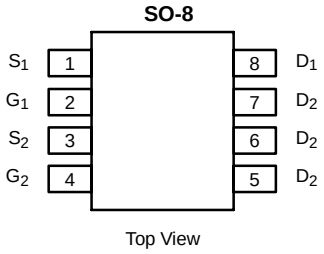
# Asymmetrical Dual N-Channel 30-V (D-S) MOSFET

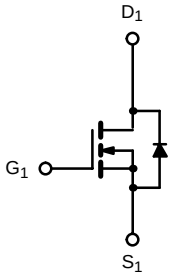
| PRODUCT SUMMARY | | | |
|---|---|---|---|
| | $V_{DS}$ (V) | $r_{DS(on)}$ (Ω) | $I_D$ (A) |
| Channel-1 | 30 | 0.022 @ $V_{GS}$ = 10 V | 6.3 |
| | | 0.030 @ $V_{GS}$ = 4.5 V | 5.4 |
| Channel-2 | | 0.0155 @ $V_{GS}$ = 10 V | 9.5 |
| | | 0.0205 @ $V_{GS}$ = 4.5 V | 8.2 |

## FEATURES

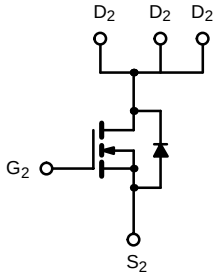
- 100% $R_g$ Tested




Ordering Information: Si4826DY
Si4826DY-T1 (with Tape and Reel)




N-Channel 1
MOSFET




N-Channel 2
MOSFET

| ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C UNLESS OTHERWISE NOTED) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Channel 1 | | Channel 2 | | |
| Parameter | | Symbol | 10 secs | Steady State | 10 secs | Steady State | Unit |
| Drain-Source Voltage | | $V_{DS}$ | 30 | | | | V |
| Gate-Source Voltage | | $V_{GS}$ | 20 | | | | |
| Continuous Drain Current ($T_J$ = 150°C)[NO TAG] | $T_A$ = 25°C | $I_D$ | 6.3 | 5.3 | 9.5 | 7.0 | A |
| | $T_A$ = 70°C | | 5.4 | 4.2 | 7.6 | 5.6 | |
| Pulsed Drain Current | | $I_{DM}$ | 30 | | 40 | | |
| Continuous Source Current (Diode Conduction)[NO TAG] | | $I_S$ | 1.3 | 0.9 | 2.2 | 1.15 | |
| Maximum Power Dissipation[NO TAG] | $T_A$ = 25°C | $P_D$ | 1.4 | 1.0 | 2.4 | 1.25 | W |
| | $T_A$ = 70°C | | 0.9 | 0.64 | 1.5 | 0.80 | |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{stg}$ | -55 to 150 | | | | °C |

| THERMAL RESISTANCE RATINGS | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | Channel 1 | | Channel 2 | | |
| Parameter | | Symbol | Typ | Max | Typ | Max | Unit |
| Maximum Junction-to-Ambient[NO TAG] | t ≤ 10 sec | $R_{thJA}$ | 72 | 90 | 43 | 53 | °C/W |
| | Steady-State | | 100 | 125 | 82 | 100 | |
| Maximum Junction-to-Foot (Drain) | Steady-State | $R_{thJC}$ | 51 | 63 | 25 | 30 | |

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

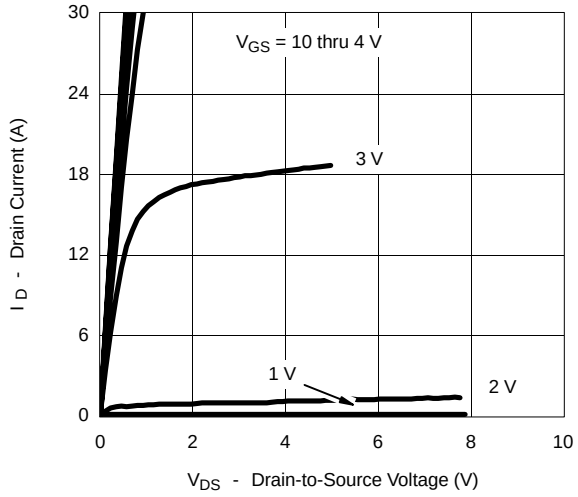
## MOSFET SPECIFICATIONS ($T_J$ = 25°C UNLESS OTHERWISE NOTED).

