	No	-40 to +85	STDFN-8 (1.0 x 1.6)
SLG59M1649V	1.6 mm² load switch with reverse-current blocking, reverse-voltage detection, and output discharge	4	23	2	6	–	No	UVLO, RCB, RVD	No	FAULT	Yes	-40 to +85	STDFN 8 (1.0 x 1.6)
SLG59M1748C	0.64 mm² load switch with reverse-current blocking, reverse-voltage detection, and ramp control	2	36	2	5	–	Internally Fixed	RCB, RVD	No	No	No	-40 to +85	WLCSP-4 (0.8 x 0.8)
SLG59M1639V	1.6 mm² dual-channel load switch with reverse-current blocking, reverse-voltage detection, and active high ON-OFF control	2	45	2	6	–	No	UVLO, RCB, RVD	No	No	No	-40 to +85	STDFN 8 (1.0 x 1.6)
SLG59M1641V	1.6 mm² dual-channel load switch with reverse-current blocking, reverse-voltage detection, and active low ON-OFF control	2	45	2	6	–	No	UVLO, RCB, RVD	No	No	No	-40 to +85	STDFN 8 (1.0 x 1.6)

* Notes (Please consult product specifications for additional information):

1. ACL - Internally Fixed Active Current Limit
2. ACL(R) - External resistor-adjustable Active Current Limit
3. SCL - Internally Fixed Short-circuit Current Limit
4. Fixed ICL – Internally Fixed Inrush Current Limit
5. RVD – Reverse-voltage Detection
6. RCB – Reverse-current Blocking
7. TSD – Overtemperature protection (Thermal Shutdown)
8. UVLO – Undervoltage Protection
9. OVLO – Overvoltage protection
10. TVS – Internal Transient Voltage Suppressor

HIGH VOLTAGE GreenFET

HIGH VOLTAGE, HIGH CURRENT, ULTRA LOW RDS_{ON} LOAD SWITCHES SELECTION GUIDE

Renesas' family of high-performance load switches include high-voltage capability for all high-side, 4.5 V to 25.2 V power rail applications up to 6 A. Using Renesas' proprietary MOSFET design, this new family of power control switches achieves ultra-stable and low RDS_{ON} across a wide input voltage range. Combining Renesas' proprietary MOSFET IP and advanced assembly techniques, these products are available in very pcb space-efficient footprints and exhibit low thermal resistance for high-current operation. Compared to discrete FETs currently used in high-voltage applications, Renesas' High Voltage GreenFET products combine high-performance nFET structures, charge pumps, multiple protection, and control circuits into feature-rich products. For products rated to operate over the industrial (-40 °C to 85 °C) or extended industrial temperature (-40 °C to 125 °C) range, these high-voltage load switches are available in low thermal resistance, RoHS-compliant packaging or wafer level chip scale packaging (WLCSP).

Featured Products

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59H1302C	5.04 mm² surge-protected, 28V tolerant USB Type C Power Splitter/Switch with charge pump, LDO and PG signal output	OUT: 6 SYS: 6	OUT: 12 SYS: 24	3	13	–	No	OVLO, UVLO, TVS, SYS: RCB	No	OUT: no SYS: PG	No	-40 to +85	WLCSP-28 (2.98 x 1.69)
SLG59H1313C	2.34 mm² surge-protected, 29V tolerant nFET load switch with Internal 100V TVS and Adjustable OVP in WLCSP	5	23	3	20	–	No	OVLO, ACL, SCL, TSD, TVS	No	PG	No	-40 to +85	WLCSP-12 (1.3 x 1.8)
SLG59H1341C	1.46 mm² load switch with V_{IN} undervoltage protection, V_{OUT} overvoltage protection, reverse-current blocking, reverse-voltage detection, and FLT Output	1.3	70	2.5	5.5	–	No	OVLO, UVLO, RCB, RVD, ACL(R), TSD	No	FLT	No	-40 to +85	WLCSP-9 (1.21 x 1.21)
SLG59H1342C	1.46 mm² load switch with V_{IN} undervoltage and overvoltage protection, reverse-current blocking, reverse-voltage detection, and FLT Output	1.5	70	2.7	5.5	–	No	OVLO, UVLO, RCB, RVD, ACL(R), TSD	No	FLT	No	-40 to +85	WLCSP-9 (1.21 x 1.21)
SLG59H1401C	3.15 mm² power multiplexer with $V_{IN[1,2]}$ undervoltage protection, resistor-adjustable overvoltage protection, true reverse-current blocking, and channel status indication	3	52	3	6	–	Capacitor	OVLO, UVLO, RCB, RVD, ACL(R), SCL, TSD	No	No	No	-40 to +85	WLCSP-20 (1.585 x 1.985)
SLG59H1403C	3.15 mm² power multiplexer with $V_{IN[1,2]}$ undervoltage protection, resistor-adjustable overvoltage protection, true reverse-current blocking, and channel status indication	3	52	3	22	–	Capacitor	OVLO, UVLO, RCB, RVD, ACL(R), SCL, TSD	No	No	No	-40 to +85	WLCSP-20 (1.585 x 1.985)
SLG59H1405V	5 mm² power multiplexer with $V_{IN[1,2]}$ undervoltage and overvoltage protection, Channel 1 true reverse-current blocking, and FLAG Output	Channel 1: 3 Channel 2: 1.25	Channel 1: 40 Channel 2: 67	4	Channel 1: 5.5 Channel 2: 13.2	–	Internally Fixed	OVLO, UVLO, RCB, RVD, ACL(R), SCL, TSD	No	FLAG	Yes	-20 to +85	FC-QFN-12 (2.0 x 2.5)

