

N-Channel Enhancement Mode MOSFET

RC3414

Feature

20V/6A, $R_{DS(ON)} = 35m\Omega(MAX)$ @ $V_{GS} = 4.5V$.

$R_{DS(ON)} = 45m\Omega(MAX)$ @ $V_{GS} = 2.5V$.

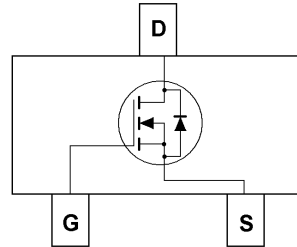
Super High dense cell design for extremely low $R_{DS(ON)}$.

Reliable and Rugged.

SC-59 for Surface Mount Package.



SC-59



Applications

- LI-ION Protection Circuit

Absolute Maximum Ratings

$T_A = 25^\circ C$ Unless Otherwise noted

| Parameter | Symbol | Limit | Units |
|--------------------------|----------|----------|-------|
| Drain-Source Voltage | V_{DS} | 20 | V |
| Gate-Source Voltage | V_{GS} | ± 10 | V |
| Drain Current-Continuous | I_D | 6 | A |

Electrical Characteristics

$T_A = 25^\circ C$ Unless Otherwise noted

| Parameter | Symbol | Test Conditions | Min | Typ. | Max | Units |
|---|--------------|-----------------------------------|-----|------|------|-----------|
| Off Characteristics | | | | | | |
| Drain to Source Breakdown Voltage | BVDSS | $V_{GS} = 0V, I_D = 250\mu A$ | 20 | - | - | V |
| Zero-Gate Voltage Drain Current | IDSS | $V_{DS} = 16V, V_{GS} = 0V$ | - | - | 1 | μA |
| Gate Body Leakage Current, Forward | IGSSF | $V_{GS} = 10V, V_{DS} = 0V$ | - | - | 100 | nA |
| Gate Body Leakage Current, Reverse | IGSSR | $V_{GS} = -10V, V_{DS} = 0V$ | - | - | -100 | nA |
| On Characteristics | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS} = V_{DS}, I_D = 250\mu A$ | 0.4 | - | 1.3 | V |
| Static Drain-source On-Resistance | $R_{DS(ON)}$ | $V_{GS} = 4.5V, I_D = 6.0A$ | - | 22 | 35 | $m\Omega$ |
| | | $V_{GS} = 2.5V, I_D = 5.2A$ | - | 30 | 45 | $m\Omega$ |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Drain-Source Diode Forward Voltage | VSD | $V_{GS} = 0V, I_S = 1.5A$ | | | 1.2 | V |

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| DYNAMIC PARAMETERS | | | | | |
|------------------------------|---------|---|--|------|--|
| Input Capacitance | Ciss | VGS=0V, VDS=8V, f=1MHz | | 800 | |
| Output Capacitance | Coss | | | 155 | |
| Reverse Transfer Capacitance | Crss | | | 125 | |
| SWITCHING PARAMETERS | | | | | |
| Total Gate Charge | Qg | VGS=4V, VDS=10V, ID=4A | | 11 | |
| Gate Source Charge | Qgs | | | 2.2 | |
| Gate Drain Charge | Qgd | | | 2.5 | |
| Turn-On Delay Time | tD(on) | VGS=4V, VDS=10V, ID=1A, RGEN=10Ω, R=10Ω | | 18.3 | |
| Turn-On Rise Time | tr | | | 4.8 | |
| Turn-Off Delay Time | tD(off) | | | 43.5 | |
| Turn-Off Fall Time | tf | | | 20 | |