| Parameter | Symbol | Test Condition | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Static** | | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250 µA | Ch-1 | 0.8 | | | V |
| | | | Ch-2 | 1.0 | | | |
| Gate-Body Leakage | $I_{GSS}$ | $V_{DS}$ = 0 V, $V_{GS}$ = 20 V | Ch-1 | | | 100 | nA |
| | | | Ch-2 | | | 100 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 24 V, $V_{GS}$ = 0 V | Ch-1 | | | 1 | µA |
| | | | Ch-2 | | | 1 | |
| | | $V_{DS}$ = 24 V, $V_{GS}$ = 0 V, $T_J$ = 85°C | Ch-1 | | | 15 | |
| | | | Ch-2 | | | 15 | |
| On-State Drain Current[a] | $I_{D(on)}$ | $V_{DS}$ = 5 V, $V_{GS}$ = 10 V | Ch-1 | 20 | | | A |
| | | | Ch-2 | 30 | | | |
| Drain-Source On-State Resistance[a] | $r_{DS(on)}$ | $V_{GS}$ = 10 V, $I_D$ = 6.3 A | Ch-1 | | 0.018 | 0.022 | Ω |
| | | $V_{GS}$ = 10 V, $I_D$ = 9.5 A | Ch-2 | | 0.0125 | 0.0155 | |
| | | $V_{GS}$ = 4.5 V, $I_D$ = 5.4 A | Ch-1 | | 0.024 | 0.030 | |
| | | $V_{GS}$ = 4.5 V, $I_D$ = 8.2 A | Ch-2 | | 0.0165 | 0.0205 | |
| Forward Transconductance[a] | $g_{fs}$ | $V_{DS}$ = 15 V, $I_D$ = 6.3 A | Ch-1 | | 17 | | S |
| | | $V_{DS}$ = 15 V, $I_D$ = 9.5 A | Ch-2 | | 28 | | |
| Diode Forward Voltage[a] | $V_{SD}$ | $I_S$ = 1.3 A, $V_{GS}$ = 0 V | Ch-1 | | 0.7 | 1.1 | V |
| | | $I_S$ = 2.2 A, $V_{GS}$ = 0 V | Ch-2 | | 0.75 | 1.1 | |
| **Dynamic[b]** | | | | | | | |
| Total Gate Charge | $Q_g$ | Channel-1<br>$V_{DS}$ = 15 V, $V_{GS}$ = 5 V, $I_D$ = 6.3 A<br>Channel-2<br>$V_{DS}$ = 15 V, $V_{GS}$ = 5 V, $I_D$ = -9.5 A | Ch-1 | | 8.0 | 12 | nC |
| | | | Ch-2 | | 15 | 23 | |
| Gate-Source Charge | $Q_{gs}$ | | Ch-1 | | 1.75 | | |
| | | | Ch-2 | | 5.3 | | |
| Gate-Drain Charge | $Q_{gd}$ | | Ch-1 | | 3.2 | | |
| | | | Ch-2 | | 4.6 | | |
| Gate Resistance | $R_g$ | | Ch-1 | 1.5 | | 5.1 | Ω |
| | | | Ch-2 | 0.5 | | 2.6 | |
| Turn-On Delay Time | $t_{d(on)}$ | Channel-1<br>$V_{DD}$ = 15 V, $R_L$ = 15 Ω<br>$I_D$ ≅ 1 A, $V_{GEN}$ = 10 V, $R_G$ = 6 Ω<br>Channel-2<br>$V_{DD}$ = 15 V, $R_L$ = 15 Ω<br>$I_D$ ≅ 1 A, $V_{GEN}$ = 10 V, $R_G$ = 6 Ω | Ch-1 | | 10 | 20 | ns |
| | | | Ch-2 | | 15 | 30 | |
| Rise Time | $t_r$ | | Ch-1 | | 5 | 10 | |
| | | | Ch-2 | | 5 | 10 | |
| Turn-Off Delay Time | $t_{d(off)}$ | | Ch-1 | | 26 | 50 | |
| | | | Ch-2 | | 44 | 80 | |
| Fall Time | $t_f$ | | Ch-1 | | 8 | 16 | |
| | | | Ch-2 | | 12 | 24 | |
| Source-Drain Reverse Recovery Time | $t_{rr}$ | $I_F$ = 1.3 A, di/dt = 100 A/µs | Ch-1 | | 30 | 60 | |
| | | $I_F$ = 2.2 A, di/dt = 100 µA/µs | Ch-2 | | 32 | 70 | |

