

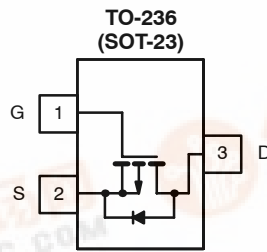


Si2315BDS
Vishay Siliconix

P-Channel 1.8-V (G-S) MOSFET

TrenchFET®
Power MOSFETs
1.8-V Rated

| PRODUCT SUMMARY | | |
|---------------------|----------------------------------|--------------------|
| V _{DS} (V) | r _{DS(on)} (Ω) | I _D (A) |
| -12 | 0.050 @ V _{GS} = -4.5 V | -3.85 |
| | 0.065 @ V _{GS} = -2.5 V | -3.4 |
| | 0.100 @ V _{GS} = -1.8 V | -2.7 |



Ordering Information: Si2315BDS-T1

Top View
Si2315BDS *(M5)
*Marking Code

| ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED) | | | | |
|--|-----------------------------------|------------|--------------|------|
| Parameter | Symbol | 5 sec | Steady State | Unit |
| Drain-Source Voltage | V _{DS} | -12 | | V |
| Gate-Source Voltage | V _{GS} | ±8 | | |
| Continuous Drain Current (T _J = 150 °C) ^a | T _A = 25 °C | -3.85 | -3.0 | A |
| | T _A = 70 °C | -3.0 | -2.45 | |
| Pulsed Drain Current ^a | I _{DM} | -12 | | |
| Continuous Source Current (Diode Conduction) ^a | I _S | -1.0 | -0.62 | |
| Power Dissipation ^a | T _A = 25 °C | 1.19 | 0.75 | W |
| | T _A = 70 °C | 0.76 | 0.48 | |
| Operating Junction and Storage Temperature Range | T _J , T _{stg} | -55 to 150 | | °C |

| THERMAL RESISTANCE RATINGS | | | | |
|--|--------------|-------------------|---------|------|
| Parameter | Symbol | Typical | Maximum | Unit |
| Maximum Junction-to-Ambient ^a | t ≤ 5 sec. | 85 | 105 | °C/W |
| | Steady State | 130 | 166 | |
| Maximum Junction-to-Foot (Drain) | Steady State | R _{thJF} | 60 | 75 |

Notes:
a. Surface Mounted on FR4 Board.
b. t ≤ 5 sec.
For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>