****Nanker reserves the right to improve product design, functions and reliability without notice.**

Typical Characteristics

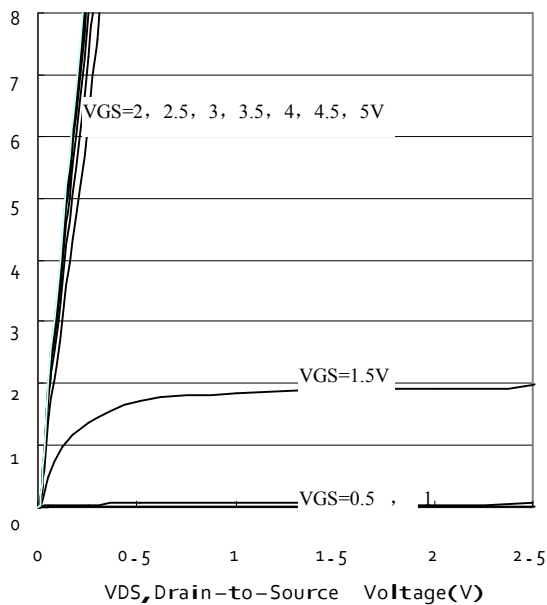


Figure 1. Output Characteristics

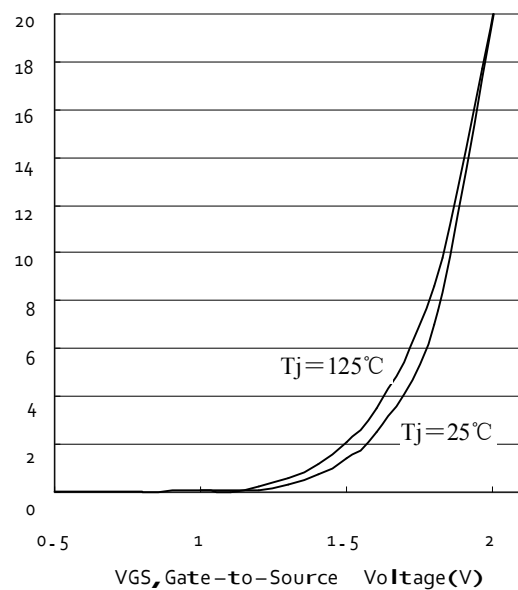


Figure 2. Transfer Characteristics

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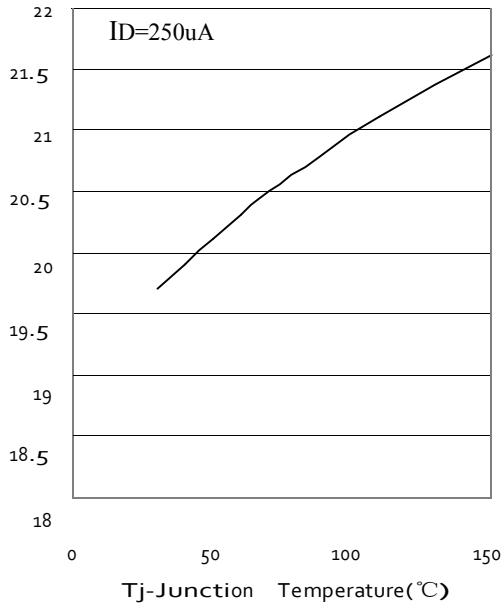