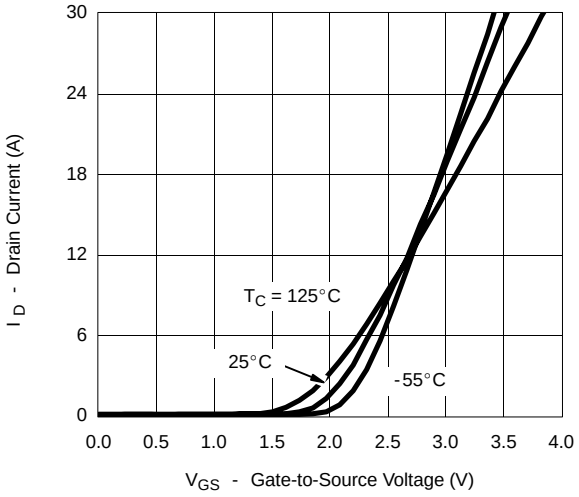
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 1

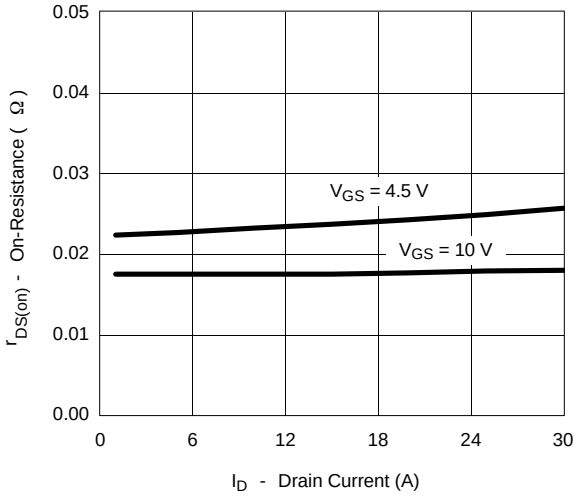
**Output Characteristics**



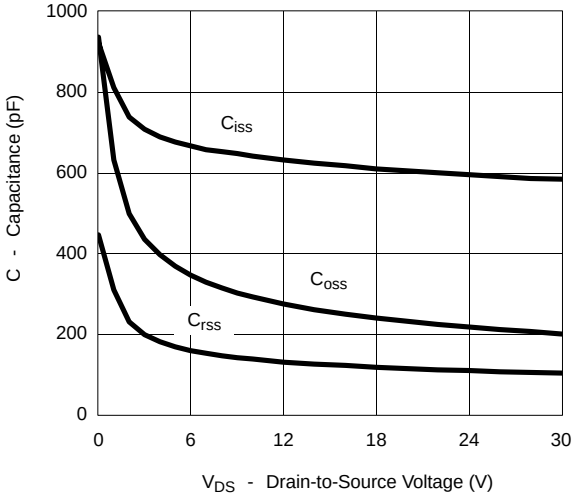

**Transfer Characteristics**



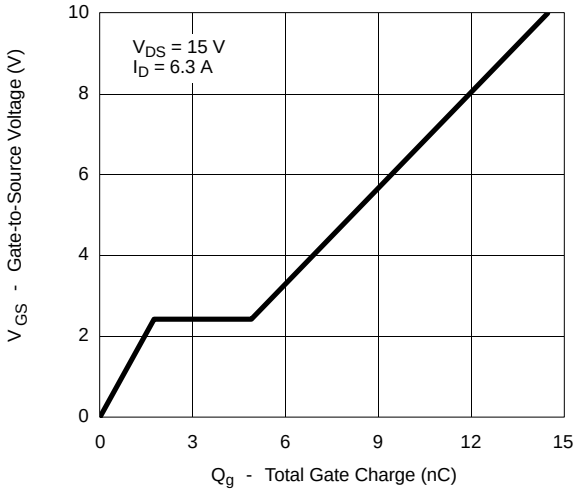

