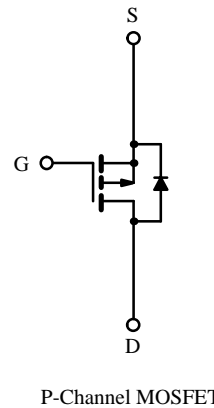
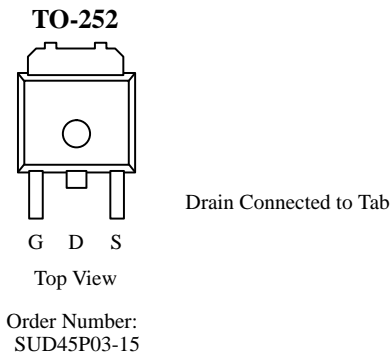


P-Channel 30-V (D-S), 150°C MOSFET

Product Summary

| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) ^a |
|--------------|---------------------------|------------------------|
| -30 | 0.015 @ $V_{GS} = -10$ V | ± 13 |
| | 0.024 @ $V_{GS} = -4.5$ V | ± 8 |

TrenchFET™
Power MOSFETs



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Parameter | Symbol | Limit | Unit | |
|--|----------------|---------------------------|------------------|---|
| Drain-Source Voltage | V_{DS} | -30 | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | | |
| Continuous Drain Current ^b | I_D | $T_A = 25^\circ\text{C}$ | ± 13 | A |
| | | $T_A = 100^\circ\text{C}$ | ± 8 | |
| Pulsed Drain Current | I_{DM} | ± 100 | | |
| Continuous Source Current (Diode Conduction) | I_S | -13 | | |
| Maximum Power Dissipation ^b | P_D | $T_C = 25^\circ\text{C}$ | 70 | W |
| | | $T_A = 25^\circ\text{C}$ | 4 ^a | |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ | |

Thermal Resistance Ratings

| Parameter | Symbol | Typical | Maximum | Unit |
|--|------------|---------|---------|--------------------|
| Maximum Junction-to-Ambient ^b | R_{thJA} | | 30 | $^\circ\text{C/W}$ |
| Maximum Junction-to-Case | R_{thJC} | | 1.8 | |

Notes

- Calculated Rating for $T_A = 25^\circ\text{C}$, for comparison purposes only. This cannot be used as continuous rating (see Absolute Maximum Ratings and Typical Characteristics).
- Surface Mounted on FR4 Board, $t \leq 10$ sec.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70267.

