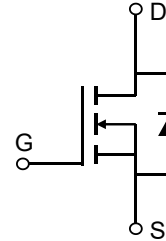


Description

Features

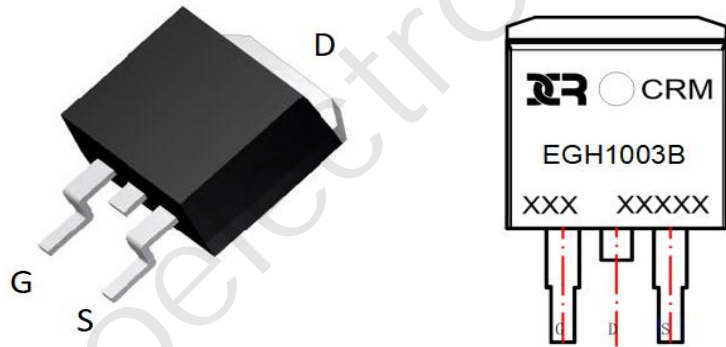
- 100V, 150A
 $R_{DS(ON)}$ Typ = 3.7mΩ @ $V_{GS} = 10V$
 Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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) |
|-------------|-------------|-----------|---------|-----------|------------|------------------|
| CRMEGH1003B | CRMEGH1003B | TO-263-3L | TAPING | 13" | 800 | 4800 |

Absolute Maximum Ratings (@ $T_J = 25^\circ C$ 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 | 150 | A |
| | | T _C = 100°C | 90 | A |
| I _{DM} | Pulsed Drain Current ⁽¹⁾ | 600 | A | |
| E _{AS} | Single Pulsed Avalanche Energy ⁽²⁾ | 400 | mJ | |
| P _D | Power Dissipation | T _C = 25°C | 189 | W |
| R _{θJC} | Thermal Resistance, Junction to Case | 0.66 | °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 | - | 3.7 | 4.8 | mΩ |

Dynamic Characteristics

| | | | | | | |
|------------------|------------------------------|---|---|------|---|----|
| C _{iss} | Input Capacitance | V _{GS} = 0V, V _{DS} = 50V, f = 1MHz | - | 2767 | - | pF |
| C _{oss} | Output Capacitance | | - | 1383 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 23 | - | pF |
| Q _g | Total Gate Charge | V _{GS} = 0 to 10V V _{DS} = 50V, I _D = 30A | - | 74 | - | nC |
| Q _{gs} | Gate Source Charge | | - | 28 | - | nC |
| Q _{gd} | Gate Drain("Miller") Charge | | - | 20 | - | nC |

Switching Characteristics

| | | | | | | |
|---------------------|--------------------|---|---|----|---|----|
| t _{d(on)} | Turn-On DelayTime | V _{GS} = 10V, V _{DD} = 50V I _D = 30A, R _{GEN} = 3Ω | - | 16 | - | ns |
| t _r | Turn-On Rise Time | | - | 35 | - | ns |
| t _{d(off)} | Turn-Off DelayTime | | - | 50 | - | ns |
| t _f | Turn-Off Fall Time | | - | 30 | - | ns |

Drain-Source Diode Characteristics and Max Ratings

| | | | | | | |
|-----------------|--|--|---|----|-----|----|
| I _S | Maximum Continuous Drain to Source Diode Forward Current | V _{GS} = 0V, I _S = 30A | - | - | 150 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 600 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | | - | - | 1.2 | V |
| t _{rr} | Body Diode Reverse Recovery Time | | - | 31 | - | ns |
| Q _{rr} | Body Diode Reverse Recovery Charge | | - | 48 | - | 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}=40A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Test Circuit

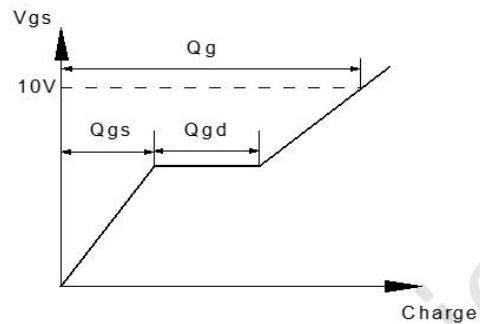
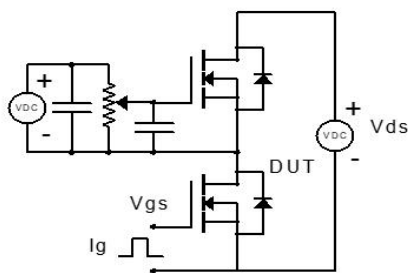


Figure 1: Gate Charge Test Circuit & Waveform

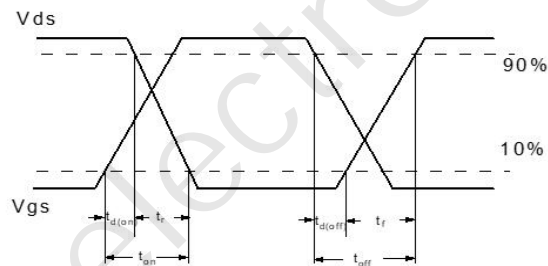
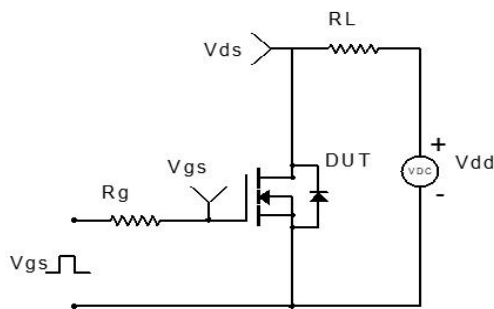


