

P-Channel 40-V (D-S) MOSFET

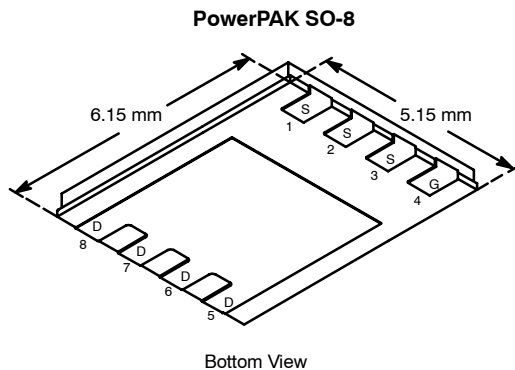
| PRODUCT SUMMARY | | |
|-----------------|---------------------------|-----------|
| V_{DS} (V) | $r_{DS(on)}$ (Ω) | I_D (A) |
| -40 | 0.0092 @ $V_{GS} = -10$ V | -18.6 |
| | 0.014 @ $V_{GS} = -4.5$ V | -15 |

FEATURES

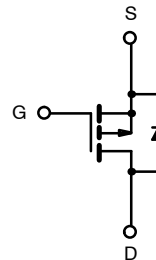
- TrenchFET® Power MOSFET
- New Low Thermal Resistance PowerPAK® Package with Low 1.07-mm Profile

APPLICATIONS

- Automotive
 - 12-V Boardnet
 - High-Side Switches
 - Motor Drives



Ordering Information: Si7463DP-T1—E3



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) | | | | | |
|---|----------------|--------------------------|--------------|------------------|---|
| Parameter | Symbol | 10 secs | Steady State | Unit | |
| Drain-Source Voltage | V_{DS} | -40 | | V | |
| Gate-Source Voltage | V_{GS} | ± 20 | | | |
| Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a | I_D | $T_A = 25^\circ\text{C}$ | -18.6 | -11 | A |
| | | $T_A = 70^\circ\text{C}$ | -15 | -8.9 | |
| Pulsed Drain Current | I_{DM} | -60 | | | |
| continuous Source Current (Diode Conduction) ^a | I_S | -4.5 | -1.6 | | |
| Maximum Power Dissipation ^a | P_D | $T_A = 25^\circ\text{C}$ | 5.4 | 1.9 | W |
| | | $T_A = 70^\circ\text{C}$ | 3.4 | 1.2 | |
| 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 ^a | R_{thJA} | $t \leq 10$ sec | 18 | 23 | $^\circ\text{C/W}$ |
| | | Steady State | 52 | 65 | |
| Maximum Junction-to-Case (Drain) | R_{thJC} | 1.0 | 1.3 | | |

Notes

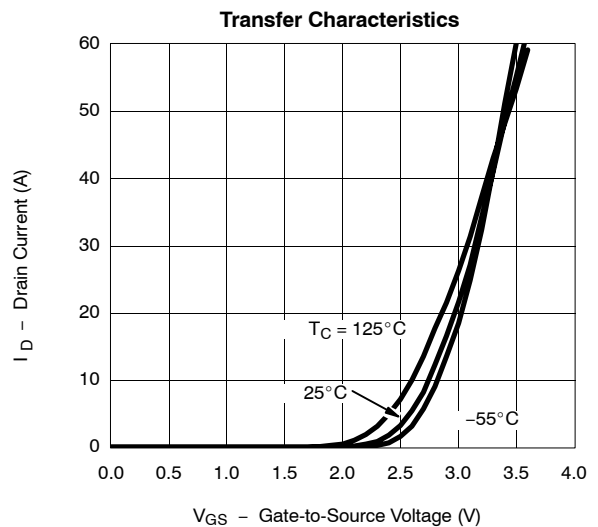
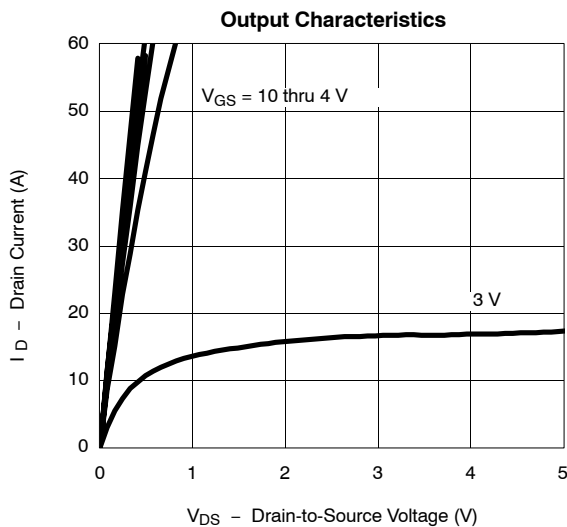
a. Surface Mounted on 1" x 1" FR4 Board.