**On-Resistance vs. Drain Current**



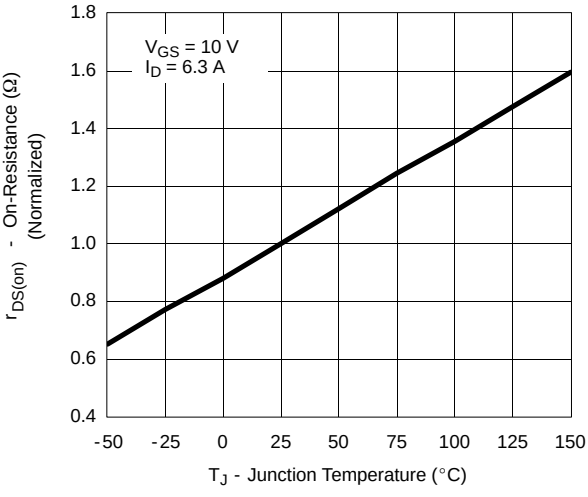

**Capacitance**




**Gate Charge**

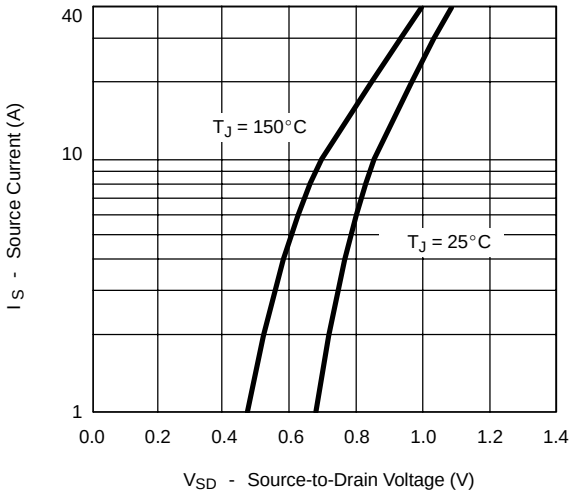



**On-Resistance vs. Junction Temperature**

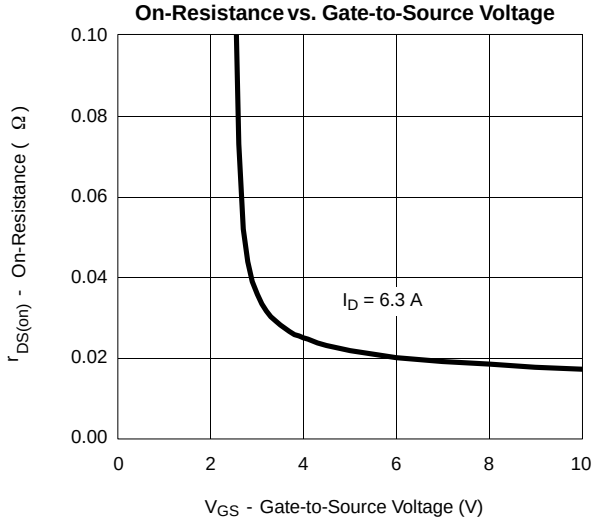


## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 1