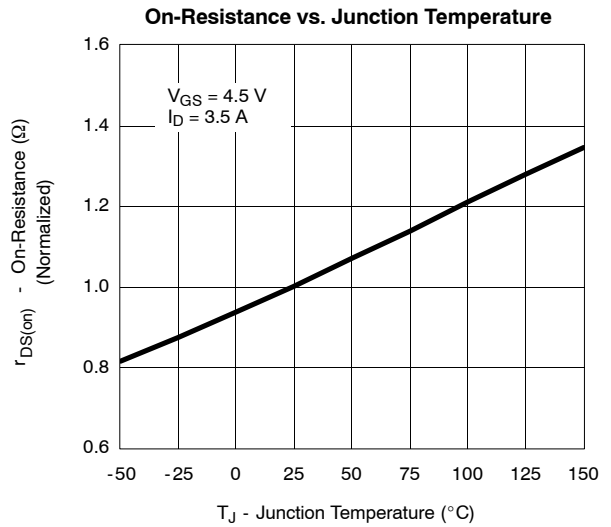
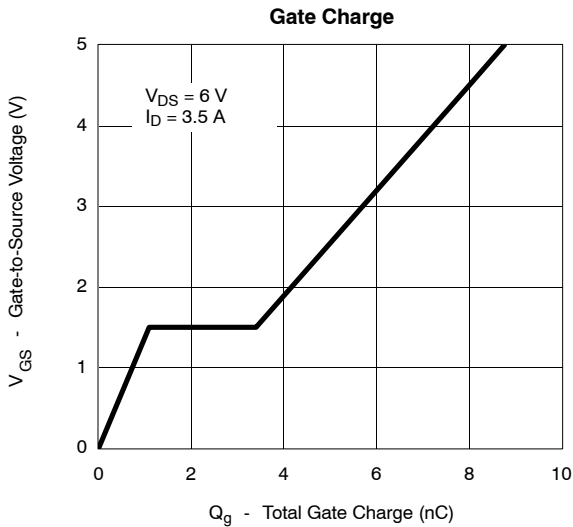
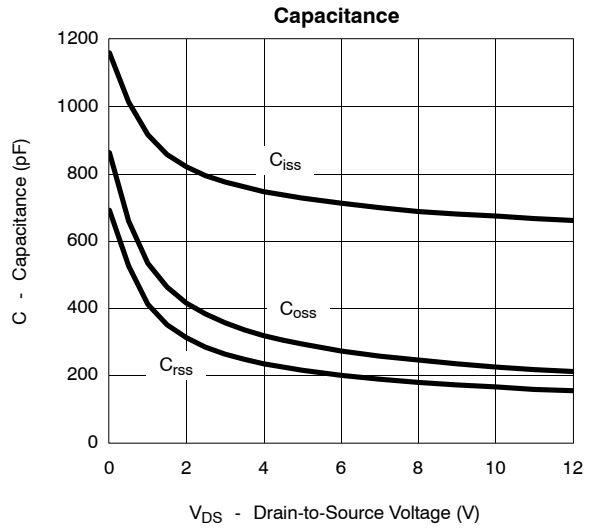
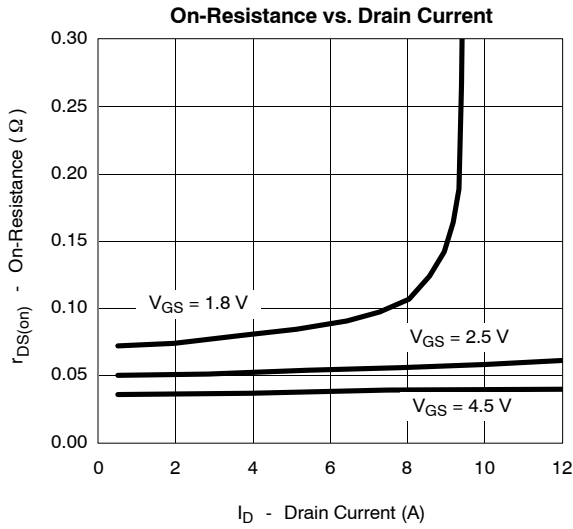
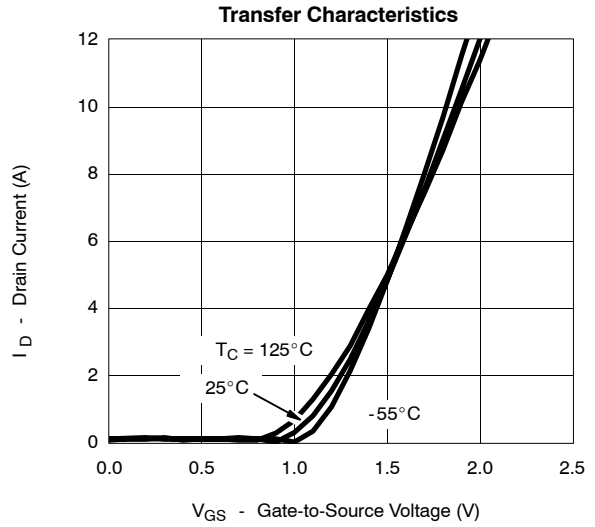
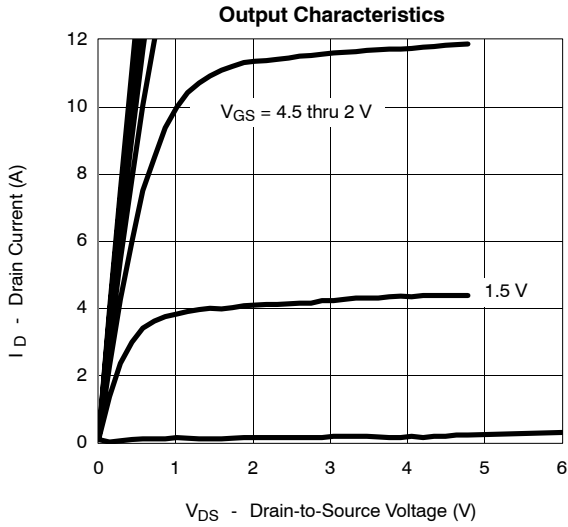
| SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|--|----------------------|--|--------|-------|-------|------|
| Parameter | Symbol | Test Conditions | Limits | | | Unit |
| | | | Min | Typ | Max | |
| Static | | | | | | |
| Drain-Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} = 0 V, I _D = -10 μA | -12 | | | V |
| Gate-Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250 μA | -0.45 | | -0.90 | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ±8 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -12 V, V _{GS} = 0 V | | | -1 | μA |
| | | V _{DS} = -12 V, V _{GS} = 0 V, T _J = 55 °C | | | -10 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≤ -5 V, V _{GS} = -4.5 V | -6 | | | A |
| | | V _{DS} ≤ -5 V, V _{GS} = -2.5 V | -3 | | | |