| 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 | -1 | | -3 | 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} = -40 V, V _{GS} = 0 V | | | -1 | μA |
| | | V _{DS} = -40 V, V _{GS} = 0 V, T _J = 70 °C | | | -10 | |
| 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 = -18.6 A | | 0.0075 | 0.0092 | Ω |
| | | V _{GS} = -4.5 V, I _D = -15 A | | 0.011 | 0.014 | |
| Forward Transconductance ^a | g _{fs} | V _{DS} = -15 V, I _D = -18.6 A | | 50 | | S |
| Diode Forward Voltage ^a | V _{SD} | I _S = -4.5 A, V _{GS} = 0 V | | -0.8 | -1.2 | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = -20 V, V _{GS} = -10 V, I _D = -18.6 A | | 121 | 140 | nC |
| Gate-Source Charge | Q _{gs} | | | 19.2 | | |
| Gate-Drain Charge | Q _{gd} | | | 30.3 | | |
| Gate-Resistance | R _g | | | 2.7 | | Ω |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = -20 V, R _L = 20 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω | | 20 | 30 | ns |
| Rise Time | t _r | | | 25 | 40 | |
| Turn-Off Delay Time | t _{d(off)} | | | 200 | 300 | |
| Fall Time | t _f | | | 100 | 150 | |
| Source-Drain Reverse Recovery Time | t _{rr} | I _F = -4.5 A, di/dt = 100 A/μs | | 45 | 70 | |

