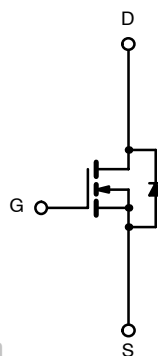
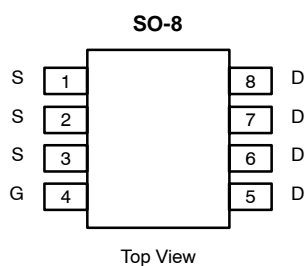




N-Channel 30-V (D-S) MOSFET

TrenchFET[®]
 Power MOSFETs
 2.5-V Rated
 100% R_G Tested

| PRODUCT SUMMARY | | |
|---------------------|----------------------------------|--------------------|
| V _{DS} (V) | r _{DS(on)} (Ω) | I _D (A) |
| 30 | 0.0045 @ V _{GS} = 10 V | 22 |
| | 0.005 @ V _{GS} = 4.5 V | 19 |
| | 0.0075 @ V _{GS} = 2.5 V | 17 |



N-Channel MOSFET

Ordering Information: Si4442DY
 Si4442DY-T1 (with Tape and Reel)
 Si4442DY—E3 (Lead Free)
 Si4442DY-T1—E3 (Lead Free with Tape and Reel)

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| ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED) | | | | | |
|--|-----------------------------------|------------------------|--------------|------|---|
| Parameter | Symbol | 10 secs | Steady State | Unit | |
| Drain-Source Voltage | V _{DS} | 30 | | V | |
| Gate-Source Voltage | V _{GS} | ±12 | | | |
| Continuous Drain Current (T _J = 150 °C) ^a | I _D | T _A = 25 °C | 22 | 15 | A |
| | | T _A = 70 °C | 17 | 11 | |
| Pulsed Drain Current (10 μs Pulse Width) | I _{DM} | 60 | | | |
| Continuous Source Current (Diode Conduction) ^a | I _S | 2.9 | 1.3 | | |
| Maximum Power Dissipation ^a | P _D | T _A = 25 °C | 3.5 | 1.6 | W |
| | | T _A = 70 °C | 2.2 | 1 | |
| 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 | R _{thJA} | t ≤ 10 sec | 29 | 35 | °C/W |
| | | Steady State | 67 | 80 | |
| Maximum Junction-to-Foot (Drain) | R _{thJF} | 13 | 16 | | |

Notes

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

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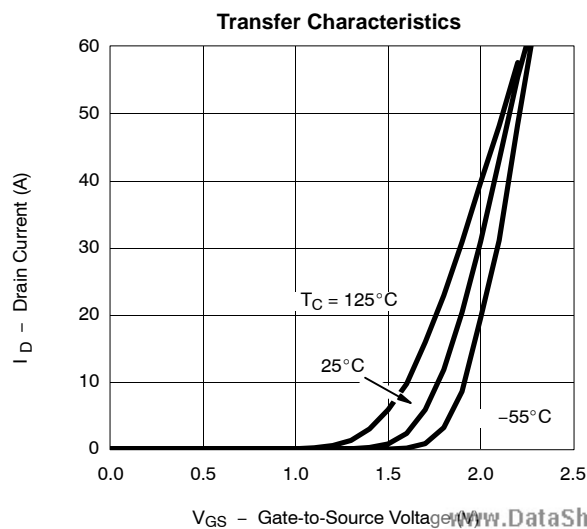
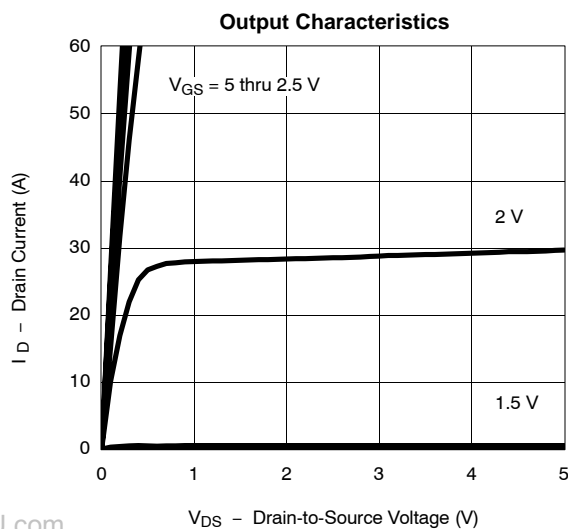


| SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED) | | | | | | |
|--|---------------------|--|--|--------|--------|------|
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
| Static | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 0.6 | | 1.5 | V |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = ± 12 V | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 30 V, V _{GS} = 0 V | | | 1 | μA |
| | | V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C | | | 5 | |
| On-State Drain Current ^a | I _{D(on)} | V _{DS} ≥ 5 V, V _{GS} = 10 V | 30 | | | A |
| Drain-Source On-State Resistance ^a | r _{DS(on)} | V _{GS} = 10 V, I _D = 22 A | | 0.0035 | 0.0045 | Ω |
| | | V _{GS} = 4.5 V, I _D = 19 A | | 0.0041 | 0.005 | |
| | | V _{GS} = 2.5 V, I _D = 17 A | | 0.0062 | 0.0075 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = 15 V, I _D = 22 A | | 100 | | S |
| Diode Forward Voltage ^a | V _{SD} | I _S = 2.9 A, V _{GS} = 0 V | | 0.75 | 1.1 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 22 A | | 36 | 50 | nC |
| Gate-Source Charge | Q _{gs} | | | 8 | | |
| Gate-Drain Charge | Q _{gd} | | | 10.5 | | |
| Gate Resistance | R _g | | 0.5 | 1.5 | 2.6 | Ω |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 15 V, R _L = 15 Ω I _D = 1 A, V _{GEN} = 10 V, R _g = 6 Ω | | 17 | 30 | ns |
| Rise Time | t _r | | | 11 | 20 | |
| Turn-Off Delay Time | t _{d(off)} | | | 125 | 180 | |
| Fall Time | t _f | | | 47 | 70 | |
| Source-Drain Reverse Recovery Time | t _{rr} | | I _F = 2.9 A, di/dt = 100 A/μs | | 50 | |

Notes

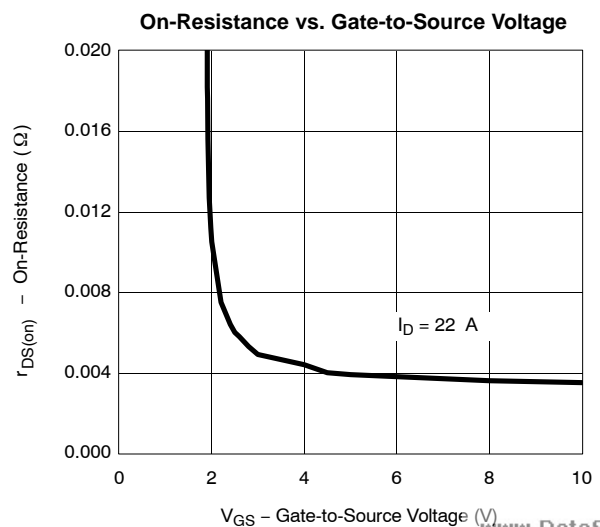
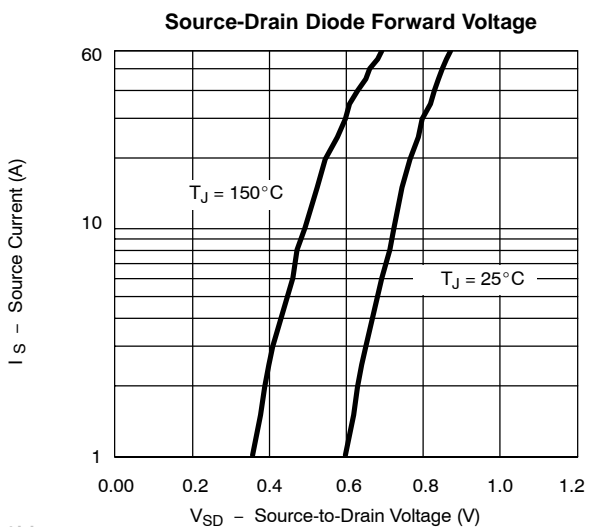
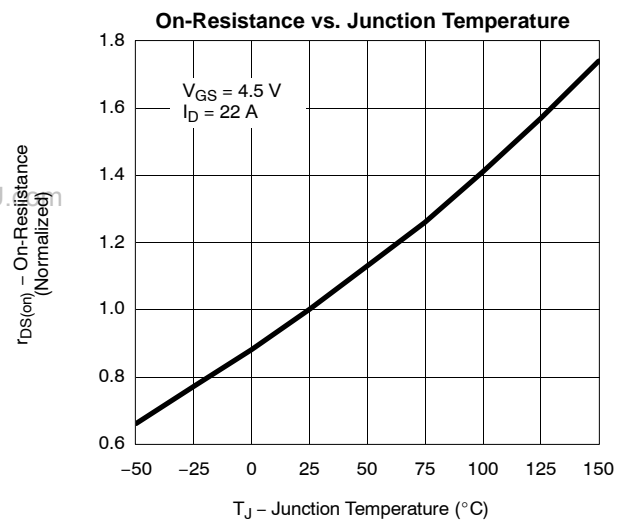
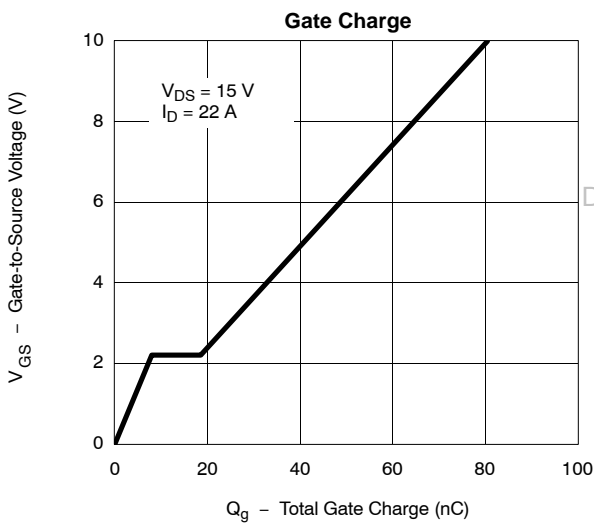
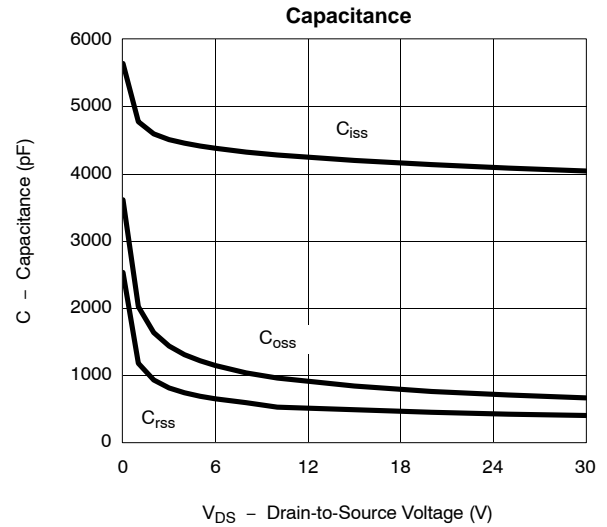
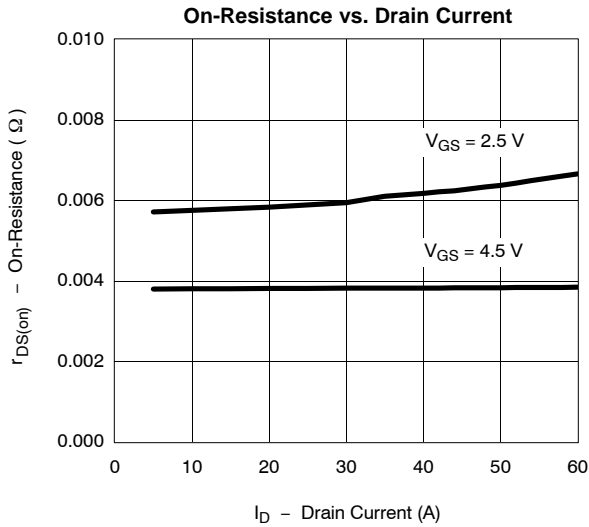
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
 b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