| Drain-Source On-Resistance ^a | r _{DS(on)} | V _{GS} = -4.5 V, I _D = -3.85 A | | 0.040 | 0.050 | Ω |
| | | V _{GS} = -2.5 V, I _D = -3.4 A | | 0.050 | 0.065 | |
| | | V _{GS} = -1.8 V, I _D = -2.7 A | | 0.071 | 0.100 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = -5 V, I _D = -3.85 A | | 7 | | S |
| Diode Forward Voltage | V _{SD} | I _S = -1.6 A, V _{GS} = 0 V | | | -1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = -6 V, V _{GS} = -4.5 V I _D ≅ -3.85 A | | 8 | 15 | nC |
| Gate-Source Charge | Q _{gs} | | | 1.1 | | |
| Gate-Drain Charge | Q _{gd} | | | 2.3 | | |
| Input Capacitance | C _{iss} | V _{DS} = -6 V, V _{GS} = 0, f = 1 MHz | | 715 | | pF |
| Output Capacitance | C _{oss} | | | 275 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 200 | | |
| Switching^b | | | | | | |
| Turn-On Time | t _{d(on)} | V _{DD} = -6 V, R _L = 6 Ω I _D ≅ -1.0 A, V _{GEN} = -4.5 V R _G = 6 Ω | | 15 | 20 | ns |
| | t _r | | | 35 | 50 | |
| Turn-Off Time | t _{d(off)} | | | 50 | 70 | |
| | t _f | | | 50 | 75 | |