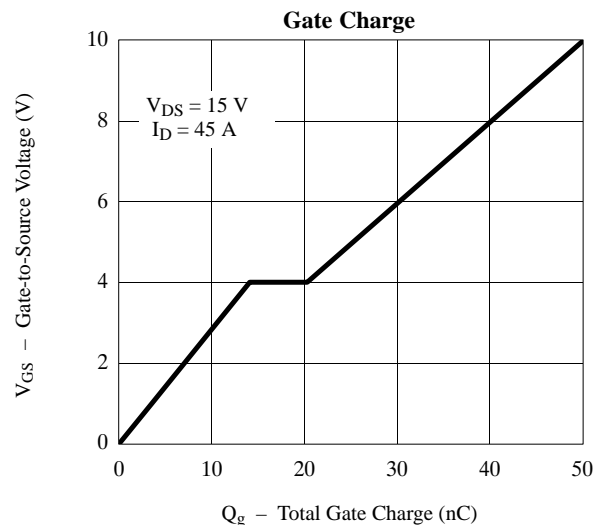
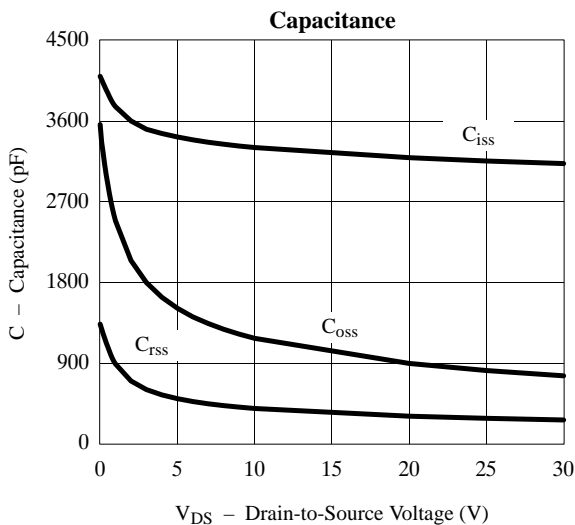
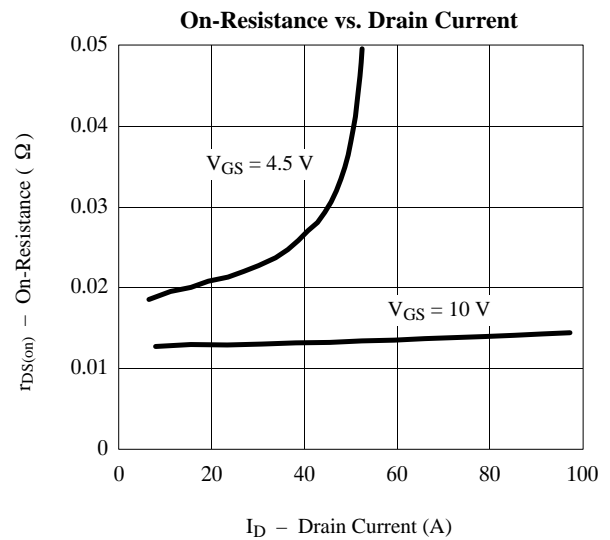
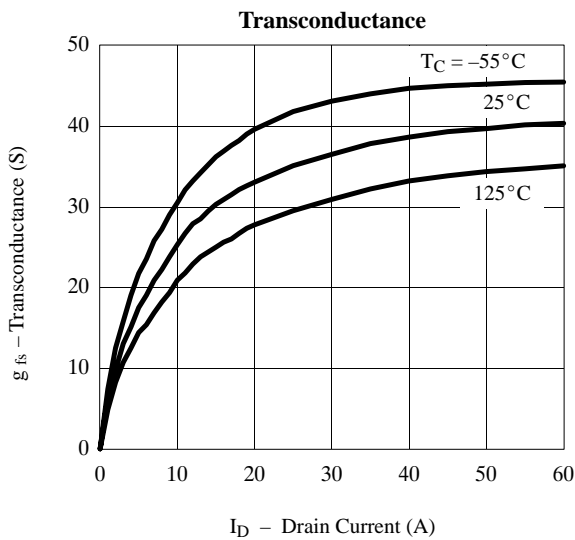
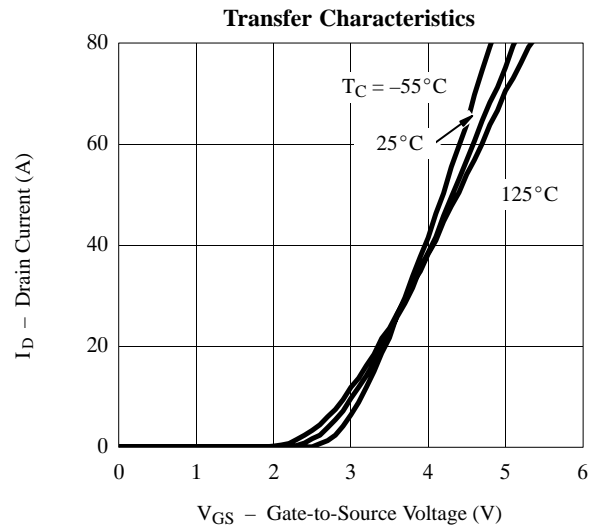
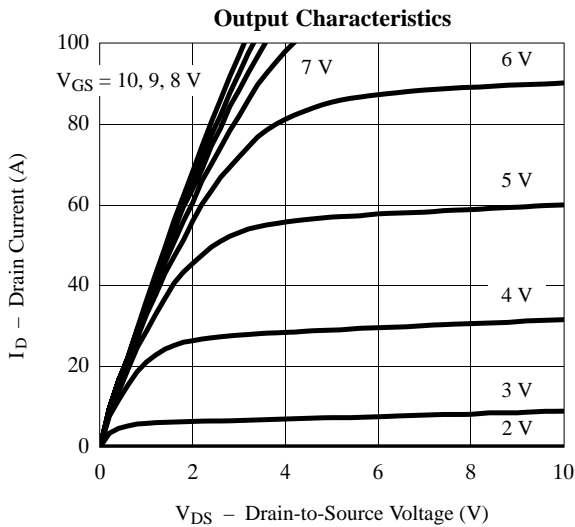
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