* Notes (Please consult product specifications for additional information):

1. ACL - Internally Fixed Active Current Limit
2. ACL(R) - External resistor-adjustable Active Current Limit
3. SCL - Internally Fixed Short-circuit Current Limit
4. Fixed ICL – Internally Fixed Inrush Current Limit
5. RVD – Reverse-voltage Detection
6. RCB – Reverse-current Blocking
7. TSD – Overtemperature protection (Thermal Shutdown)
8. UVLO – Undervoltage Protection
9. OVLO – Overvoltage protection
10. TVS – Internal Transient Voltage Suppressor

For Applications up to 13.2 V

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59H1127V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and Power Good Output	4	15	5	13	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	No	PG, FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1120V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and DS current monitor output	5	18	5	13	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1126V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	6	18	5	13	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)

HIGH VOLTAGE GreenFET

HIGH VOLTAGE, HIGH CURRENT, ULTRA LOW RDS_{ON} LOAD SWITCHES SELECTION GUIDE

For Applications up to 25.2 V

Part Number	Description	Max I_{DS} (A)	RDS_{ON} (mΩ)	V_D/V_{IN} Min (V)	V_D/V_{IN} Max (V)	Power Supply (V_{DD}) Voltage Range (V)	Output Voltage Slew Rate set by	Protection Features*	Current Monitor Output	Power Good, FAULT indicator	Output Discharge Circuit	Operating Temperature Range, (°C)	Package Size (mm)
SLG59H1013V	4.8 mm² load switch with pin-selectable VIN lockout protection, internal 5W nFET SOA protection, and I_{DS} current monitor output for enterprise printer/copier applications	4	13	11	25	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +125	STQFN-18 (1.6 x 3.0)
SLG59H1017V	4.8 mm² load switch with pin-selectable VIN lockout protection, internal 10W nFET SOA protection, and I_{DS} current monitor output for enterprise printer/copier applications	4	13	11	25	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1008V	4.8 mm² load switch with pin-selectable VIN lockout protection, internal 5W nFET SOA protection, and I_{DS} current monitor output for enterprise printer/copier applications	4	13	11	25	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1010V	4.8 mm² load switch with pin-selectable VIN lockout protection, internal 5W nFET SOA protection, and I_{DS} current monitor output for enterprise printer/copier applications	5	13	11	25	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1019V	4.8 mm² load switch with VIN OVLO disabled, internal 10W nFET SOA protection, and I_{DS} current monitor output	5	13	5	25	–	Capacitor	UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1016V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	4	13	5	22	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +125	STQFN-18 (1.6 x 3.0)
SLG59H1009V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	4	13	5	22	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1128V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 10W nFET SOA protection, and I_{DS} current monitor output	5	13	5	22	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1006V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	5	13	5	22	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1012V	4.8 mm² load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	6	13	5	22	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD	Yes	FAULT	Yes	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1005V	4.8 mm² back-to-back reverse-current blocking load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	3	50	5	22	–	Capacitor	OVLO, UVLO, ACL(R), SCL, TSD, RCB	Yes	FAULT	No	-40 to +85	STQFN-18 (1.6 x 3.0)
SLG59H1020V	4.8 mm² back-to-back reverse-current blocking load switch with pin-selectable VIN overvoltage protection, internal 5W nFET SOA protection, and I_{DS} current monitor output	3	50	5	20	–	Capacitor	OVLO, ACL(R), SCL, TSD, RCB	Yes	FAULT	No	-40 to +85	STQFN-18 (1.6 x 3.0)