Notes

- a. For DESIGN AID ONLY, not subject to production testing.
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.
- c. Switching time is essentially independent of operating temperature.

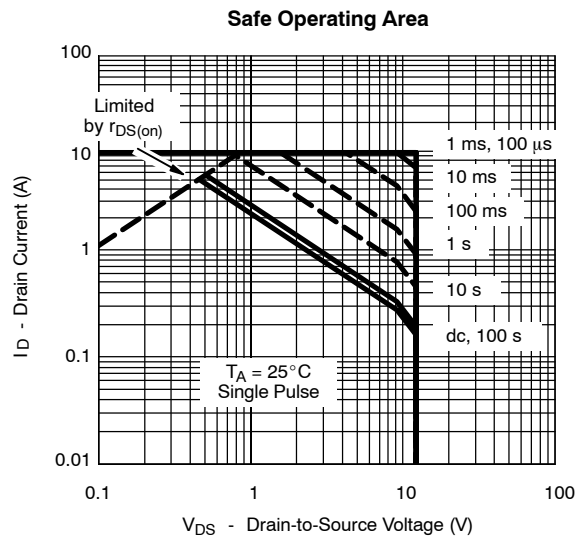
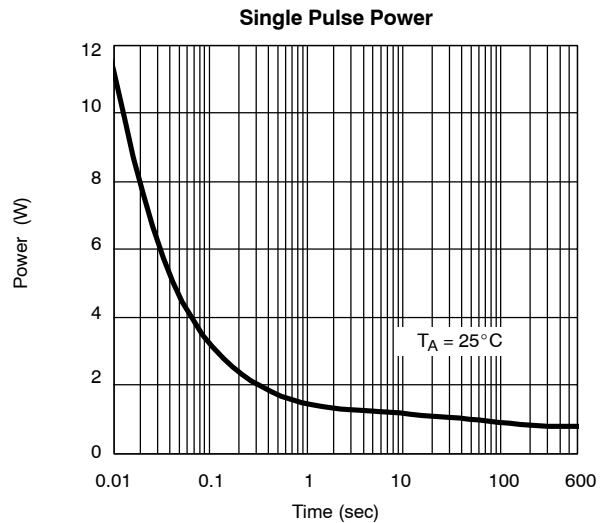
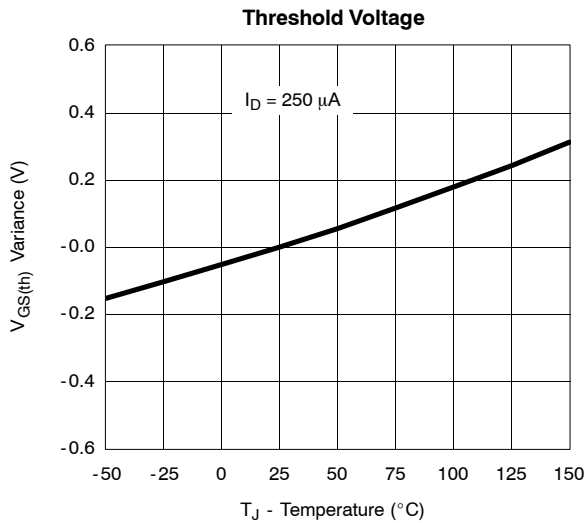
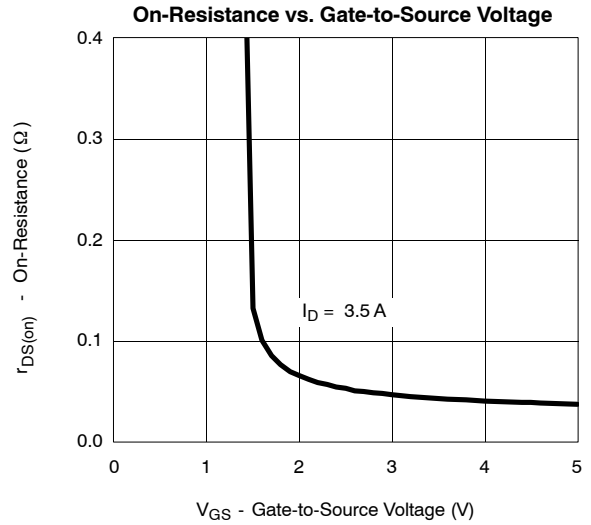
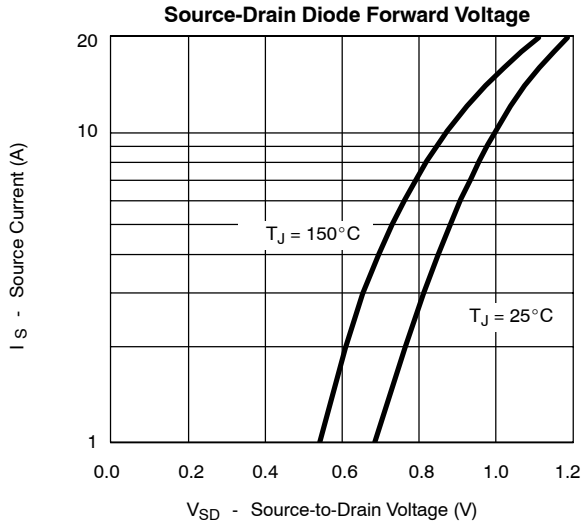


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





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