Figure 3. Breakdown Voltage Variation with Temperature

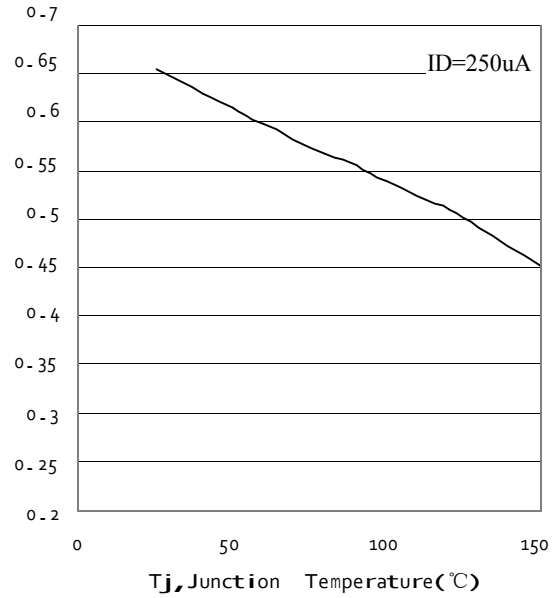


Figure 4. Gate Threshold Variation with Temperature

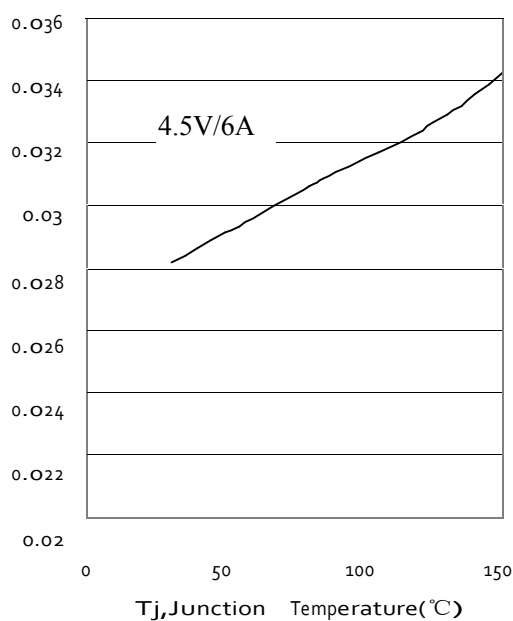


Figure 5. On-Resistance Variation with Temperature

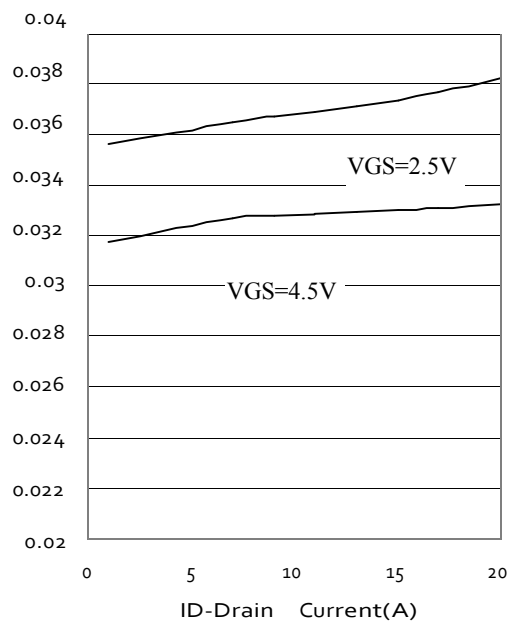


Figure 6. On-Resistance vs. Drain Current

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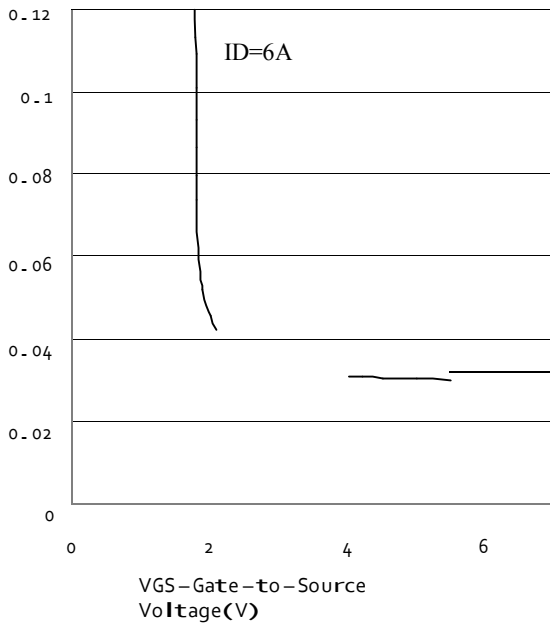