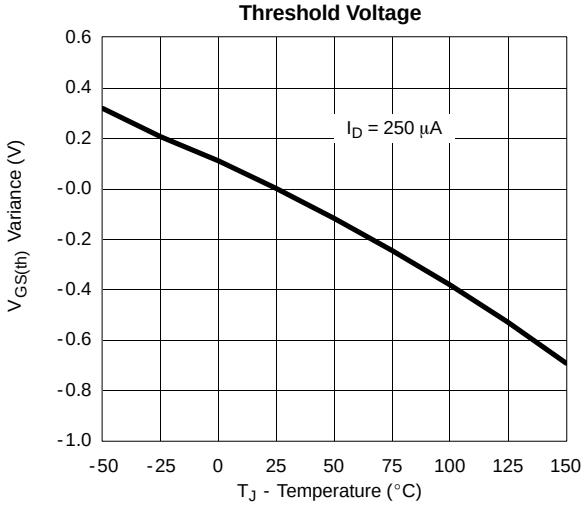
**Source-Drain Diode Forward Voltage**



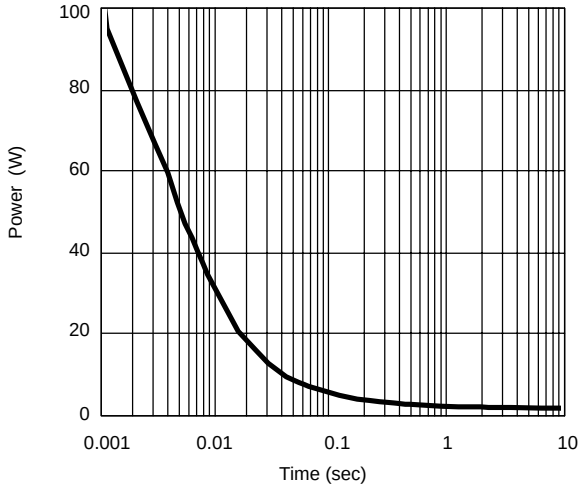

**On-Resistance vs. Gate-to-Source Voltage**



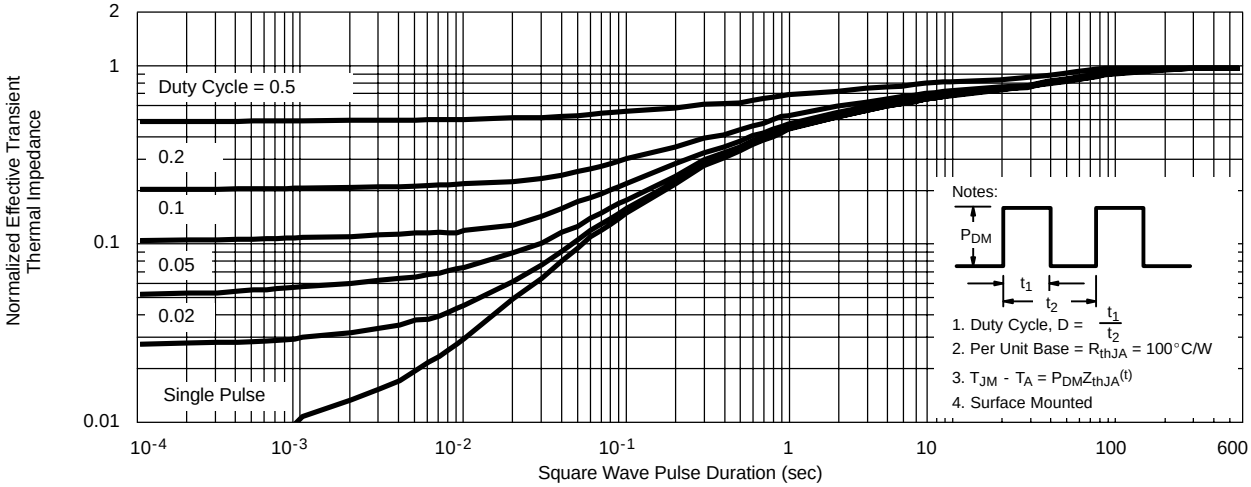

**Threshold Voltage**



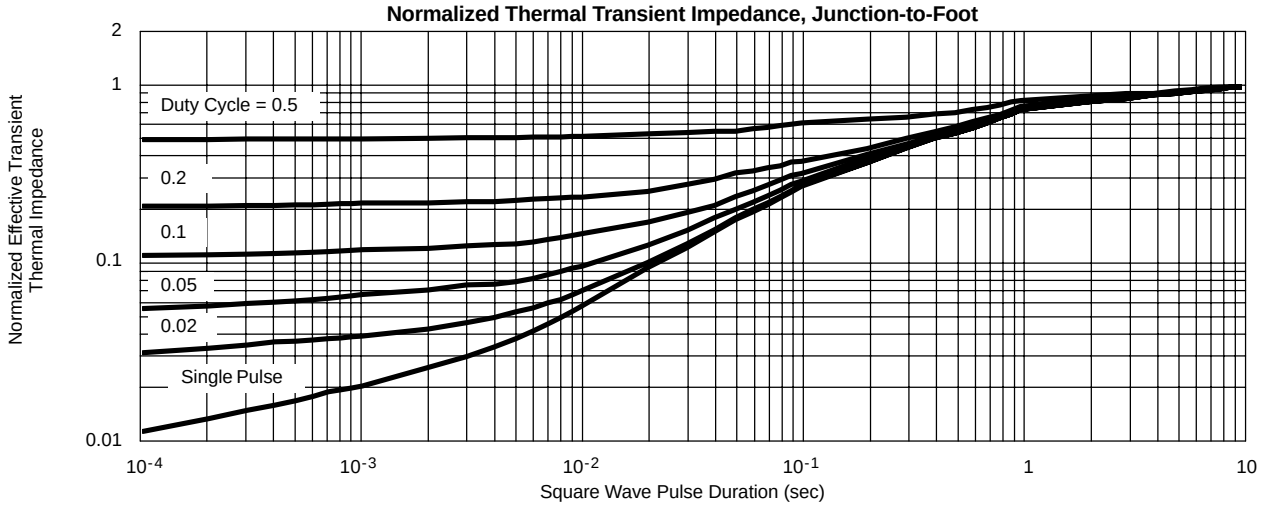

