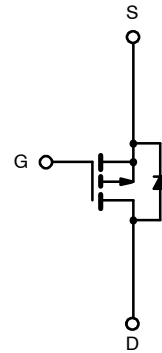
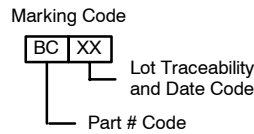
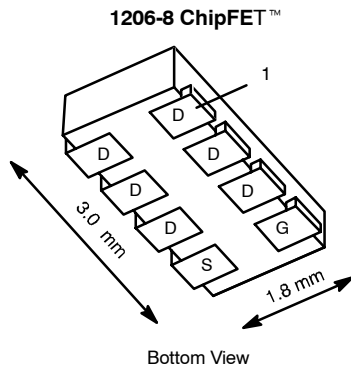




P-Channel 1.8-V (G-S) MOSFET

TrenchFET[®]
Power MOSFETs
1.8-V Rated

| PRODUCT SUMMARY | | |
|-----------------|---------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
| -8 | 0.035 @ $V_{GS} = -4.5$ V | ± 7.1 |
| | 0.047 @ $V_{GS} = -2.5$ V | ± 6.2 |
| | 0.062 @ $V_{GS} = -1.8$ V | ± 5.7 |



Ordering Information: Si5445DC-T1

| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | |
|---|----------------|--------------------------|--------------|------------------|
| Parameter | Symbol | 5 secs | Steady State | Unit |
| Drain-Source Voltage | V_{DS} | -8 | | V |
| Gate-Source Voltage | V_{GS} | ± 8 | | |
| Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a | I_D | $T_A = 25^\circ\text{C}$ | ± 7.1 | ± 5.2 |
| | | $T_A = 85^\circ\text{C}$ | ± 5.2 | ± 3.7 |
| Pulsed Drain Current | I_{DM} | ± 20 | | A |
| Continuous Source Current ^a | I_S | -2.1 | -1.1 | |
| Maximum Power Dissipation ^a | P_D | $T_A = 25^\circ\text{C}$ | 2.5 | 1.3 |
| | | $T_A = 85^\circ\text{C}$ | 1.3 | 0.7 |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | | $^\circ\text{C}$ |
| Soldering Recommendations (Peak Temperature) ^{b, c} | | 260 | | |

| THERMAL RESISTANCE RATINGS | | | | |
|--|------------|----------------|---------|--------------------|
| Parameter | Symbol | Typical | Maximum | Unit |
| Maximum Junction-to-Ambient ^a | R_{thJA} | $t \leq 5$ sec | 40 | 50 |
| | | Steady State | 80 | 95 |
| Maximum Junction-to-Foot (Drain) | R_{thJF} | 15 | 20 | $^\circ\text{C/W}$ |

Notes

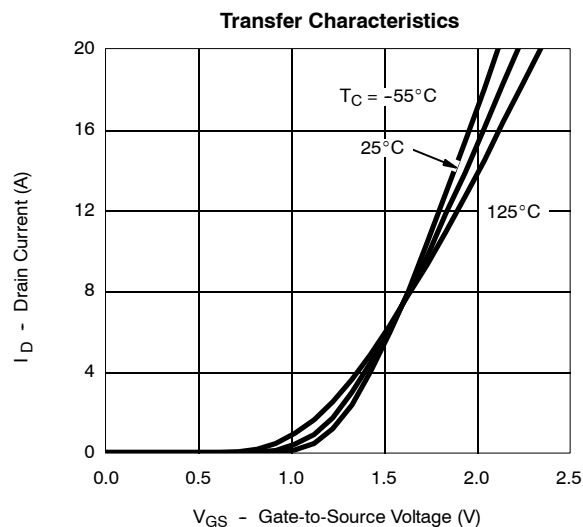
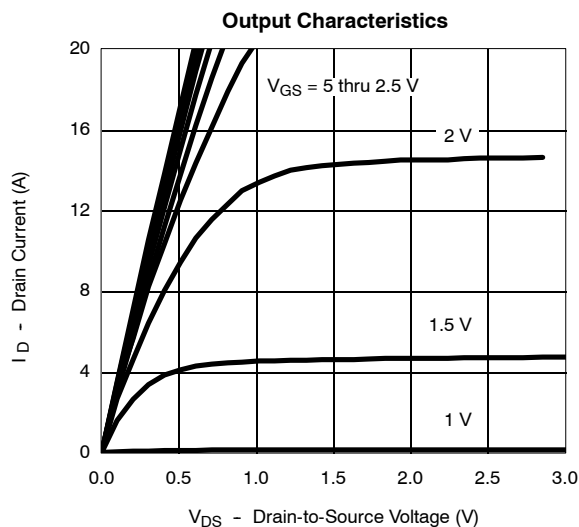
- a. Surface Mounted on 1" x 1" FR4 Board.
- b. See Reliability Manual for profile. The ChipFET is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- c. Rework Conditions: manual soldering with a soldering iron is not recommended for leadless components.

| SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|--|---------------------|--|---|-------|-------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Static | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250 μA | -0.45 | | | V |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ±8 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -6.4 V, V _{GS} = 0 V | | | -1 | μA |
| | | V _{DS} = -6.4 V, V _{GS} = 0 V, T _J = 85 °C | | | -5 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≤ -5 V, V _{GS} = -4.5 V | -20 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = -4.5 V, I _D = -5.2 A | | 0.030 | 0.035 | Ω |
| | | V _{GS} = -2.5 V, I _D = -4.5 A | | 0.040 | 0.047 | |
| | | V _{GS} = -1.8 V, I _D = -2 A | | 0.052 | 0.062 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = -5 V, I _D = -5.2 A | | 18 | | S |
| Diode Forward Voltage ^a | V _{SD} | I _S = -1.1 A, V _{GS} = 0 V | | -0.8 | -1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = -4 V, V _{GS} = -4.5 V, I _D = -5.2 A | | 17 | 26 | nC |
| Gate-Source Charge | Q _{gs} | | | 2.8 | | |
| Gate-Drain Charge | Q _{gd} | | | 2.6 | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = -4 V, R _L = 4 Ω I _D ≅ -1 A, V _{GEN} = -4.5 V, R _G = 6 Ω | | 15 | 25 | ns |
| Rise Time | t _r | | | 45 | 70 | |
| Turn-Off Delay Time | t _{d(off)} | | | 110 | 165 | |
| Fall Time | t _f | | | 65 | 100 | |
| Source-Drain Reverse Recovery Time | t _{rr} | | I _F = -1.1 A, di/dt = 100 A/μs | | 30 | |

Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

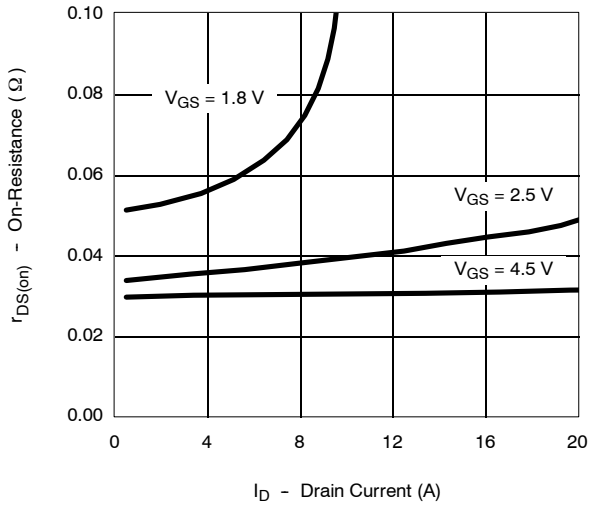
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



