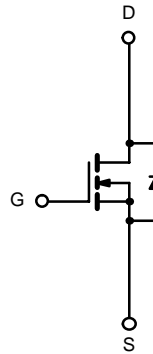
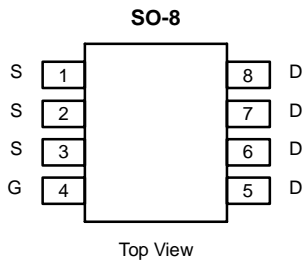




N-Channel 100-V (D-S) MOSFET

175°C Rated
Maximum Junction Temperature
High-Efficiency
PWM Optimized

| PRODUCT SUMMARY | | |
|---------------------|---------------------------------|--------------------|
| V _{DS} (V) | r _{DS(on)} (Ω) | I _D (A) |
| 100 | 0.025 @ V _{GS} = 10 V | 7.9 |
| | 0.028 @ V _{GS} = 6.0 V | 7.5 |



Ordering Information: Si4486EY
Si4486EY-T1 (with Tape and Reel)

| ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED) | | | | | |
|---|-----------------------------------|-----------------------|----------------|------|----|
| Parameter | Symbol | 10 secs | Steady State | Unit | |
| Drain-Source Voltage | V _{DS} | 100 | | V | |
| Gate-Source Voltage | V _{GS} | ± 20 | | | |
| Continuous Drain Current (T _J = 175°C) ^a | I _D | T _A = 25°C | 7.9 | 5.4 | A |
| | | T _A = 85°C | 6.1 | 4.2 | |
| Pulsed Drain Current | I _{DM} | 40 | | | |
| Avalanche Current | I _{AR} | 30 | | | |
| Repetitive Avalanche Energy (Duty Cycle ≤ 1%) | E _{AR} | L = 0.1 mH | 45 | | mJ |
| Continuous Source Current (Diode Conduction) ^a | | | I _S | 3.1 | |
| Maximum Power Dissipation ^a | P _D | T _A = 25°C | 3.8 | 1.8 | W |
| | | T _A = 85°C | 2.3 | 1.1 | |
| Operating Junction and Storage Temperature Range | T _J , T _{stg} | -55 to 175 | | °C | |

| THERMAL RESISTANCE RATINGS | | | | | |
|--|-------------------|--------------|---------|------|------|
| Parameter | Symbol | Typical | Maximum | Unit | |
| Maximum Junction-to-Ambient ^a | R _{thJA} | t ≤ 10 sec | 33 | 40 | °C/W |
| | | Steady State | 70 | 85 | |
| Maximum Junction-to-Foot (Drain) | R _{thJF} | 17 | 21 | | |

Notes
a. Surface Mounted on 1" x 1" FR4 Board.

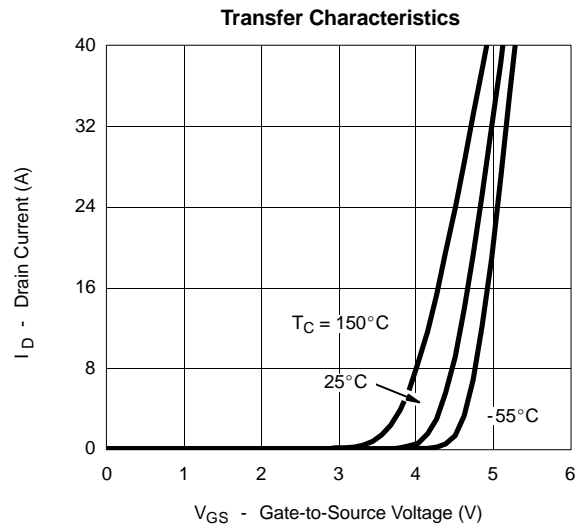
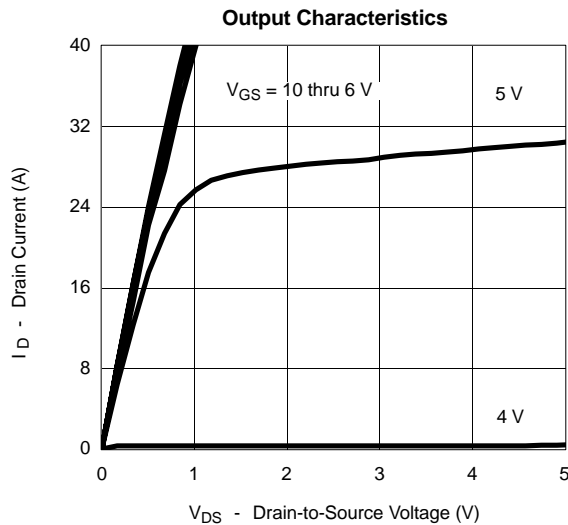


| SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|--|---------------------|--|-----|-------|-------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Static | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 2 | | | V |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ±20 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 80 V, V _{GS} = 0 V | | | 1 | μA |
| | | V _{DS} = 80 V, V _{GS} = 0 V, T _J = 85 °C | | | 20 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≥ 5 V, V _{GS} = 10 V | 40 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = 10 V, I _D = 7.9 A | | 0.021 | 0.025 | Ω |
| | | V _{GS} = 6.0 V, I _D = 7.5 A | | 0.023 | 0.028 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = 15 V, I _D = 7.9 A | | 35 | | S |
| Diode Forward Voltage ^a | V _{SD} | I _S = 3.1 A, V _{GS} = 0 V | | 0.8 | 1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 50 V, V _{GS} = 10 V, I _D = 7.9 A | | 36 | 44 | nC |
| Gate-Source Charge | Q _{gs} | | | 10 | | |
| Gate-Drain Charge | Q _{gd} | | | 8.6 | | |
| Gate Resistance | R _g | | 0.5 | 1.27 | 2.2 | Ω |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 50 V, R _L = 50 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω | | 20 | 40 | ns |
| Rise Time | t _r | | | 10 | 20 | |
| Turn-Off Delay Time | t _{d(off)} | | | 46 | 90 | |
| Fall Time | t _f | | | 26 | 50 | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = 3.1 A, di/dt = 100 A/μs | | 50 | 80 | |

Notes

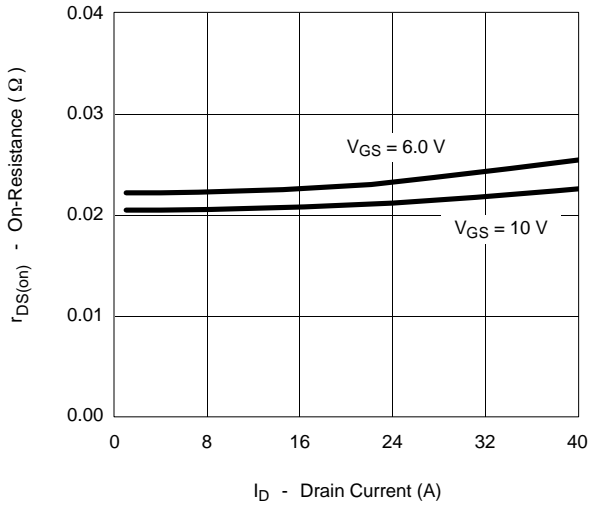
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