**Single Pulse Power, Junction-to-Ambient**



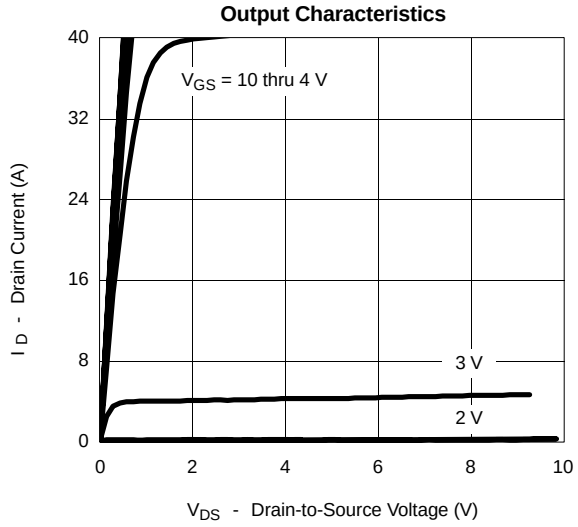

**Normalized Thermal Transient Impedance, Junction-to-Ambient**

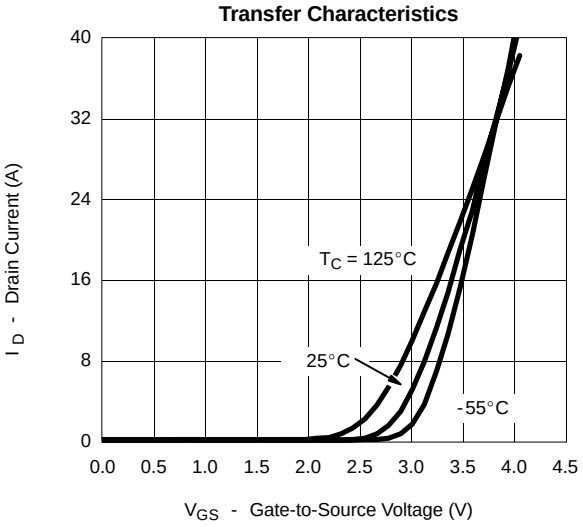


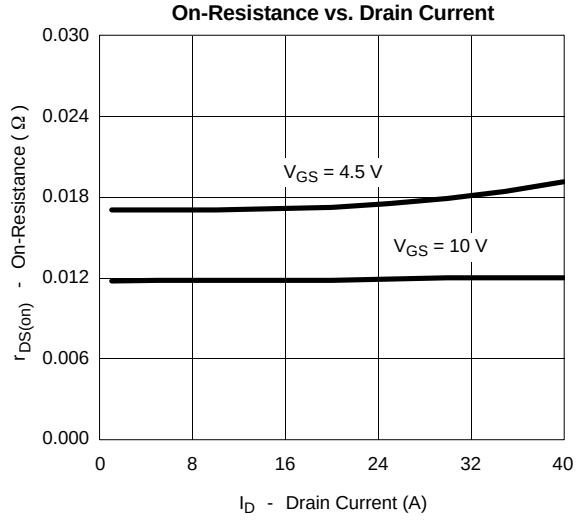
## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 1

