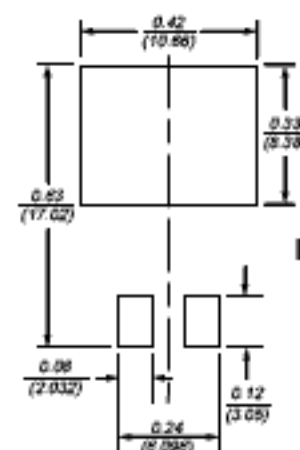
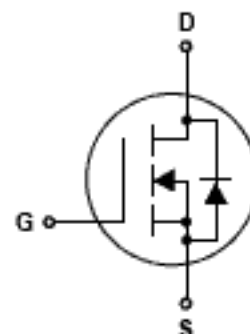
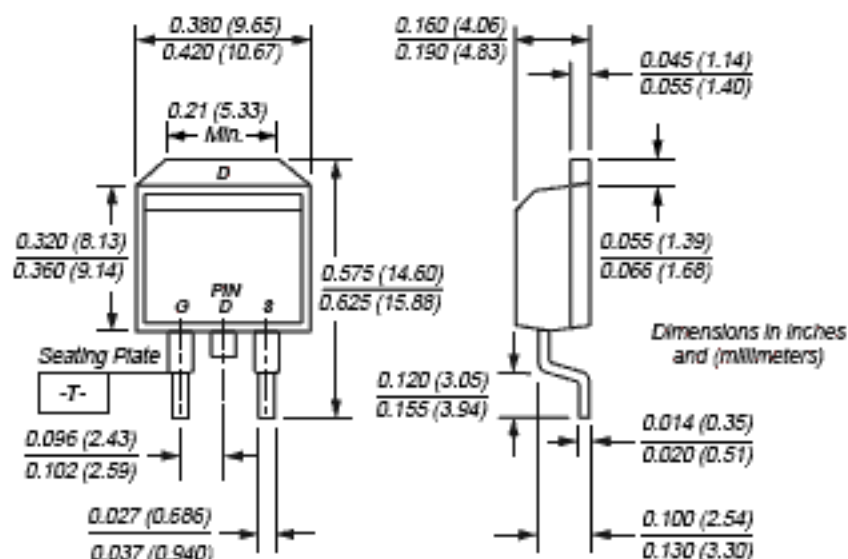


N-Channel Enhancement-Mode MOSFET

V_{DS} 30V $R_{DS(ON)}$ 13mΩ I_D 50A



TO-263AB



Mechanical Data

Case: JEDEC TO-263 molded plastic body
 Terminals: Leads solderable per MIL-STD-750, Method 2028
 High temperature soldering guaranteed: 250°C/10 seconds at terminals
 Mounting Position: Any Weight: 1.3g

Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Specially Designed for Low Voltage DC/DC Converters
- Fast Switching for High Efficiency

Maximum Ratings and Thermal Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|-----------------|---|--------------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current ⁽¹⁾ | I_D | 50 | A |
| Pulsed Drain Current | I_{DM} | 100 | |
| Maximum Power Dissipation | P_D | $T_C = 25^\circ\text{C}$ 25 $T_C = 100^\circ\text{C}$ | W |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |
| Lead Temperature (1/8" from case for 5 sec.) | T_L | 275 | $^\circ\text{C}$ |
| Junction-to-Case Thermal Resistance | $R_{\theta JC}$ | 2.0 | $^\circ\text{C/W}$ |
| Junction-to-Ambient Thermal Resistance ⁽²⁾ | $R_{\theta JA}$ | 40 | $^\circ\text{C/W}$ |

Notes: (1) Maximum DC current limited by the package
 (2) 1-in² 2oz. Cu PCB mounted

