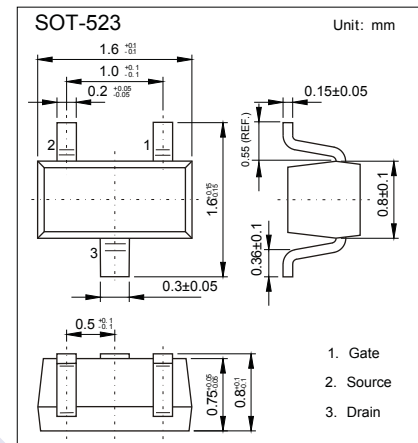


N-Channel MOSFET

2KK5043

■ Features

- $V_{DS} = 20\text{ V}$
- $I_D = 500\text{ mA}$
- Trench FET Power MOSFET: 1.8-V Rated
- Low On-Resistance: 0.7.
- Low Threshold: 0.8V (Typ.)
- ESD Protected

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

| Parameter | | Symbol | 5 secs | Stead State | Unit |
|------------------------------------|--------------------------|-----------|------------|-------------|------------------|
| Drain-Source Voltage | | V_{DS} | 20 | | V |
| Gate-Source Voltage | | V_{GS} | ± 6 | | |
| Continuous Drain Current (Note 2) | $T_A = 25^\circ\text{C}$ | I_D | 600 | 500 | mA |
| | $T_A = 85^\circ\text{C}$ | | 400 | 350 | |
| Pulsed Drain Current (Note 1) | | I_{DM} | 1000 | | |
| Continuous Source Current (Note 2) | | I_S | 275 | 250 | |
| Power Dissipation (Note 2) | $T_A = 25^\circ\text{C}$ | P_D | 175 | 150 | mW |
| | $T_A = 85^\circ\text{C}$ | | 90 | 80 | |
| Junction Temperature | | T_J | 150 | | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{stg} | -55 to 150 | | |

Notes

1. Pulse test; pulse width = 300 μs , duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

N-Channel MOSFET

2KK5043

■ Electrical Characteristics ($T_A = 25^\circ\text{C}$, unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-----------------------------------|--------------|---|------|------|---------|---------------|
| Drain-Source Breakdown Voltage | V_{DSS} | $I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$ | 20 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=20\text{V}$, $V_{GS}=0\text{V}$ | | | 100 | nA |
| Gate-Body Leakage Current | I_{GSS} | $V_{DS}=0\text{V}$, $V_{GS}=\pm 4.5\text{V}$ | | | ± 1 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=3\text{V}$, $I_D=250\mu\text{A}$ | 0.45 | | 0.9 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=4.5\text{V}$, $I_D=600\text{mA}$ | | 0.41 | 0.7 | Ω |
| | | $V_{GS}=2.5\text{V}$, $I_D=500\text{mA}$ | | 0.53 | 0.85 | |
| | | $V_{GS}=1.8\text{V}$, $I_D=350\text{mA}$ | | 0.7 | 1.25 | |
| Forward Transconductance | g_{FS} | $V_{DS}=10\text{V}$, $I_D=400\text{mA}$ | | 1 | | mS |
| Total Gate Charge | Q_g | $V_{DS}=10\text{V}$, $I_D=250\text{mA}$, $V_{GS}=4.5\text{V}$ | | 750 | | pC |
| Gate Source Charge | Q_{gs} | | | 75 | | |
| Gate Drain Charge | Q_{gd} | | | 225 | | |
| Turn-On Delay Time | $t_{d(on)}$ | | | 5 | | |
| Turn-On Rise Time | t_r | $V_{DD} = 10\text{V}$, $R_L = 47\Omega$, $I_D \leq 200\text{mA}$, $V_{GEN} = 4.5\text{V}$, $R_G = 10\Omega$ | | 5 | | ns |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 25 | | |
| Turn-Off Fall Time | t_f | | | 11 | | |
| Diode Forward Voltage | V_{SD} | $I_{SD}=150\text{mA}$, $V_{GS}=0\text{V}$ | | | 1.2 | V |