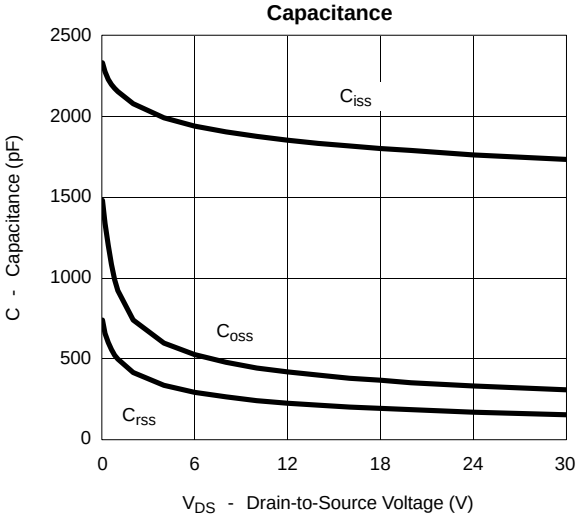



## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 2



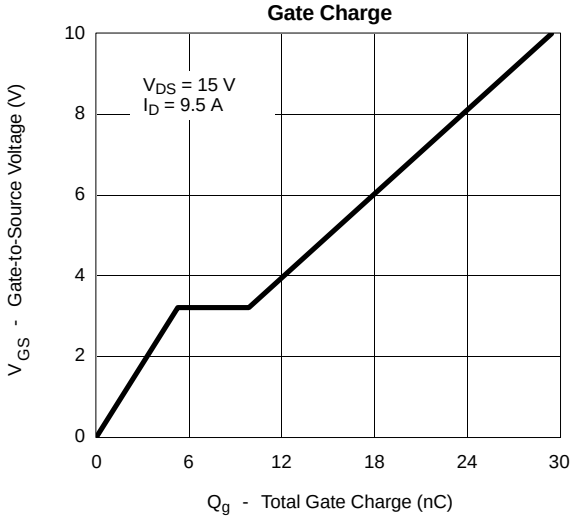



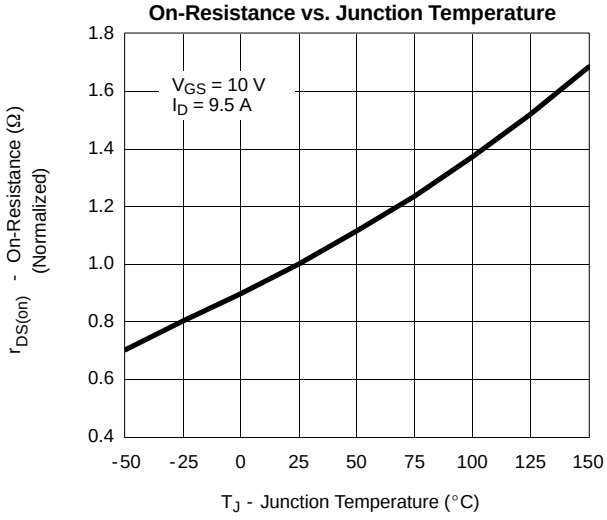



## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 2

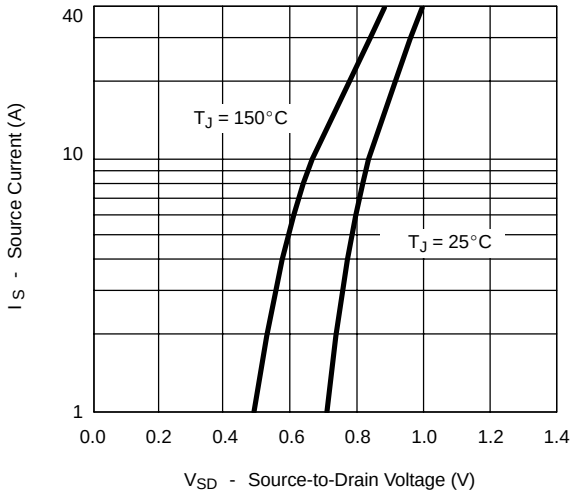
**Gate Charge**



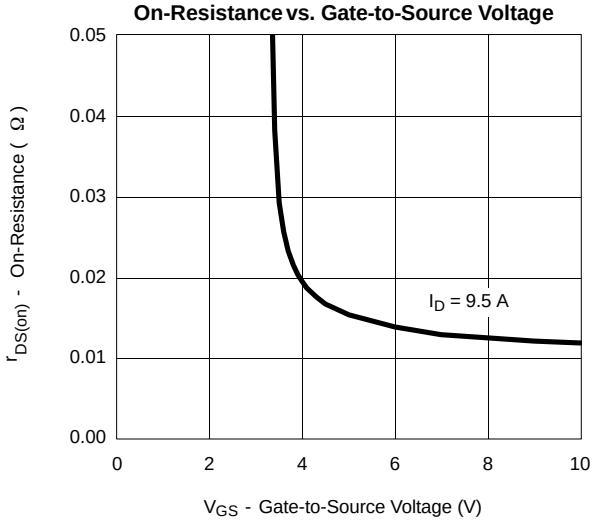

**On-Resistance vs. Junction Temperature**



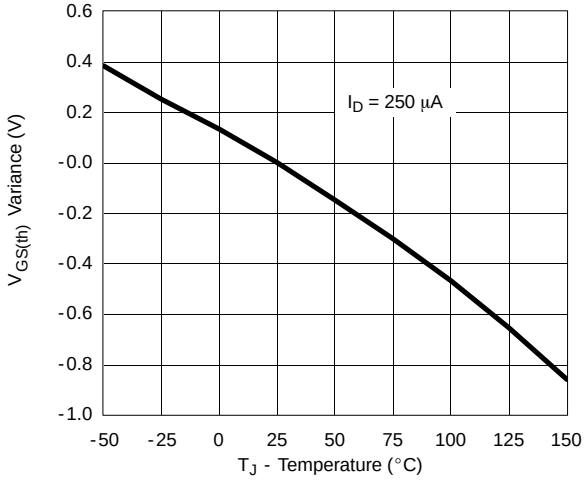

