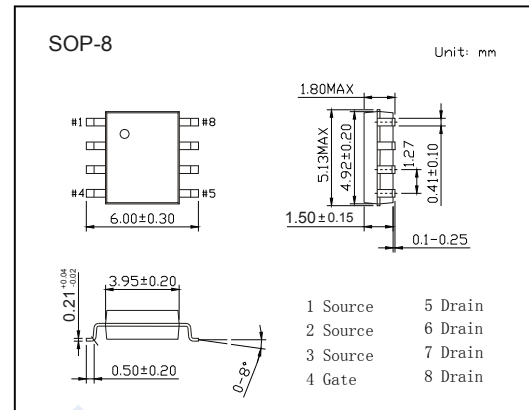
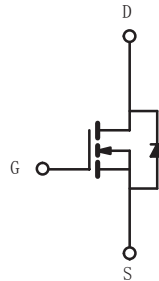


N-Channel MOSFET

KX4N15DY

■ Features

- $V_{DS} = 150V, I_D = 5.2A$
- $R_{DS(ON)} < 44m\Omega @ V_{GS} = 10V$
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Low gate to drain charge to reduce switching losses

■ Absolute Maximum Ratings ($T_A = 25^\circ C$, unless otherwise specified)

| Parameter | Symbol | Rating | Unit |
|--|------------|---------------------|--------------|
| Drain-Source Voltage | V_{DS} | 150 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Continuous Drain Current | I_D | $T_C = 25^\circ C$ | 5.2 |
| | | $T_C = 100^\circ C$ | 3.7 |
| Pulsed Drain Current (Note 1) | I_{DM} | 42 | A |
| Power Dissipation | P_D | 3.5 | |
| Thermal Resistance, Junction- to-Case (Note 2) | R_{thJC} | 35.7 | $^\circ C/W$ |
| Junction Temperature | T_J | 150 | $^\circ C$ |
| Storage Temperature Range | T_{stg} | -55 to 150 | |

N-Channel MOSFET

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

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---------------------|---|-----|------|-----------|------------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | I _D =250 μ A, V _{GS} =0V | 150 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =150V, V _{GS} =0V | | | 1 | μ A |
| Gate-Body Leakage Current | I _{GSS} | V _{DS} =0V, V _{GS} = \pm 20V | | | \pm 100 | nA |
| On Characteristics (Note 3) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250 μ A | 2.5 | | 4.5 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} =10V, I _D =5.2A | | | 44 | m Ω |
| Forward Transconductance | g _{fs} | V _{GS} =10V, I _D =5.2A | 12 | | | S |
| Dynamic Characteristics (Note4) | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =25V, f=1MHz | | 1700 | | pF |
| Output Capacitance | C _{oss} | | | 190 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 90 | | |
| Switching Characteristics (Note 4) | | | | | | |
| Turn-On DelayTime | t _{d(on)} | V _{DD} =75V, I _D =3.1A, V _{GS} =10V, R _{GEN} =6.5 Ω | | 15 | | ns |
| Turn-On Rise Time | t _r | | | 13 | | |
| Turn-Off DelayTime | t _{d(off)} | | | 26 | | |
| Turn-Off Fall Time | t _f | | | 14 | | |
| Total Gate Charge | Q _g | V _{DS} =75V, I _D =3.1A, V _{GS} =10V | | 35.8 | | nC |
| Gate Source Charge | Q _{gs} | | | 7.5 | | |
| Gate Drain Charge | Q _{gd} | | | 13 | | |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Current (Note 2) | I _S | | | | 8 | A |
| Diode Forward Voltage (Note 3) | V _{SD} | I _S =3.1A, V _{GS} =0V | | | 1.2 | V |
| Reverse Recovery Time | t _{rr} | T _J =25 $^\circ$ C, I _F =3.1A, di/dt=100A/ μ s | | 140 | | nC |