Figure 2: Resistive Switching Test Circuit & Waveform

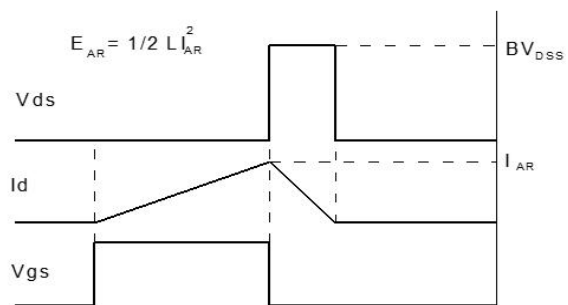
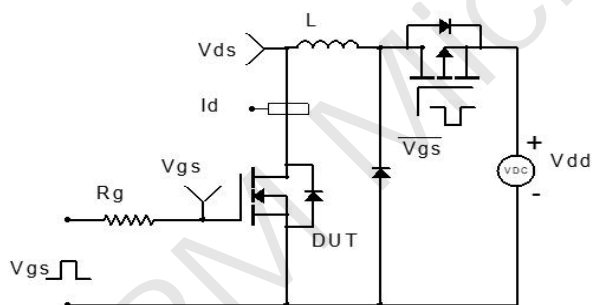


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

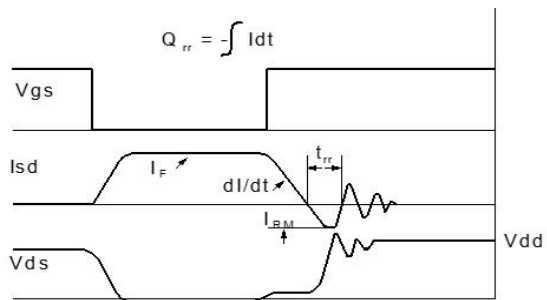
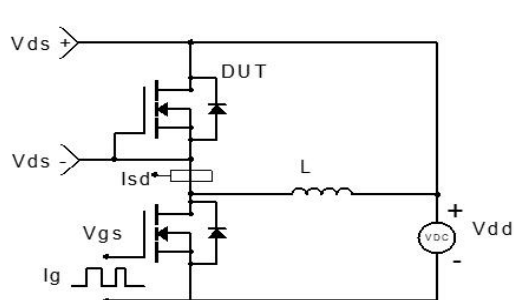
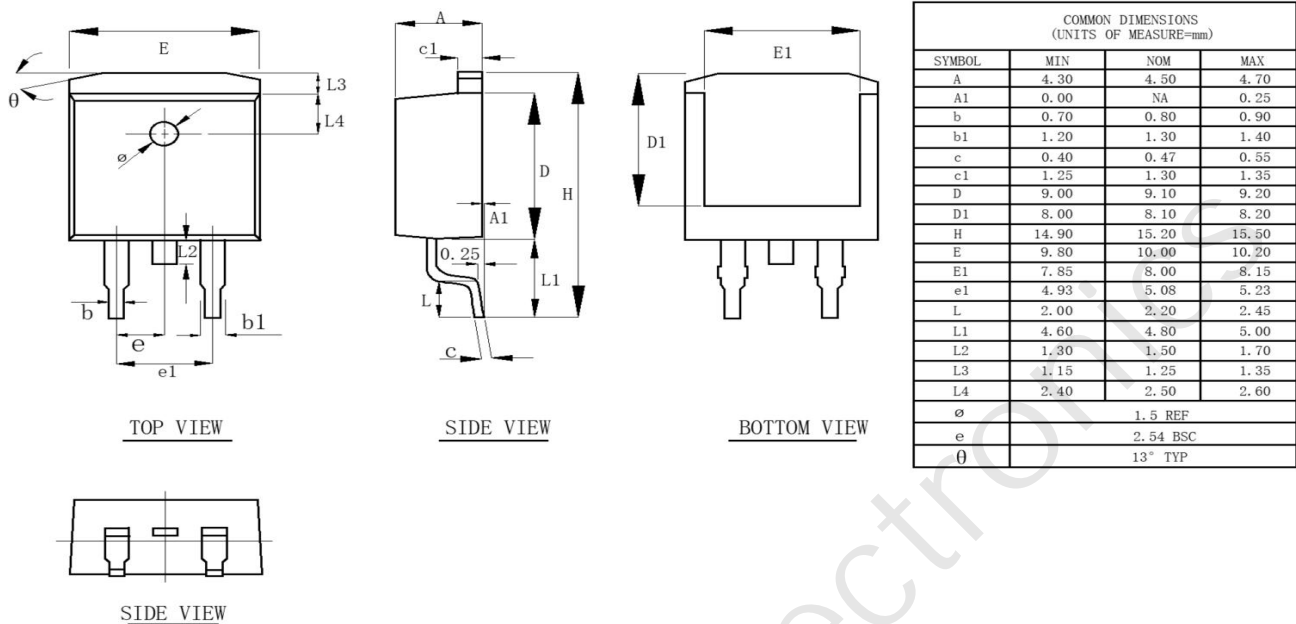


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-263-3L)




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