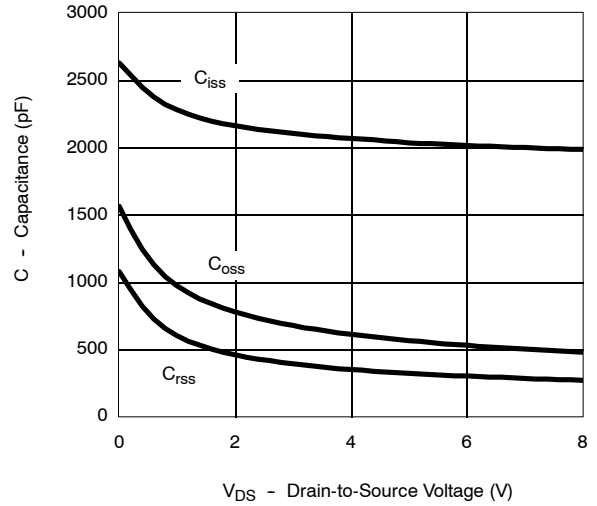


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

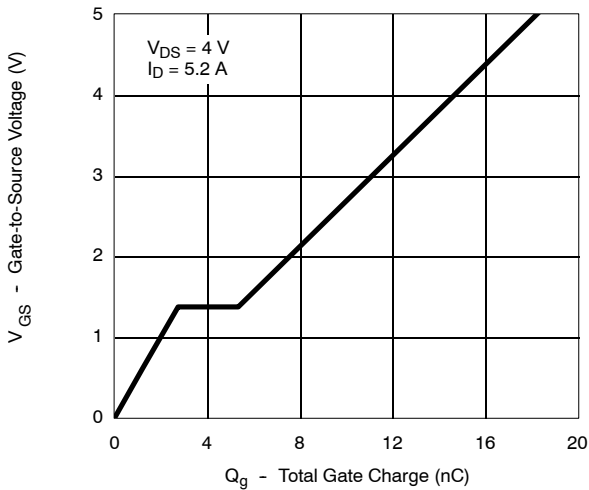
On-Resistance vs. Drain Current



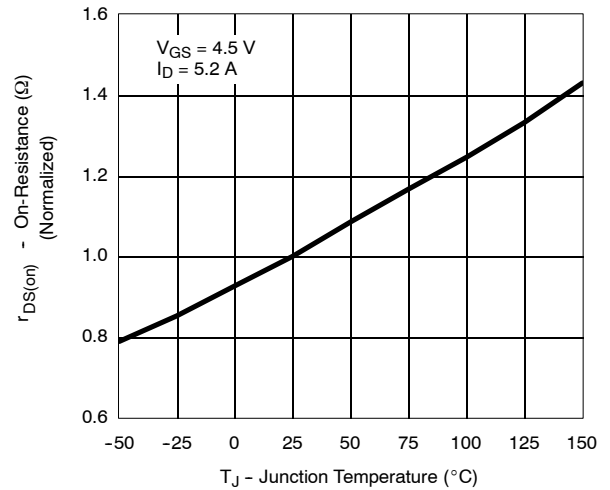
Capacitance



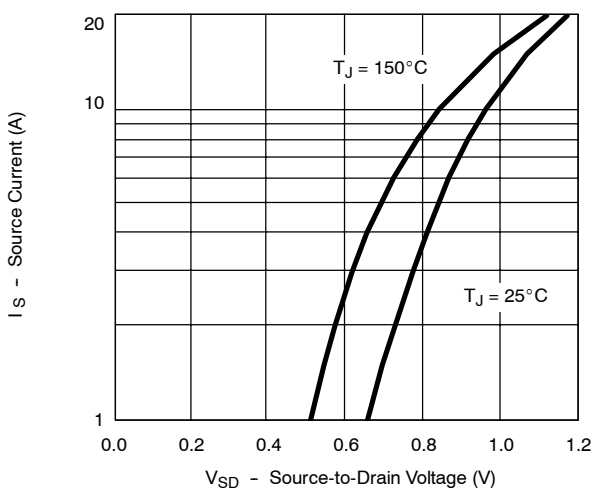
Gate Charge



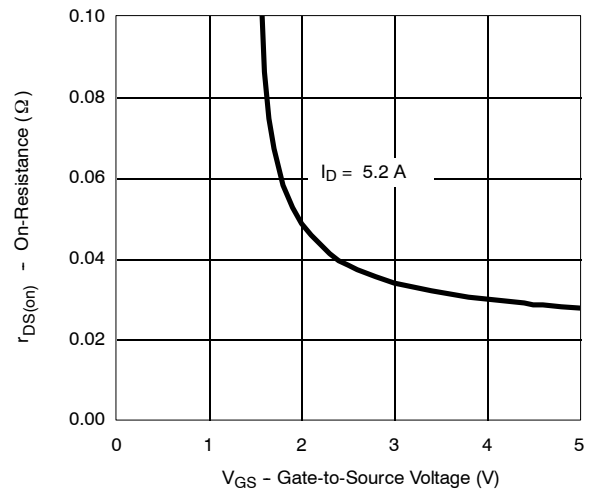
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

