# CRMKGH1006A

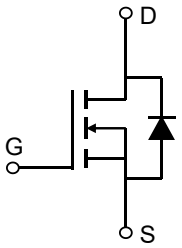
## N-Channel 100V, 7.1mΩ Typ. Power MOSFET

## Description

### Features

- 100V, 88A

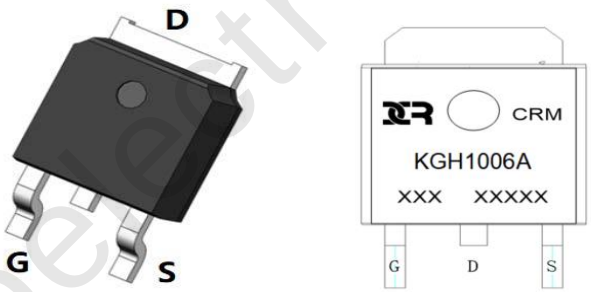
  $R_{DS(ON)}$ Typ = 7.1mΩ @ $V_{GS}$ = 10V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!




**Schematic Diagram**

### Application

- Load Switch
- PWM Application
- Power Management




**Marking and Pin Assignment**

### Package Marking and Ordering Information

| Device | Marking | Package | Outline | Reel Size | Reel (pcs) | Per Carton (pcs) |
|---|---|---|---|---|---|---|
| CRMKGH1006A | CRMKGH1006A | TO-252-3L | TAPING | 13" | 2500 | 25000 |

### Absolute Maximum Ratings (@ $T_J$ = 25°C unless otherwise specified)

| Symbol | Parameter | | Value | Units |
|---|---|---|---|---|
| $V_{DS}$ | Drain-to-Source Voltage | | 100 | V |
| $V_{GS}$ | Gate-to-Source Voltage | | ±20 | V |
| $I_D$ | Continuous Drain Current | $T_C$ = 25°C | 88 | A |
| | | $T_C$ = 100°C | 52.8 | A |
| $I_{DM}$ | Pulsed Drain Current (1) | | 352 | A |
| $E_{AS}$ | Single Pulsed Avalanche Energy (2) | | 144 | mJ |
| $P_D$ | Power Dissipation | $T_C$ = 25°C | 125 | W |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | | 1 | °C/W |
| $T_J$, $T_{STG}$ | Junction & Storage Temperature Range | | -55 to 150 | °C |

## Electrical Characteristics ($T_J$ = 25°C unless otherwise specified)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $I_D$ = 250μA, $V_{GS}$ = 0V | 100 | - | - | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$ = 100V, $V_{GS}$ = 0V | - | - | 1.0 | μA |
| $I_{GSS}$ | Gate-Body Leakage Current | $V_{DS}$ = 0V, $V_{GS}$ = ±20V | - | - | ±100 | nA |
| **On Characteristics** | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 2.4 | 3 | 3.6 | V |
| $R_{DS(ON)}$ | Static Drain-Source ON-Resistance(3) | $V_{GS}$ = 10V, $I_D$ = 30A | - | 7.1 | 9.3 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0V, $V_{DS}$ = 50V, f = 1MHz | - | 1772 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 950 | - | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 18 | - | pF |
| $Q_g$ | Total Gate Charge | $V_{GS}$ = 0 to 10V $V_{DS}$ = 50V, $I_D$ = 20A | - | 29 | - | nC |
| $Q_{gs}$ | Gate Source Charge | | - | 6.8 | - | nC |
| $Q_{gd}$ | Gate Drain("Miller") Charge | | - | 8.4 | - | nC |
| **Switching Characteristics** | | | | | | |
| $t_{d(on)}$ | Turn-On DelayTime | $V_{GS}$ = 10V, $V_{DD}$ = 50V $I_D$= 20A, $R_{GEN}$ = 6Ω | - | 8.4 | - | ns |
| $t_r$ | Turn-On Rise Time | | - | 9.4 | - | ns |
| $t_{d(off)}$ | Turn-Off DelayTime | | - | 27 | - | ns |
| $t_f$ | Turn-Off Fall Time | | - | 18 | - | ns |
| **Drain-Source Diode Characteristics and Max Ratings** | | | | | | |
| $I_S$ | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 88 | A |
| $I_{SM}$ | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 352 | A |
| $V_{SD}$ | Drain to Source Diode Forward Voltage | $V_{GS}$ = 0V, $I_S$ = 30A | - | - | 1.2 | V |
| trr | Body Diode Reverse Recovery Time | $I_F$ = 15A, di/dt = 100A/us | - | 45 | - | ns |
| Qrr | Body Diode Reverse Recovery Charge | | - | 53 | - | nC |