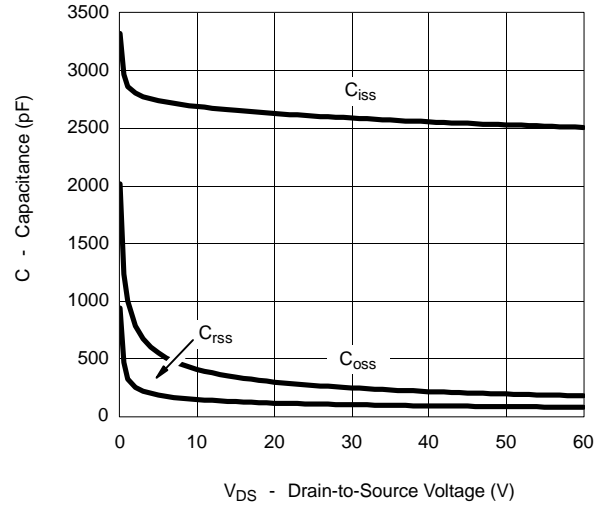


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

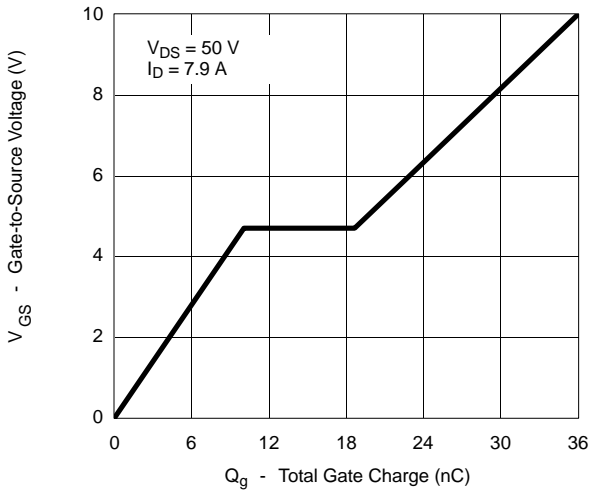
On-Resistance vs. Drain Current



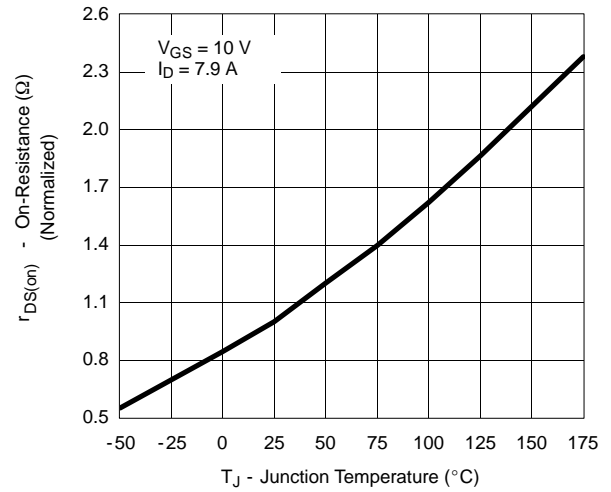
Capacitance



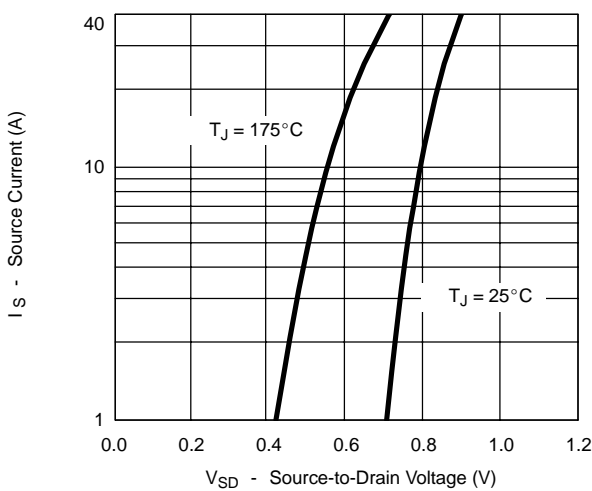
Gate Charge



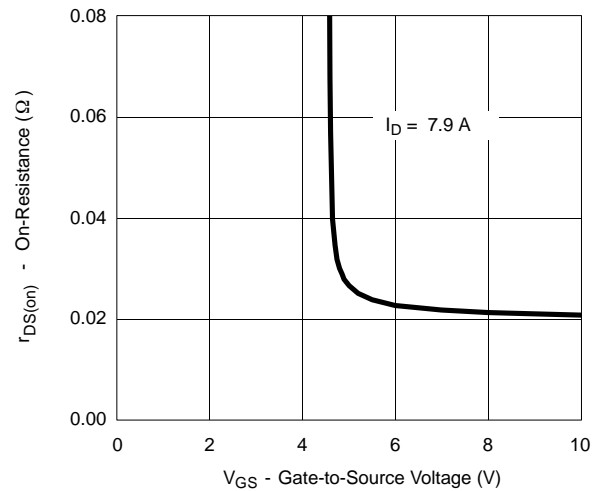
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