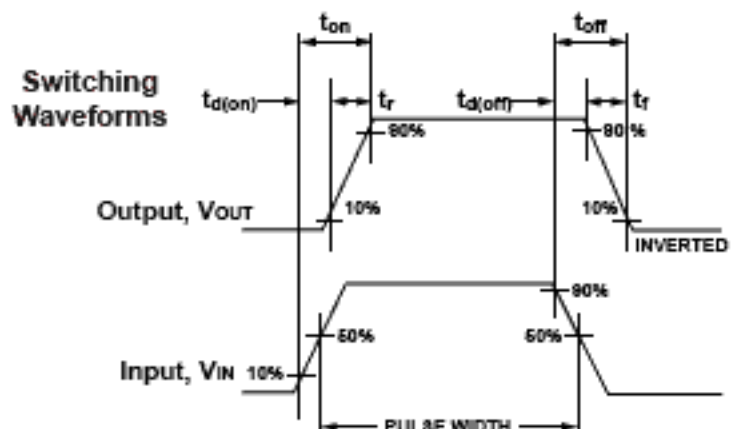
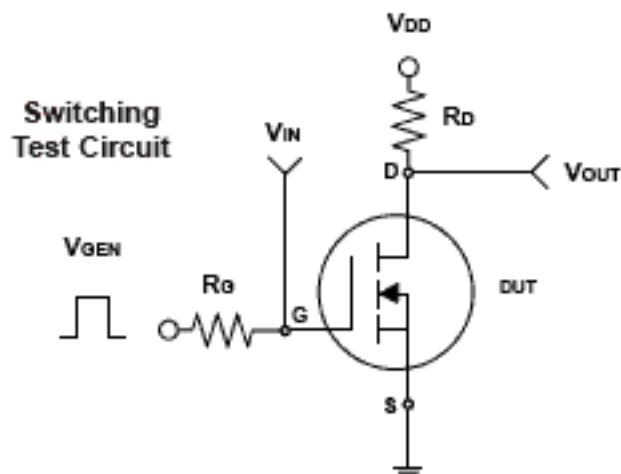
N-Channel Enhancement-Mode MOSFET

Electrical Characteristics (T_J = 25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit | |
|---|---------------------|---|-----------------------|------------|------|------|---|
| Static | | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D = 250μA | 30 | | | V | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.0 | | 3.0 | | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±20V | | | ±100 | nA | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 30V, V _{GS} = 0V | | | 1 | μA | |
| On-State Drain Current ⁽¹⁾ | I _{D(on)} | V _{DS} ≥ 5V, V _{GS} = 10V | 60 | | | A | |
| Drain-Source On-State Resistance ⁽¹⁾ | R _{DS(on)} | V _{GS} = 10V, I _D = 25A | | 11 | 13 | mΩ | |
| | | V _{GS} = 4.5V, I _D = 20A | | 15 | 20 | | |
| Forward Transconductance ⁽¹⁾ | g _{fs} | V _{DS} = 10V, I _D = 25A | | 40 | | S | |
| Diode Forward Voltage | V _{SD} | I _S = 25A, V _{GS} = 0V | | 0.9 | 1.3 | V | |
| Dynamic⁽¹⁾ | | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15V, V _{GS} = 5V, I _D = 50A | | 16 | 22 | nC | |
| | | V _{DS} = 15V, V _{GS} = 10V I _D = 50A | | 35 | 60 | | |
| | | | | 8 | | | |
| Gate-Source Charge | Q _{gs} | V _{DS} = 15V, R _L = 15Ω I _D = 1A, V _{GEN} = 10V R _G = 6Ω | | 11 | 20 | ns | |
| Gate-Drain Charge | Q _{gd} | | | 11 | 20 | | |
| Turn-On Delay Time | t _{d(on)} | | | 48 | 80 | | |
| Rise Time | t _r | | 15 | 30 | | | |
| Turn-Off Delay Time | t _{d(off)} | V _{GS} = 0V | | – | – | pF | |
| Fall Time | t _f | | V _{DS} = 15V | | 1850 | | |
| Input Capacitance | C _{iss} | | | f = 1.0MHz | | | – |
| Output Capacitance | C _{oss} | I _F = 25A, di/dt = 100A/μs | | – | – | ns | |
| Reverse Transfer Capacitance | C _{rss} | | | | 145 | | |
| Source-Drain Reverse Recovery Time | t _{rr} | | | 160 | | | |

Note:

(1) Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 1 – Output Characteristics