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

3. Pulse Test: Pulse Width $\leq 300\mu$ s, Duty Cycle $\leq 2\%$.

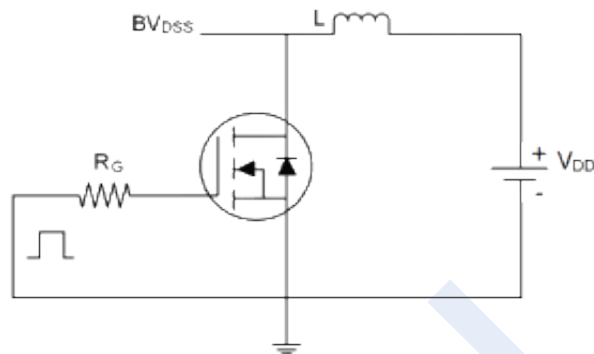
4. Guaranteed by design, not subject to production

N-Channel MOSFET

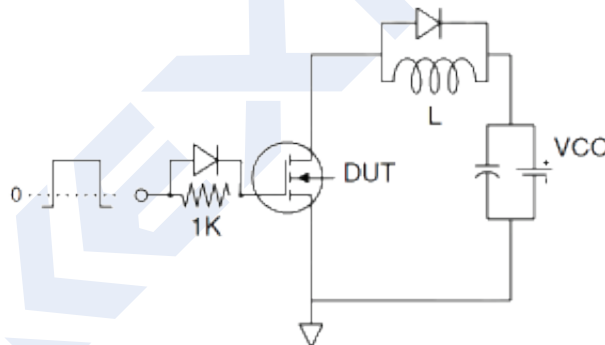
KX4N15DY

■ Test Circuit

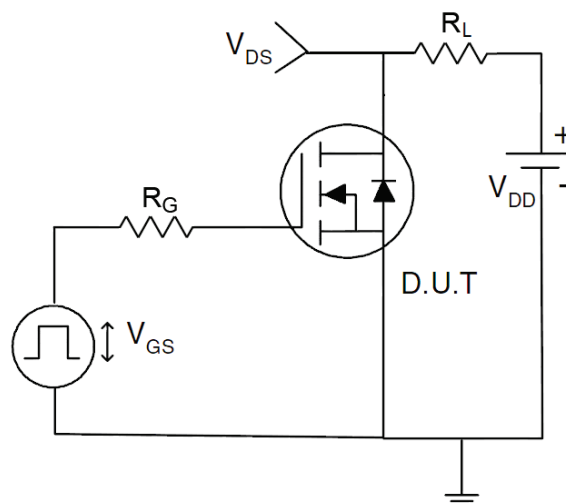
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



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■ Typical Characteristics Thermal Characteristics