■ Marking

| | |
|---------|----|
| Marking | A8 |
|---------|----|

N-Channel MOSFET

2KK5043

■ Typical Characteristics

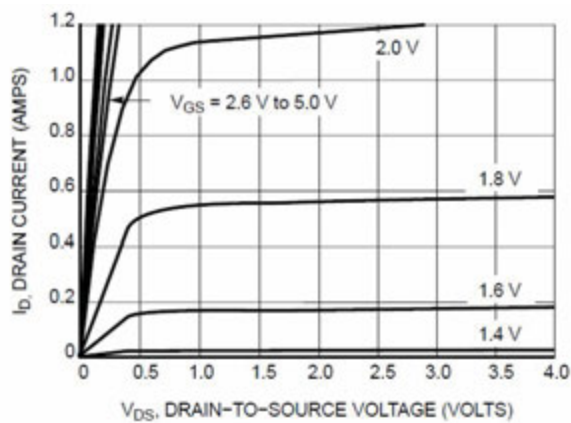


Figure 1. On-Region Characteristics

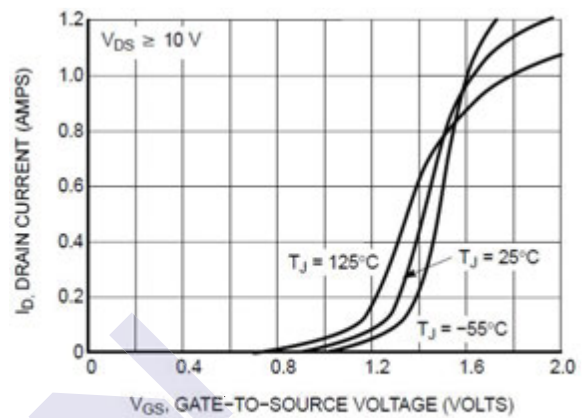


Figure 2. Transfer Characteristics

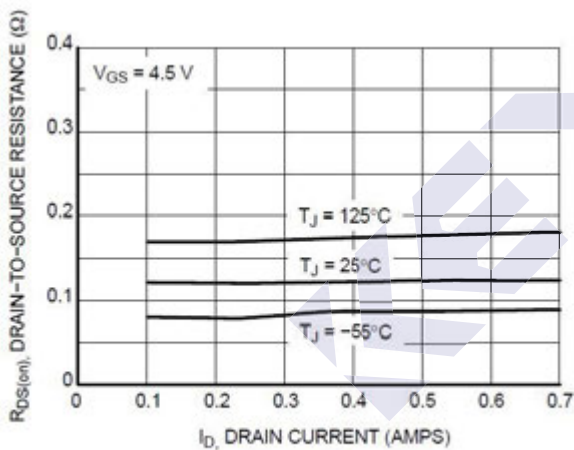


Figure 3. On-Resistance vs. Drain Current and Temperature

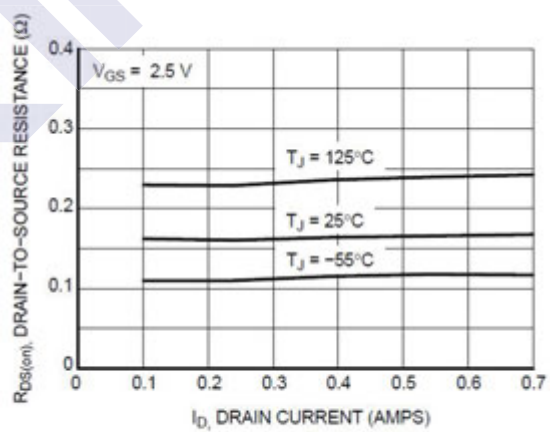


Figure 4. On-Resistance vs. Drain Current and Temperature