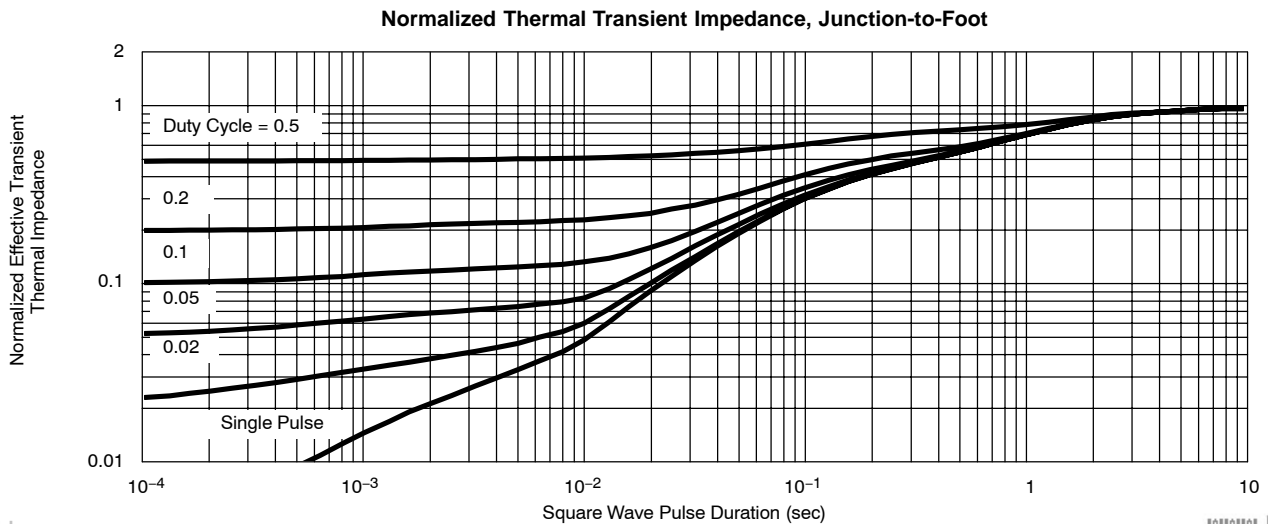
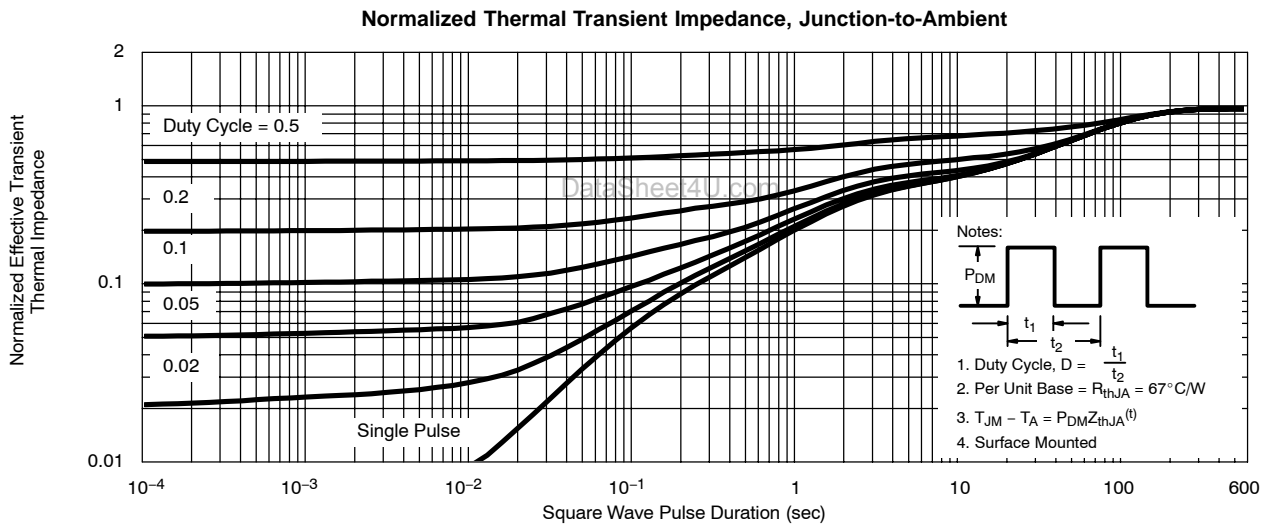
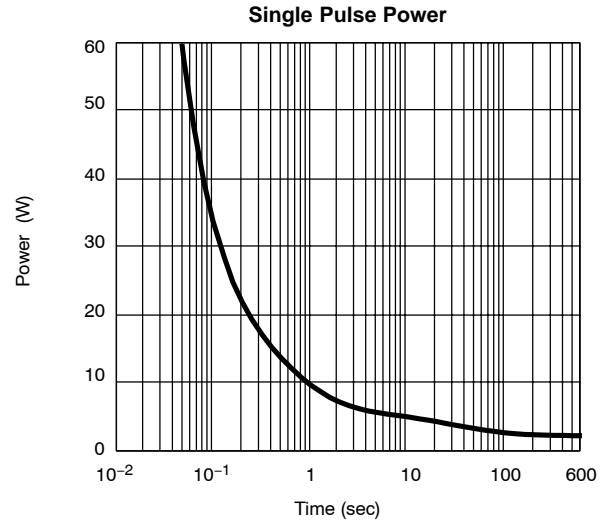
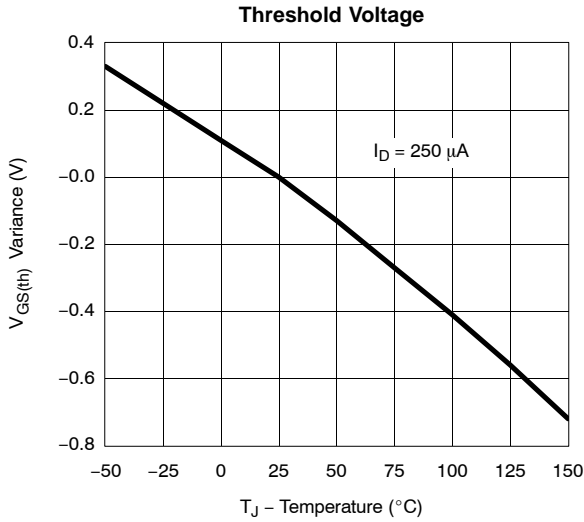


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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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