**Source-Drain Diode Forward Voltage**



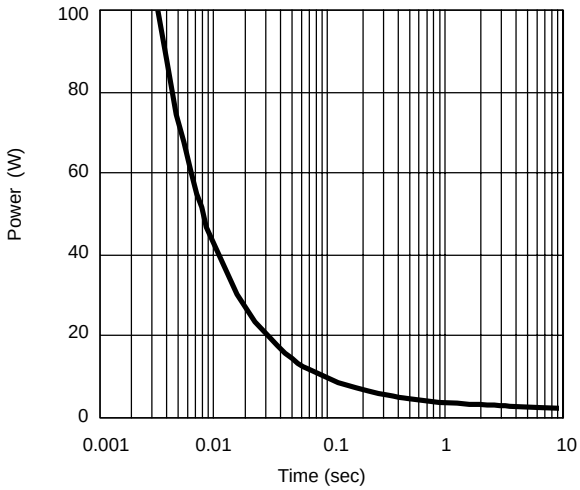

**On-Resistance vs. Gate-to-Source Voltage**



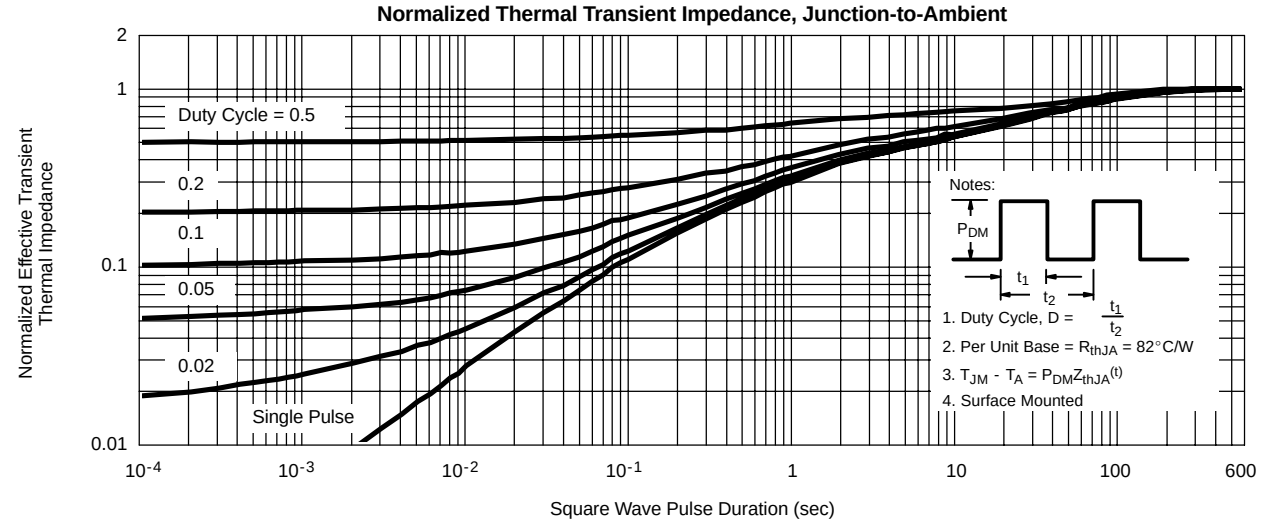

**Threshold Voltage**

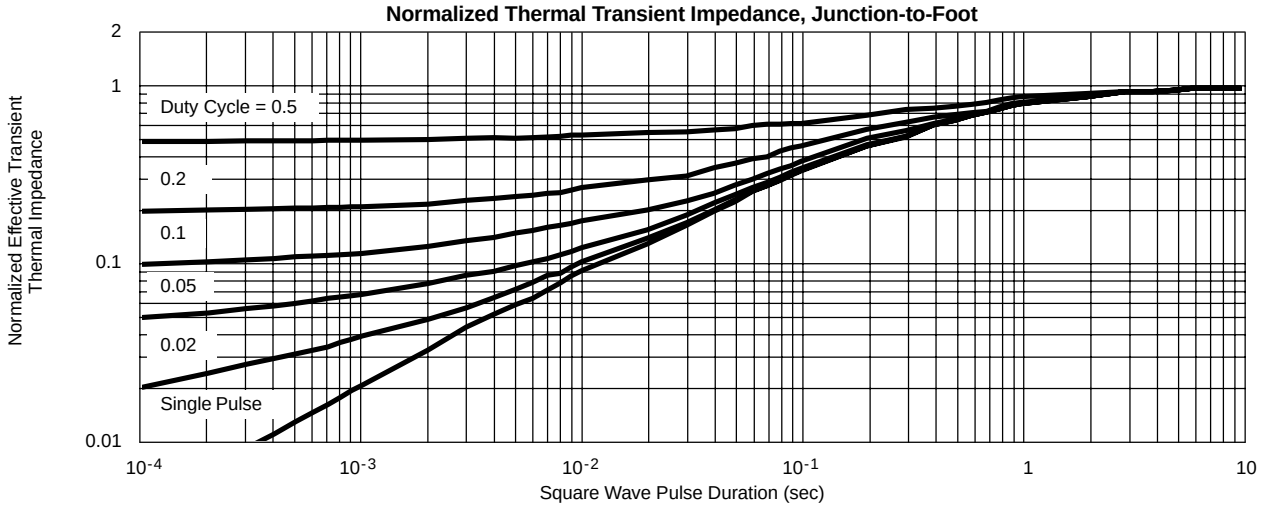



**Single Pulse Power, Junction-to-Ambient**



## TYPICAL CHARACTERISTICS (25°C UNLESS NOTED) CHANNEL 2



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