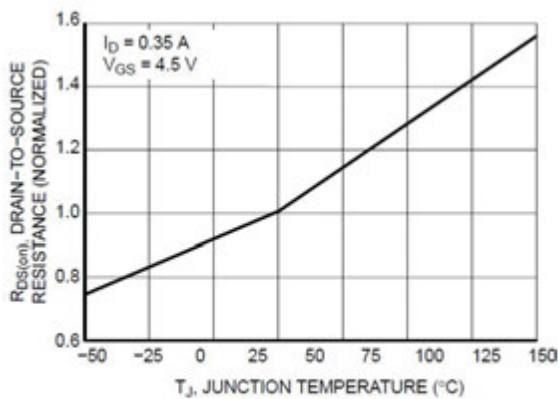


Figure 5. On-Resistance Variation with Temperature

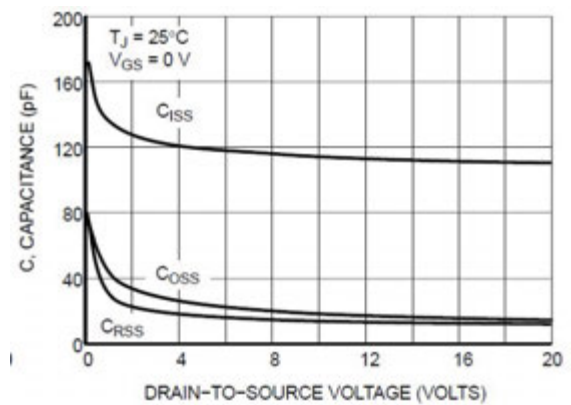


Figure 6. Capacitance Variation

N-Channel MOSFET

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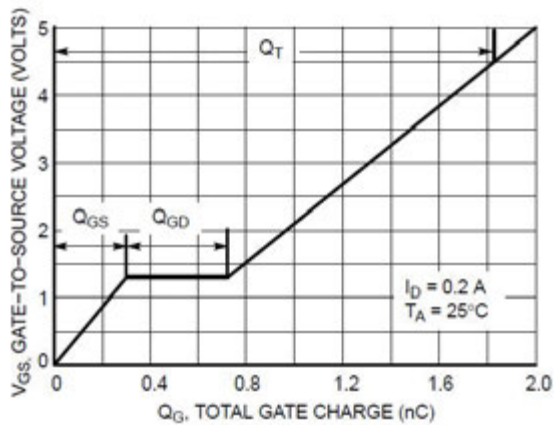


Figure 7. Gate-to-Source Voltage vs. Total Gate Charge

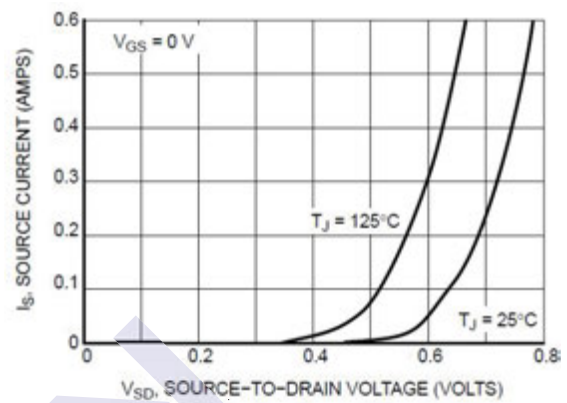


Figure 8. Diode Forward Voltage vs. Current

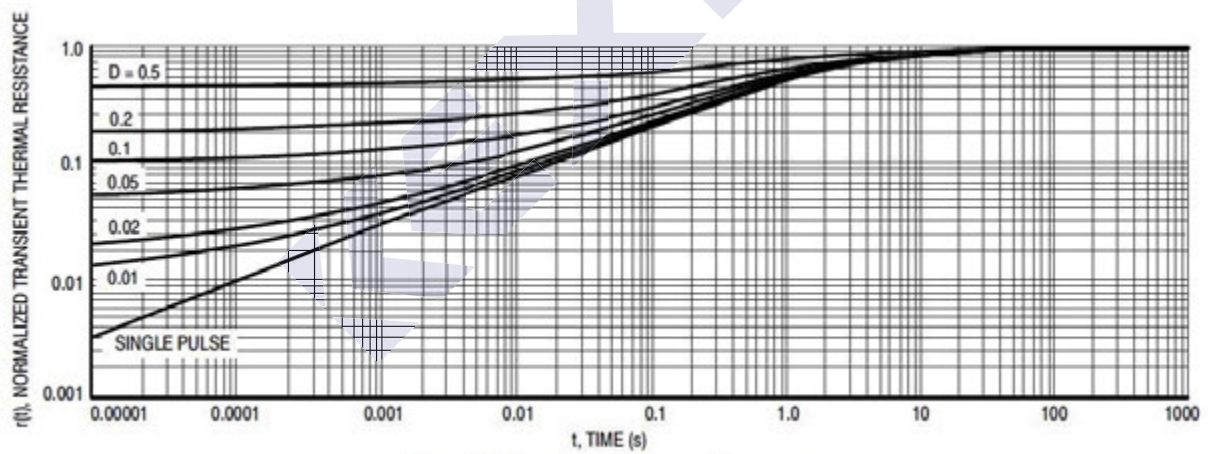


Figure 9. Normalized Thermal Response