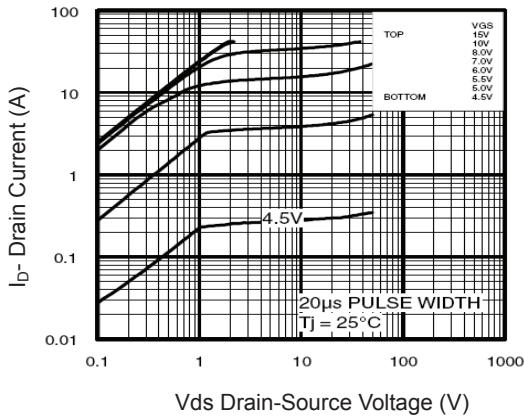


Figure 1 Output Characteristics

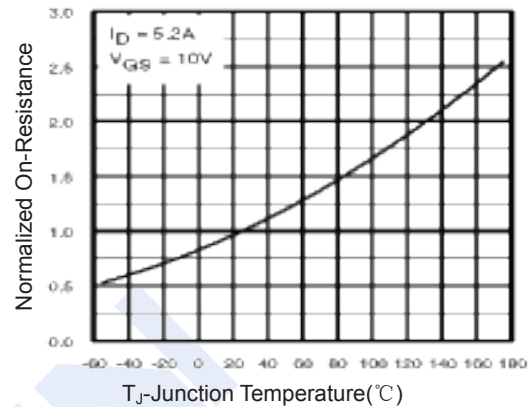


Figure 4 Rdson-Junction Temperature

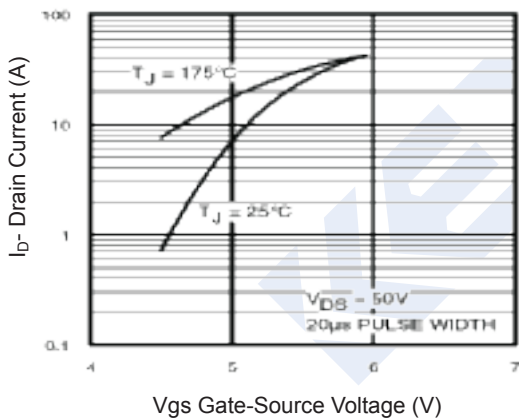


Figure 2 Transfer Characteristics

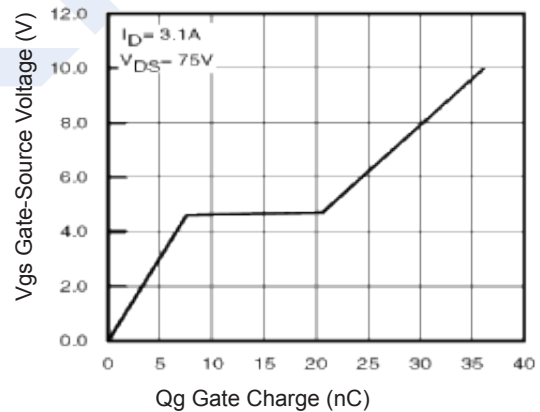


Figure 5 Gate Charge

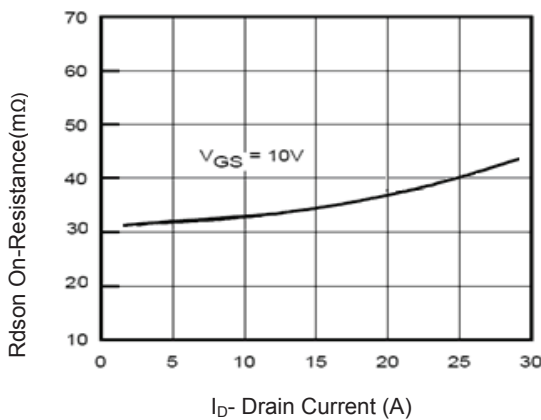


Figure 3 Rdson- Drain Current

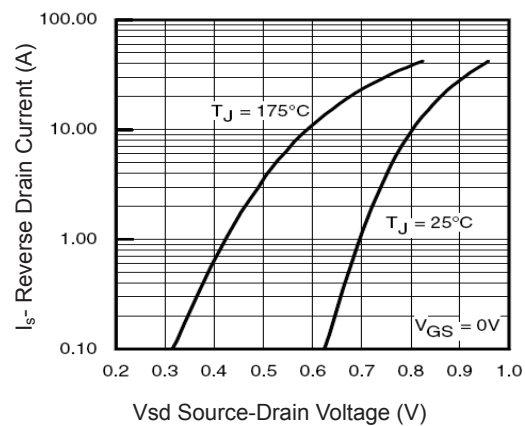


Figure 6 Source- Drain Diode Forward

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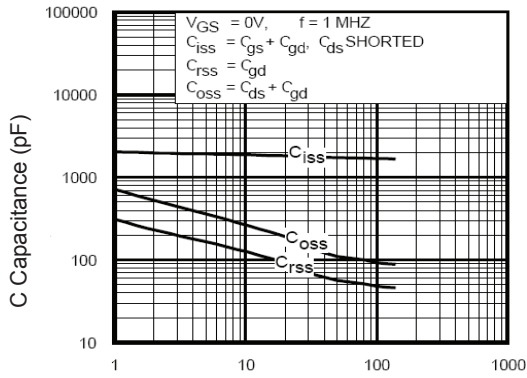