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $E_{AS}$ condition: Starting $T_J$=25°C, $V_{DD}$=50V, $V_G$=10V, $R_G$=25ohm, L=0.5mH, $I_{AS}$=24A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

## Test Circuit

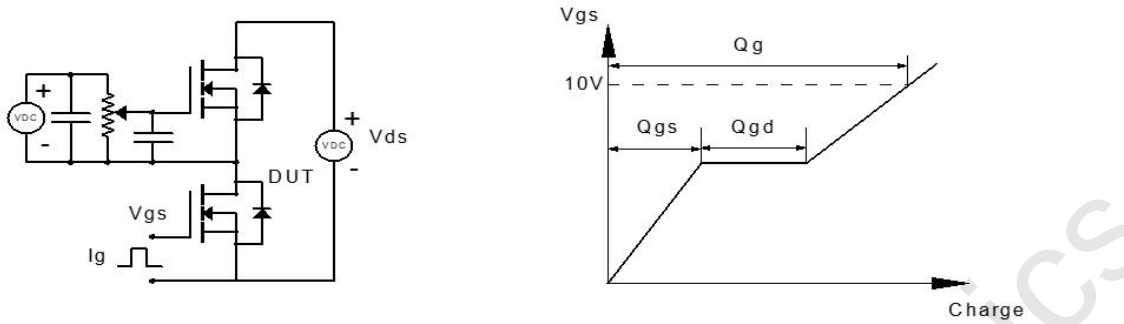



**Figure 1: Gate Charge Test Circuit & Waveform**

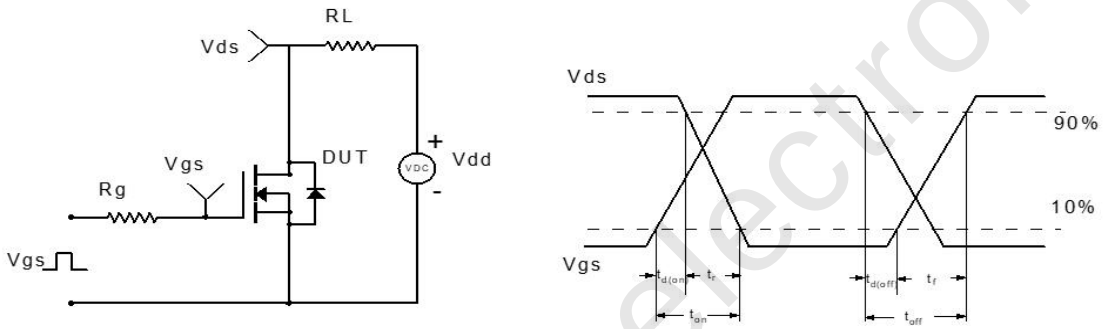



**Figure 2: Resistive Switching Test Circuit & Waveform**

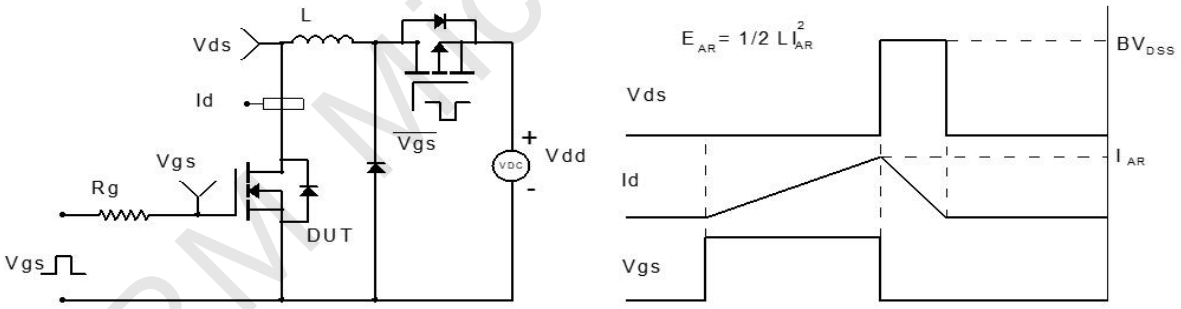



**Figure 3: Unclamped Inductive Switching Test Circuit& Waveform**

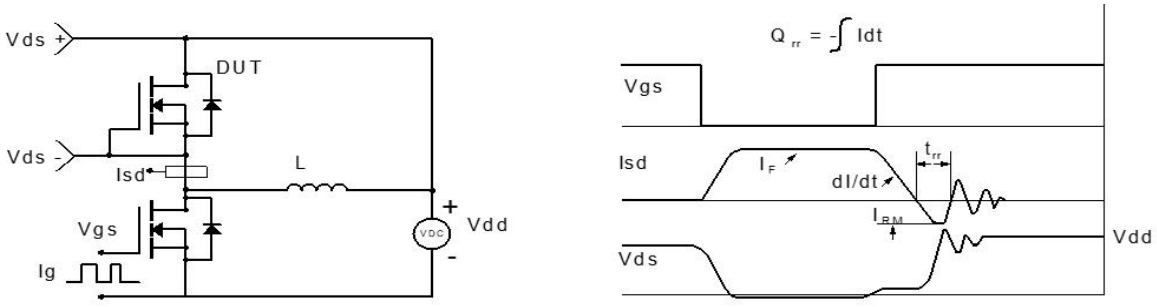
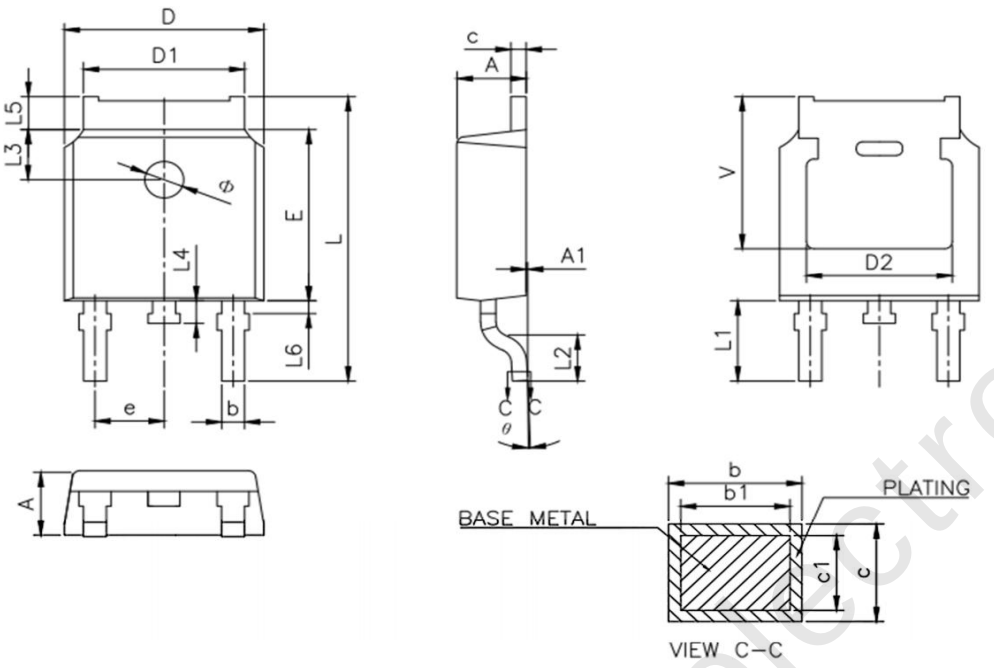



**Figure 4: Diode Recovery Test Circuit & Waveform**

## Package Mechanical Data(TO-252-3L)




| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| A | 2.20 | 2.30 | 2.40 |
| A1 | 0.00 | -- | 0.127 |
| b | 0.66 | -- | 0.86 |
| b1 | 0.65 | 0.76 | 0.81 |
| D | 6.50 | 6.60 | 6.70 |
| D1 | 5.10 | 5.33 | 5.46 |
| c | 0.47 | -- | 0.60 |
| c1 | 0.46 | 0.51 | 0.56 |
| D2 | 4.83 REF. | | |
| E | 6.00 | 6.10 | 6.20 |
| e | 2.186 | 2.286 | 2.386 |
| L | 9.80 | 10.10 | 10.40 |
| L1 | 2.90 REF. | | |
| L2 | 1.40 | 1.50 | 1.60 |
| L3 | 1.80 REF. | | |
| L4 | 0.60 | 0.80 | 1.00 |
| L5 | 0.90 | -- | 1.25 |
| L6 | 0.15 | -- | 0.75 |
| Φ | 1.10 | -- | 1.30 |
| θ | 0° | -- | 8° |
| V | 5.40 REF | | |

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