



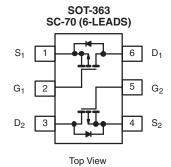
Dual P-Channel 2.5-V (G-S) MOSFET

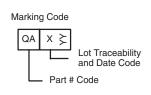
| PRODUCT SUMMARY | | | | |
|---------------------|------------------------------------|--------------------|--|--|
| V _{DS} (V) | $R_{DS(on)}(\Omega)$ | I _D (A) | | |
| | 0.995 at V _{GS} = - 4.5 V | ± 0.44 | | |
| - 20 | 1.190 at V _{GS} = - 3.6 V | ± 0.40 | | |
| | 1.8 at V _{GS} = - 2.5 V | ± 0.32 | | |

FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET[®] Power MOSFETs
- 2.5 V Rated
- · Compliant to RoHS Directive 2002/95/EC







Ordering Information: Si1903DL-T1-E3 (Lead (Pb)-free)

Si1903DL-T1-GE3 (Lead (Pb)-free and Halogen-free)

| ABSOLUTE MAXIMUM RATINGS $T_A = 3$ | 25 °C, unless oth | erwise noted | | | | |
|-----------------------------------------------------------------|------------------------|-----------------------------------|--------------|--------|------|--|
| Parameter | Symbol | 5 s | Steady State | Unit | | |
| Drain-Source Voltage | | V_{DS} | - 20 | | V | |
| Gate-Source Voltage | | V_{GS} | ± | | | |
| Continuous Drain Current /T 150 °C)8 | T _A = 25 °C | - I _D | ± 0.44 | ± 0.41 | А | |
| Continuous Drain Current (T _J = 150 °C) ^a | T _A = 85 °C | | ± 0.31 | ± 0.30 | | |
| Pulsed Drain Current | | I _{DM} | ± 1.0 | | А | |
| Continuous Diode Current (Diode Conduction) ^a | | I _S | - 0.25 | - 0.23 | | |
| Martine de Danier Dissination d | T _A = 25 °C | P _D | 0.30 | 0.27 | W | |
| Maximum Power Dissipation ^a | T _A = 85 °C | 7 'B | 0.16 | 0.14 | , vv | |
| Operating Junction and Storage Temperature Range | | T _J , T _{stq} | - 55 | °C | | |

| THERMAL RESISTANCE RATINGS | | | | | |
|------------------------------------------|--------------|-------------------|---------|---------|------|
| Parameter | | Symbol | Typical | Maximum | Unit |
| Maximum Junction-to-Ambient ^a | t ≤ 5 s | R _{thJA} | 360 | 415 | °C/W |
| | Steady State | | 400 | 460 | |
| Maximum Junction-to-Foot (Drain) | Steady State | R_{thJF} | 300 | 350 | |

Notes:

a. Surface Mounted on 1" x 1" FR4 board.

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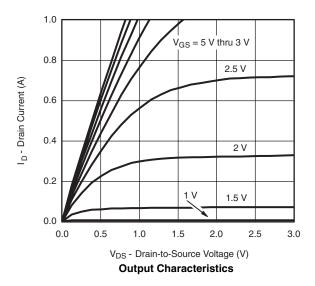
| SPECIFICATIONS T _J = 25 °C, unless otherwise noted | | | | | | | |
|----------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------|-------|-------|-------|------|--|
| Parameter | Symbol | Test Conditions | Min. | Тур. | Max. | Unit | |
| Static | | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | $V_{DS} = V_{GS, I_D} = -250 \mu A$ | - 0.6 | | 1.5 | V | |
| Gate-Body Leakage | I _{GSS} | $V_{DS} = 0 \text{ V}, V_{GS} = \pm 12 \text{ V}$ | | | ± 100 | nA | |
| Zero Gate Voltage Drain Current | I _{DSS} | $V_{DS} = -20 \text{ V}, V_{GS} = 0 \text{ V}$ | | | - 1 | μΑ | |
| Zero Gale voltage Drain Current | | $V_{DS} = -20 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 85 ^{\circ}\text{C}$ | | | - 5 | | |
| On-State Drain Current ^a | I _{D(on)} | $V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$ | - 1.0 | | | Α | |
| | | $V_{GS} = -4.5 \text{ V}, I_D = -0.41 \text{ A}$ | | 0.850 | 0.995 | | |
| Drain-Source On-State Resistance ^a | R _{DS(on)} | $V_{GS} = -3.6 \text{ V}, I_D = -0.38 \text{ A}$ | | 1.0 | 1.190 | Ω | |
| | | V _{GS} = - 2.5 V, I _D = - 0.25 A | | 1.4 | 1.80 | | |
| Forward Transconductancea | 9 _{fs} | $V_{DS} = -10 \text{ V}, I_{D} = -0.41 \text{ A}$ | | 0.8 | | S | |
| Diode Forward Voltage ^a | V _{SD} | $I_S = -0.23 \text{ A}, V_{GS} = 0 \text{ V}$ | | - 0.8 | - 1.2 | V | |
| Dynamic ^b | | | | | | | |
| Total Gate Charge | Q_g | | | 1.2 | 1.8 | | |
| Gate-Source Charge | Q_{gs} | $V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V}, I_{D} = -0.41 \text{ A}$ | | 0.45 | | nC | |
| Gate-Drain Charge | Q_{gd} | | | 0.25 | | | |
| Turn-On Delay Time | t _{d(on)} | | | 7.5 | 15 | | |
| Rise Time | t _r | V_{DD} = - 10 V, R_L = 20 Ω | | 20 | 40 | | |
| Turn-Off DelayTime | t _{d(off)} | $I_D \cong$ - 0.5 A, V_{GEN} = - 4.5 V, R_g = 6 Ω | | 8.5 | 17 | ns | |
| Fall Time | t _f | | | 12 | 24 | | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = - 0.23 A, dl/dt = 100 A/μs | | 25 | 40 | | |