Figure 7 Capacitance vs Vds

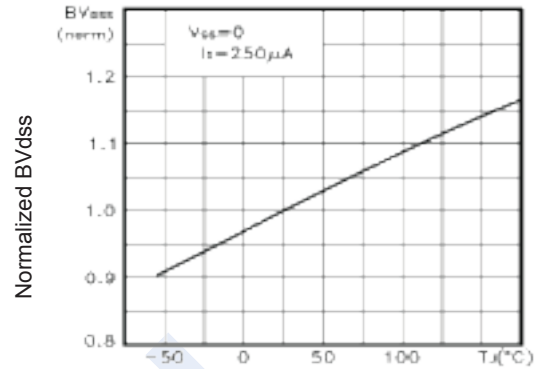


Figure 9 BV_{DSS} vs Junction Temperature

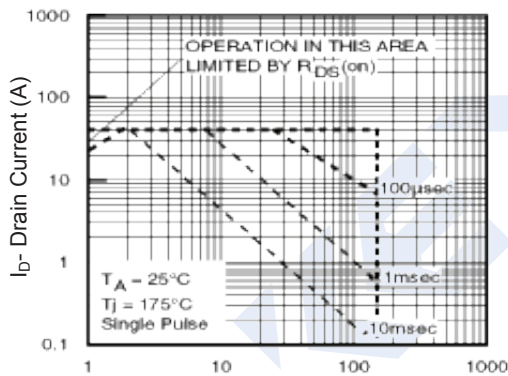


Figure 8 Safe Operation Area

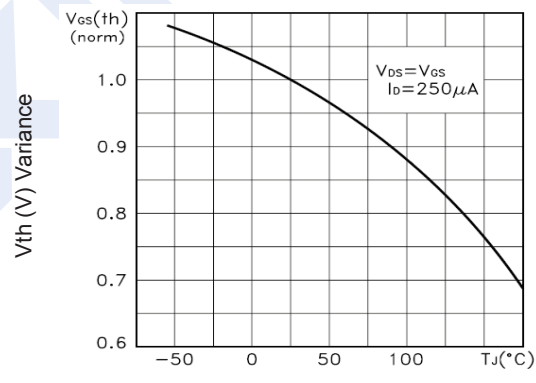


Figure 10 $V_{GS(th)}$ vs Junction Temperature

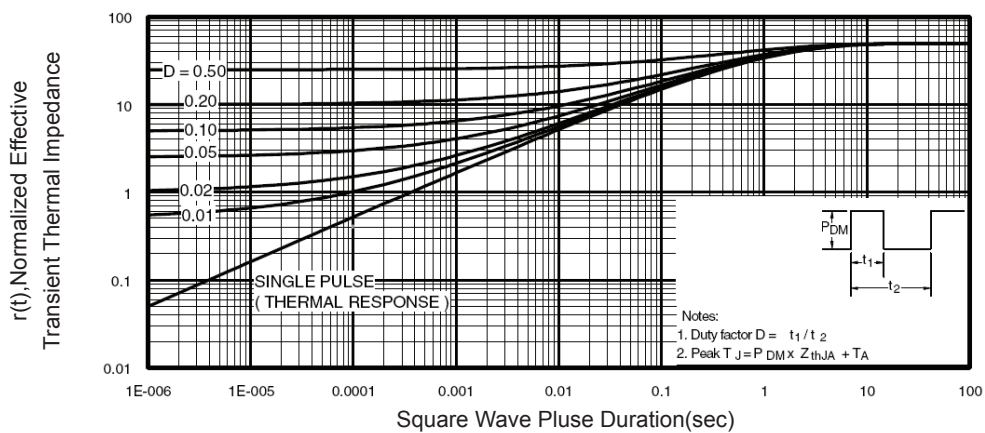


Figure 11 Normalized Maximum Transient Thermal Impedance