Notes

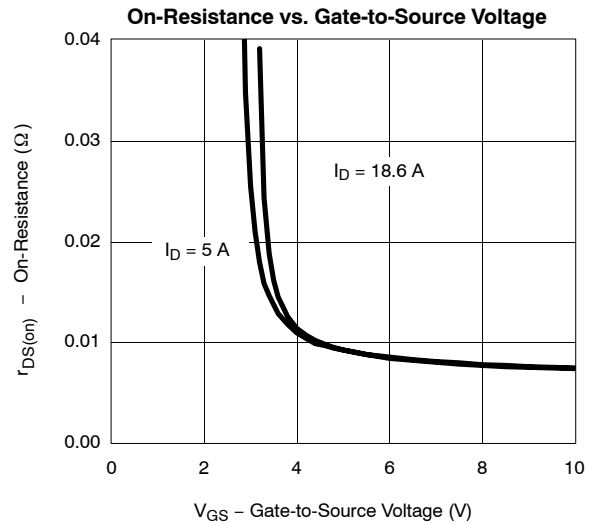
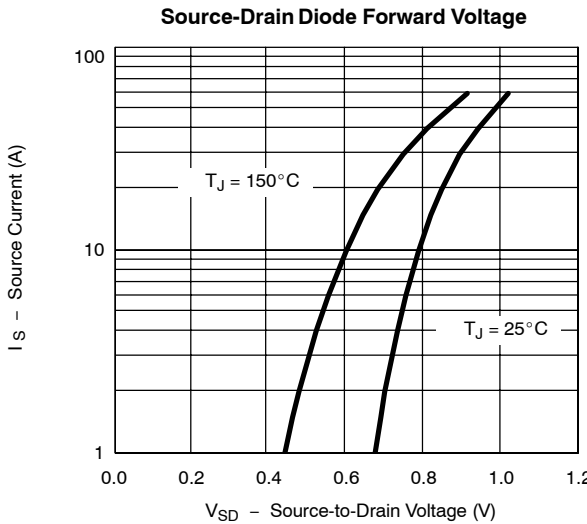
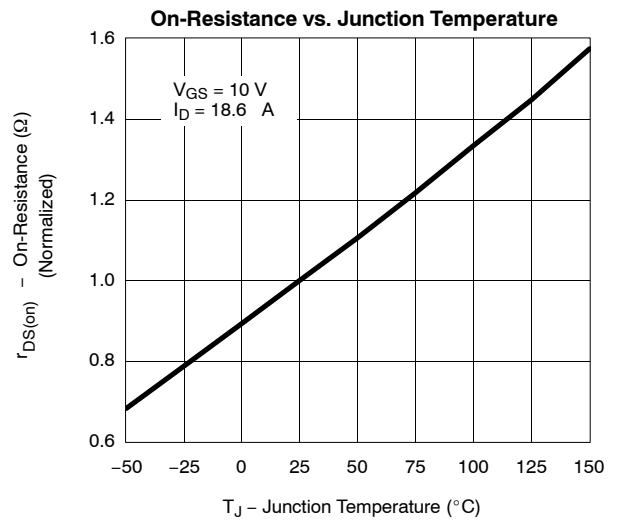
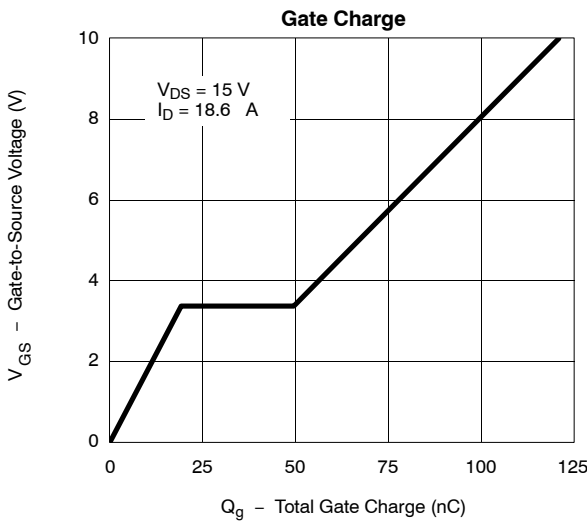
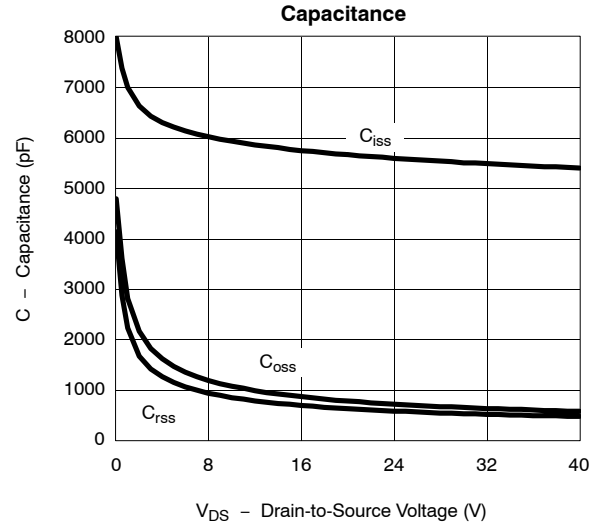
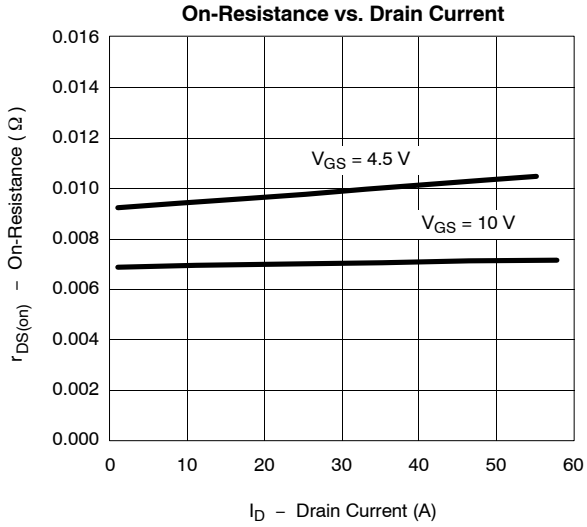
- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