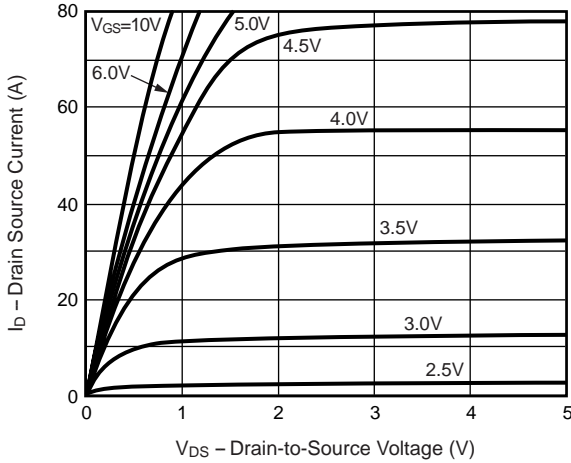


Fig. 2 – Transfer Characteristics

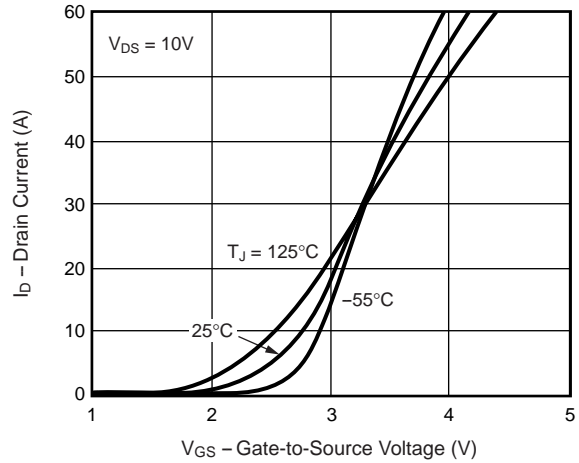


Fig. 3 – Threshold Voltage vs. Temperature

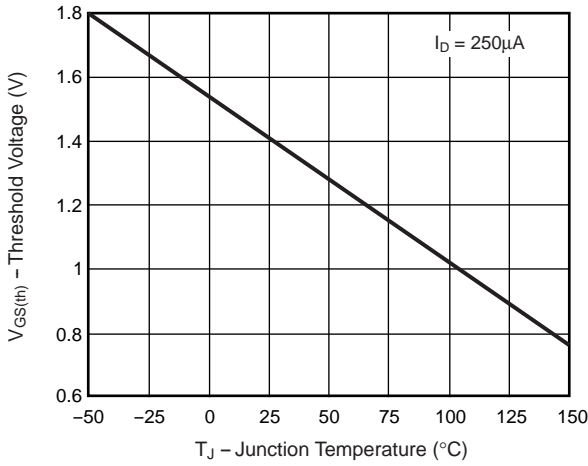


Fig. 4 – On-Resistance vs. Drain Current

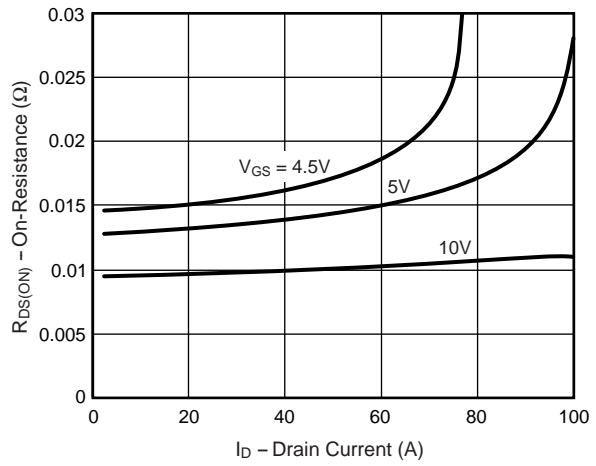
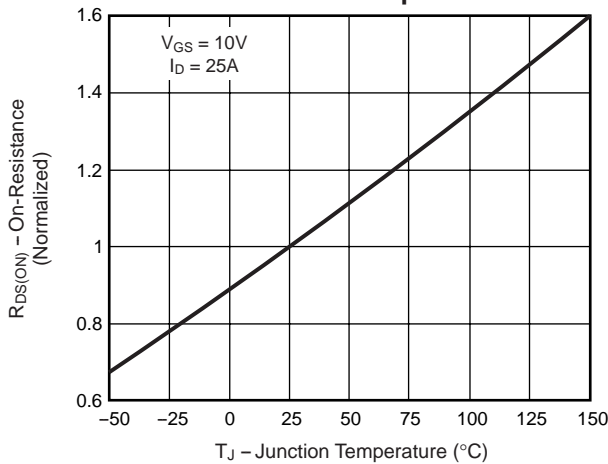