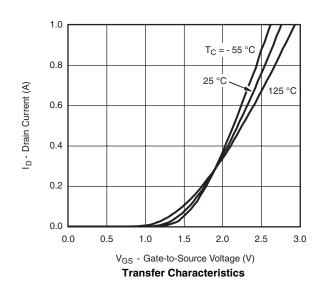
Notes:

- a. Pulse test; pulse width \leq 300 μ s, duty cycle \leq 2 %.
- b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



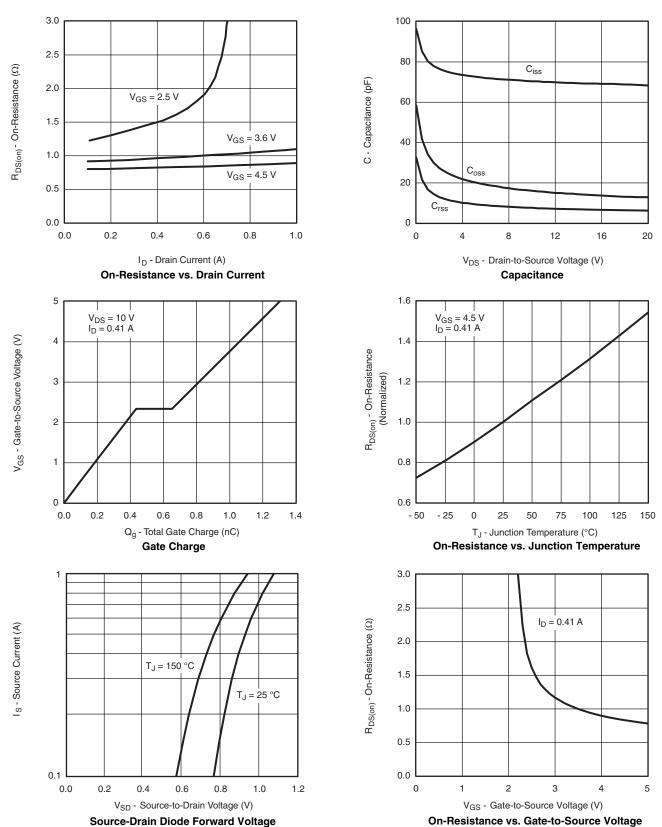






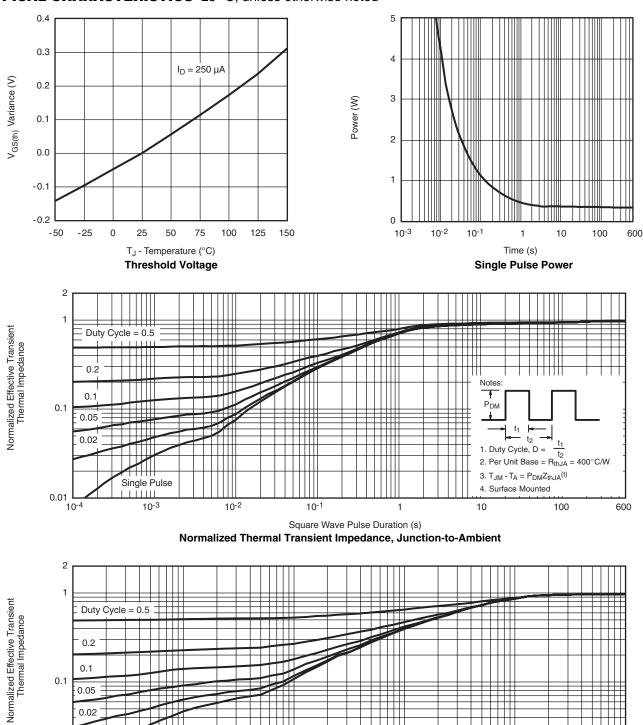


TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



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TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



Square Wave Pulse Duration (s) Normalized Thermal Transient Impedance, Junction-to-Foot

10⁻¹

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10-2

0.02

0.01 10-4 Single Pulse

10-3

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