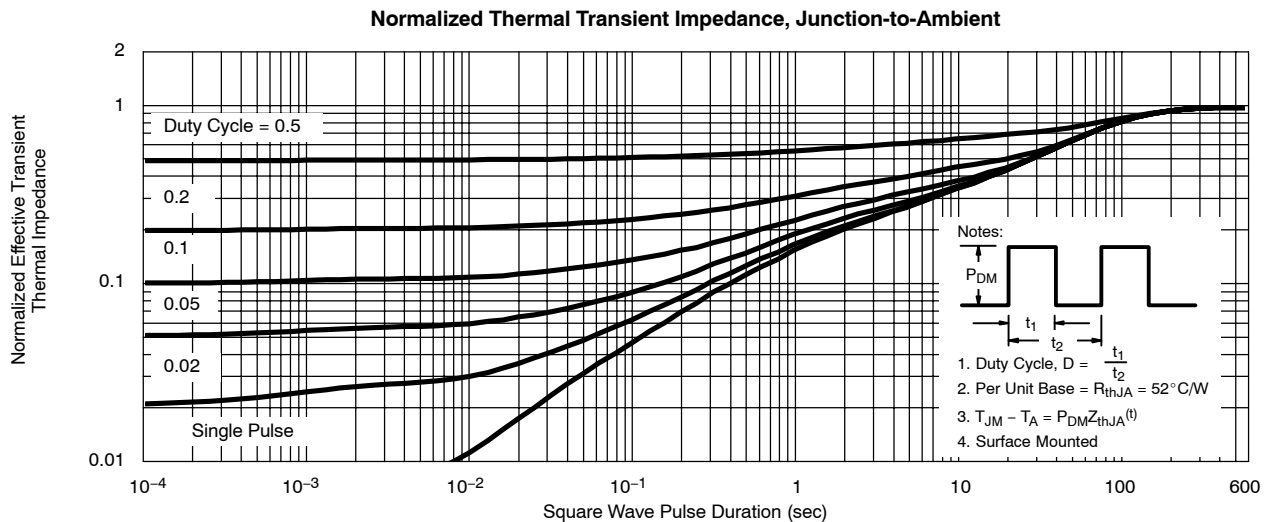
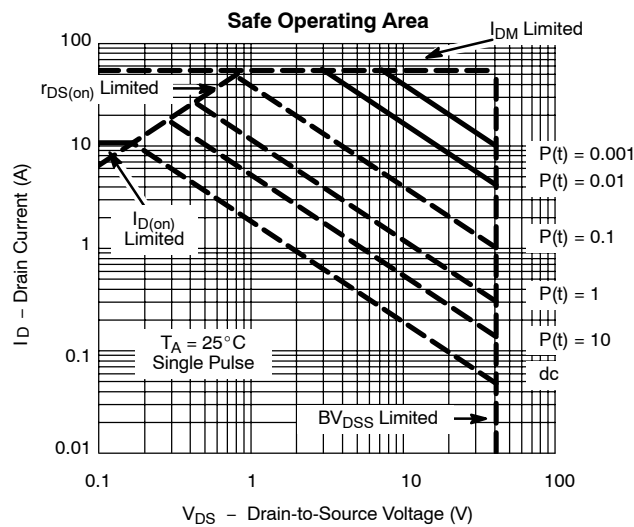
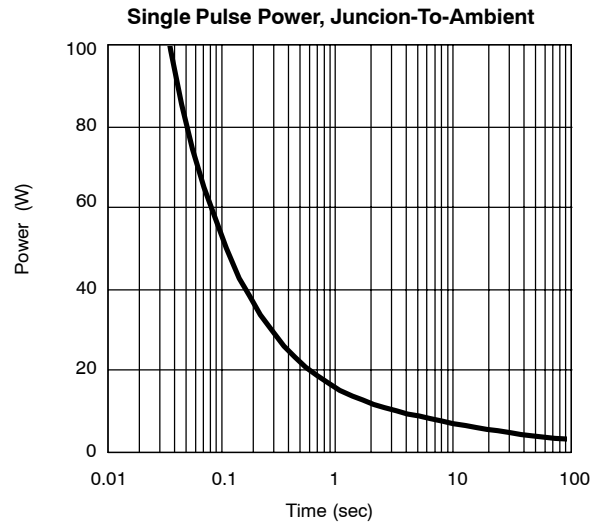
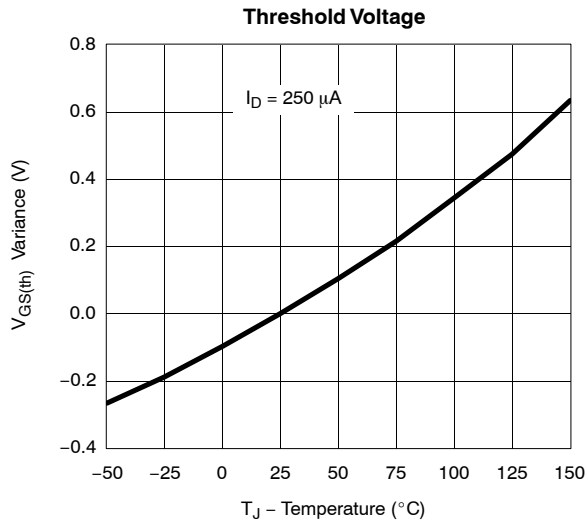




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