Fig. 5 – On-Resistance vs. Junction Temperature



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 6 – On-Resistance vs. Gate-to-Source Voltage

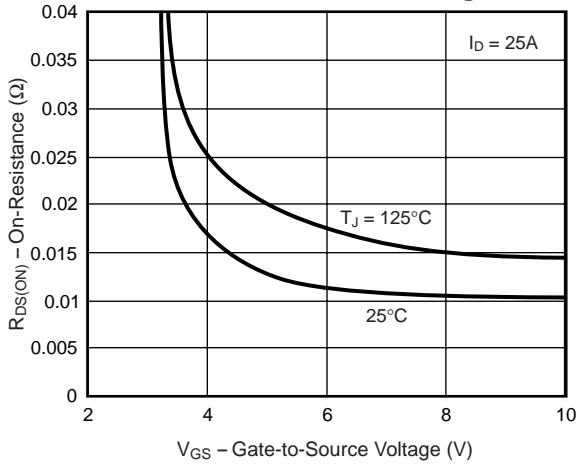


Fig. 7 – Gate Charge

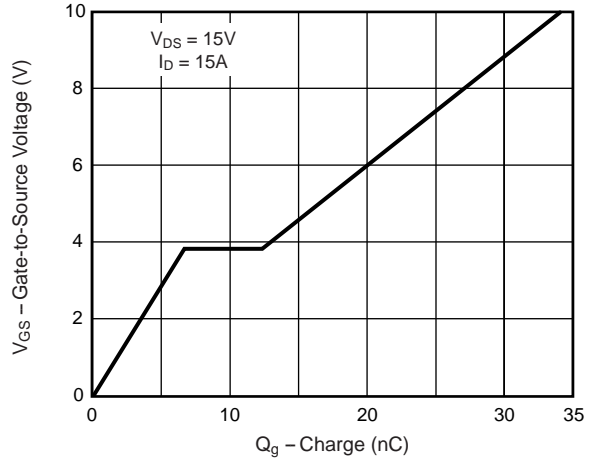


Fig. 8 – Capacitance

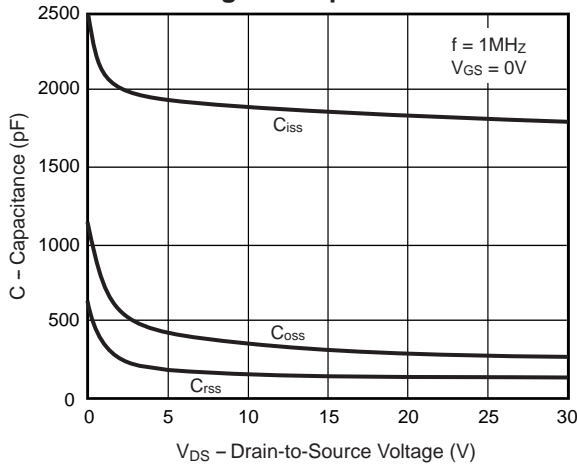
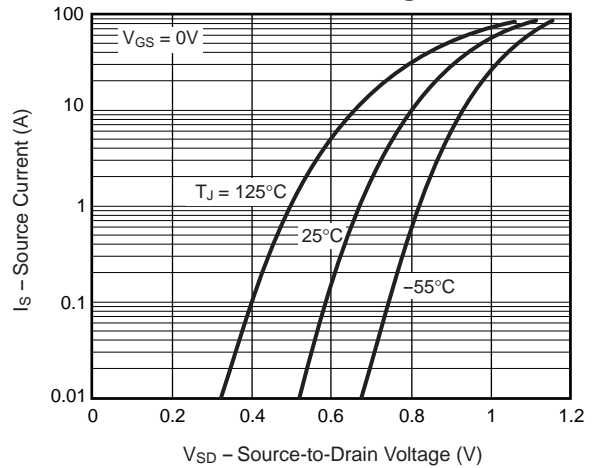