* Notes (Please consult product specifications for additional information):

1. ACL - Internally Fixed Active Current Limit
2. ACL(R) - External resistor-adjustable Active Current Limit
3. SCL - Internally Fixed Short-circuit Current Limit
4. Fixed ICL – Internally Fixed Inrush Current Limit
5. RVD – Reverse-voltage Detection
6. RCB – Reverse-current Blocking
7. TSD – Overtemperature protection (Thermal Shutdown)
8. UVLO – Undervoltage Protection
9. OVLO – Overvoltage protection
10. TVS – Internal Transient Voltage Suppressor

GreenFET SELECTION GUIDE

Visit **renesas.com/load-switches** for more details on the complete portfolio of products, including the product guide, eval boards and samples.

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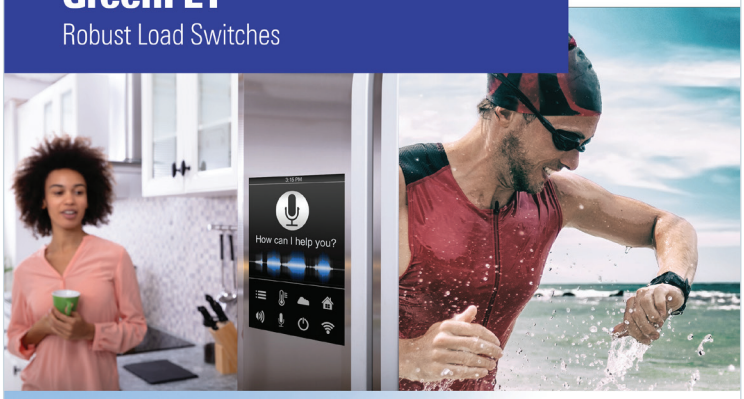
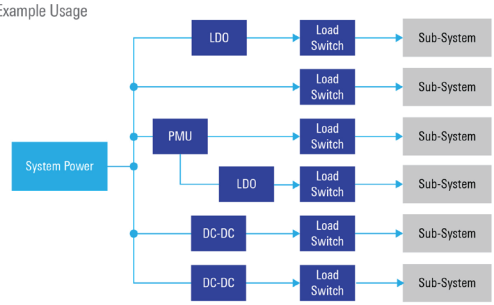
GreenFET
Robust Load Switches

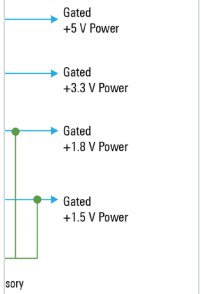


GreenFET LOAD SWITCH USAGE EXAMPLES

Power Distribution Application
Load Switch Example Usage



Power Control Application



GreenFET Load Switch Portfolio

GreenFET

- Single-channel nFET & pFET in STDFN & STQFN (1 mm^2 to 4 mm^2)
- Single-channel in WLCSP (1 A to 4 A, 0.56 mm^2 to 1.5 mm^2)
- Dual-channel nFET and pFET in STDFNs (3 mm^2)

Operating input voltage range

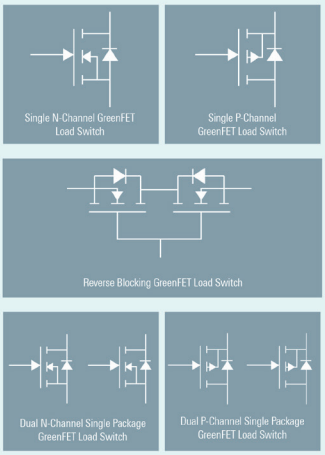
- Maximum V_{DD} Voltage Ranges: 2 V, 3.6 V & 5.5 V
- FET V_{IN} Range: 0.25 V to V_{DD}
- RD_{SON} Range: 4 mΩ to 45 mΩ
- I_{DS} Current Range: 1 A to 9 A
- UL2367 Current-Limiter Certified (select parts)

High voltage GreenFET

- Single-channel (2.3 mm^2 to 5 mm^2)
- Power-supply/FET Input Voltage Ranges: 4.5 V to 25.2 V
- RD_{SON} Range: 13.3 mΩ to 50 mΩ
- IDS Current Range: 3 A to 6 A
- WLCSP for Space-Constrained Applications
- UL2367 Current-Limiter Certified (select parts)

High Side Gate Drivers

- N-Channel MOSFET Drivers



GreenFET products combine high-performance nFET or pFET structures, high current handling capability, charge pumps, as well as multiple protection and control circuits into space-efficient single- and dual-channel products.

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