| Parameter | Symbol | Test Condition | Min | Typ ^a | Max | Unit |
|--|---------------|--|------|------------------|-----------|---------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$ | -30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$ | -1.0 | | | |
| Gate-Body Leakage | I_{GSS} | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}$ | | | -1 | μA |
| | | $V_{DS} = -30\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$ | | | -50 | |
| On-State Drain Current ^b | $I_{D(on)}$ | $V_{DS} = -5\text{ V}, V_{GS} = -10\text{ V}$ | -50 | | | A |
| | | $V_{DS} = -5\text{ V}, V_{GS} = -4.5\text{ V}$ | -20 | | | |
| Drain-Source On-State Resistance ^b | $r_{DS(on)}$ | $V_{GS} = -10\text{ V}, I_D = -13\text{ A}$ | | 0.012 | 0.015 | Ω |
| | | $V_{GS} = -10\text{ V}, I_D = -13\text{ A}, T_J = 125^\circ\text{C}$ | | 0.018 | 0.026 | |
| | | $V_{GS} = -4.5\text{ V}, I_D = -13\text{ A}$ | | 0.020 | 0.024 | |
| Forward Transconductance ^b | g_{fs} | $V_{DS} = -15\text{ V}, I_D = -13\text{ A}$ | 20 | | | S |
| Dynamic^a | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0\text{ V}, V_{DS} = -25\text{ V}, F = 1\text{ MHz}$ | | 3200 | | pF |
| Output Capacitance | C_{oss} | | | 800 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 280 | | |
| Total Gate Charge ^c | Q_g | $V_{DS} = -15\text{ V}, V_{GS} = -10\text{ V}, I_D = -45\text{ A}$ | | 50 | 125 | nC |
| Gate-Source Charge ^c | Q_{gs} | | | 14 | | |
| Gate-Drain Charge ^c | Q_{gd} | | | 6.2 | | |
| Turn-On Delay Time ^c | $t_{d(on)}$ | $V_{DD} = -15\text{ V}, R_L = 0.33\ \Omega$ $I_D \cong -45\text{ A}, V_{GEN} = -10\text{ V}, R_G = 2.4\ \Omega$ | | 13 | 20 | ns |
| Rise Time ^c | t_r | | | 10 | 20 | |
| Turn-Off Delay Time ^c | $t_{d(off)}$ | | | 50 | 100 | |
| Fall Time ^c | t_f | | | 20 | 40 | |
| Source-Drain Diode Ratings and Characteristic ($T_C = 25^\circ\text{C}$) | | | | | | |
| Pulsed Current | I_{SM} | | | | 100 | A |
| Diode Forward Voltage ^b | V_{SD} | $I_F = -45\text{ A}, V_{GS} = 0\text{ V}$ | | 1.0 | 1.5 | V |
| Source-Drain Reverse Recovery Time | t_{rr} | $I_F = -45\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$ | | 55 | 100 | ns |

Notes

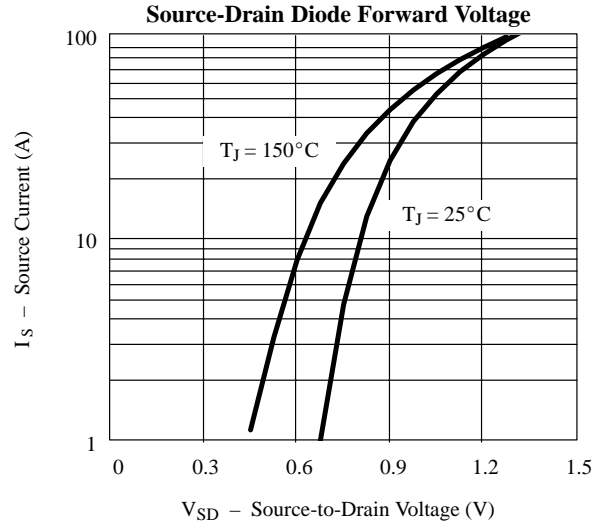
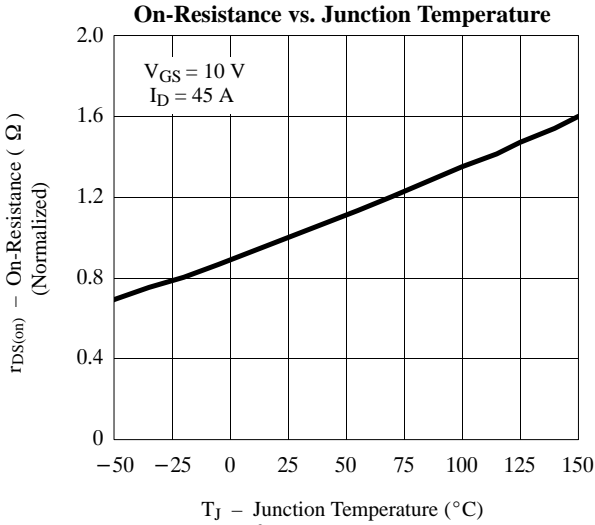
- a. Guaranteed by design, not subject to production testing.
b. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
c. Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)





Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