Fig. 9 – Source-Drain Diode Forward Voltage



N-Channel Enhancement-Mode MOSFET

Ratings and Characteristic Curves (T_A = 25°C unless otherwise noted)

Fig. 10 – Breakdown Voltage vs. Junction Temperature

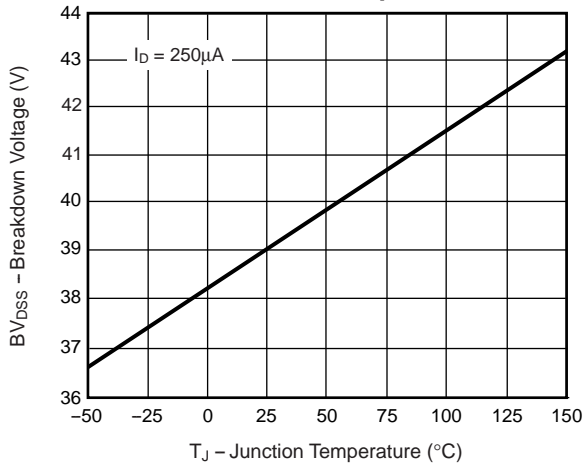


Fig. 11 – Transient Thermal Impedance

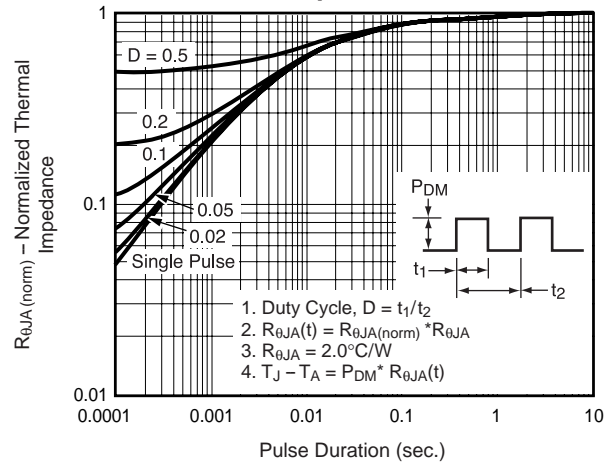


Fig. 12 – Power vs. Pulse Duration

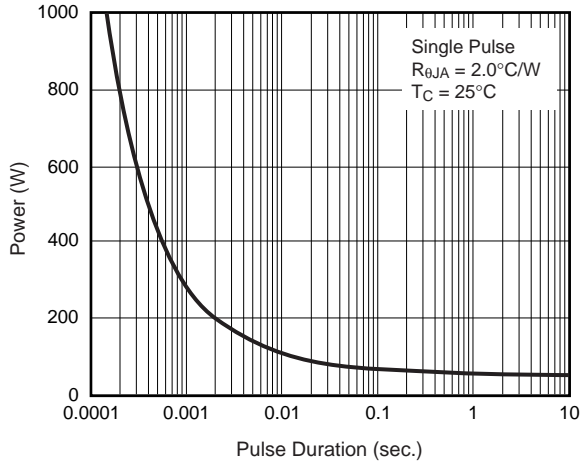
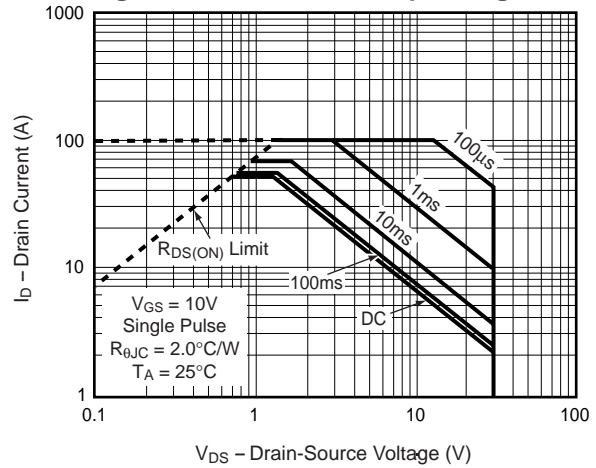


Fig. 13 – Maximum Safe Operating Area



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