Figure 7 . On-Resistance vs. Gate-to-Source Voltage

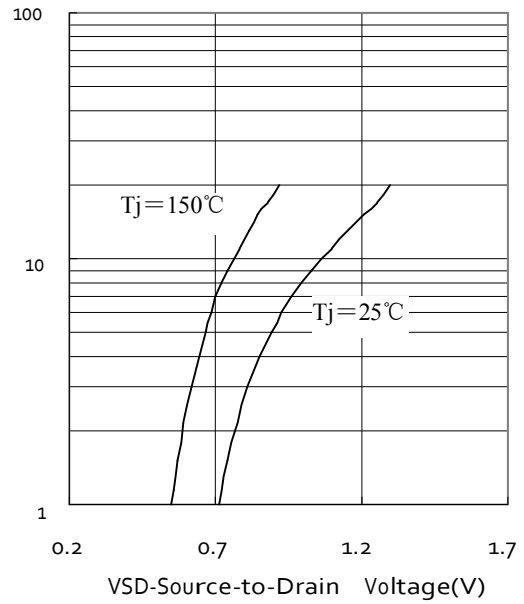


Figure 8 . Source-Drain Diode Forward

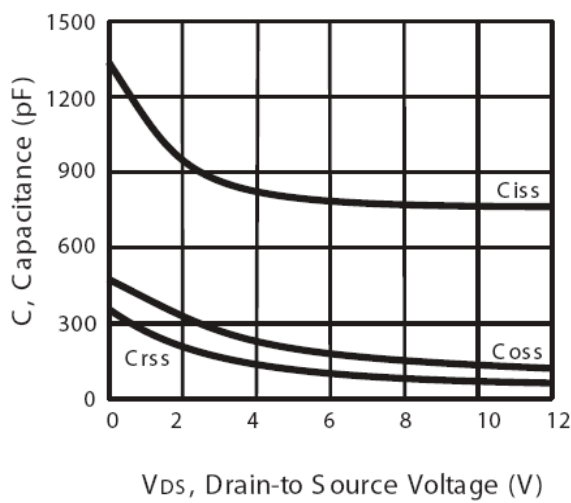


Figure 9. Capacitance

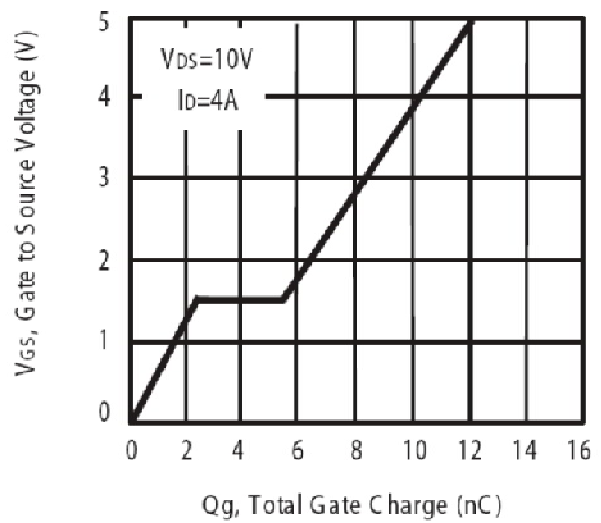


Figure 10. Gate Charge

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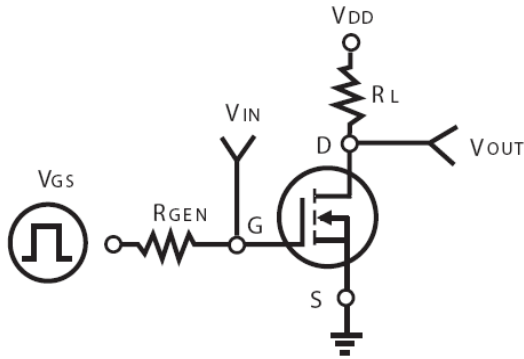


Figure 11. Switching Test Circuit

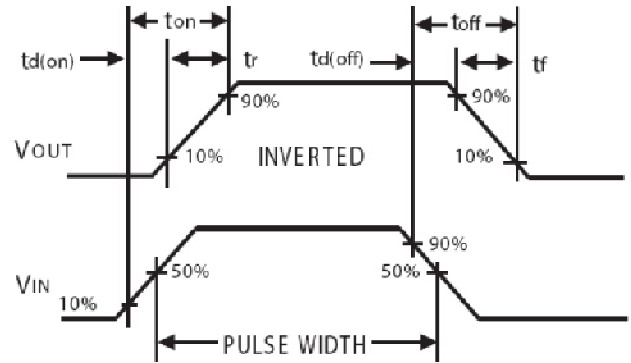


Figure 12. Switching Waveforms

SC-59 Package Outline Dimensions (UNIT: mm)

