



CST7002KW Dual N-Ch 60V Fast Switching MOSFETs

CST7002KW Features

- $V_{DS}=60V$, $I_D=0.2A$
 $R_{DS(ON)} < 2.1\Omega @ V_{GS} = 10V$
 $R_{DS(ON)} < 2.7\Omega @ V_{GS} = 4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- ESD Protected: 2KV

CST7002KW Application

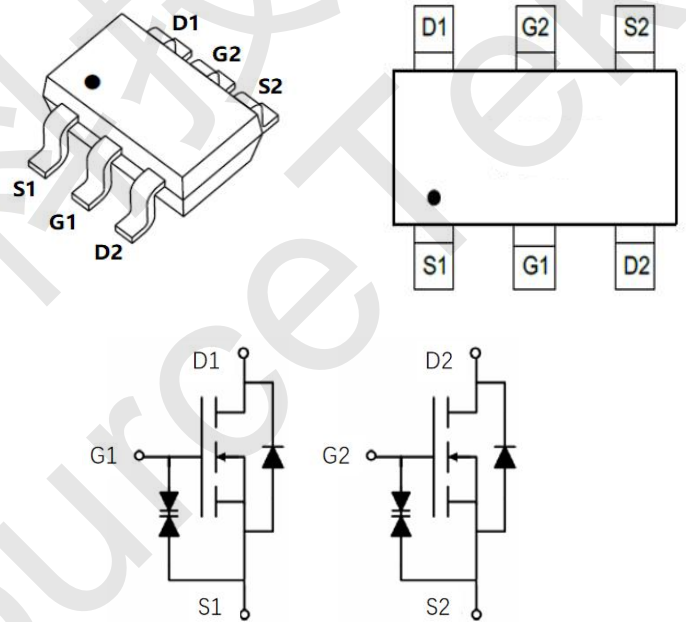
- Battery Operated Systems
- Direct logic-level Interface:
TTL/CMOS
- Solid-State Relays

CST7002KW Product Summary



| BVDSS | RDSON | ID |
|-------|--------------|--------|
| 60V | 1.6 Ω | 200m A |

CST7002KW SOT363-6L Pin Configuration



CST7002KW Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise specified)

| Symbol | Parameter | Max. | Units |
|-----------------|---|---------------------|--------------|
| V_{DSS} | Drain-Source Voltage | 60 | V |
| V_{GSS} | Gate-Source Voltage | ± 20 | V |
| I_D | Continuous Drain Current | $T_A = 25^\circ C$ | 0.2 |
| | | $T_A = 100^\circ C$ | 0.13 |
| I_{DM} | Pulsed Drain Current ^{note1} | 0.8 | A |
| P_D | Power Dissipation | 0.38 | W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 328 | $^\circ C/W$ |
| T_J, T_{STG} | Operating and Storage Temperature Range | -55 to +150 | $^\circ C$ |



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CST7002KW Electrical Characteristics (T_J=25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|------|------|------|-------|
| Off Characteristic | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D = 10μA | 60 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =60V, V _{GS} = 0V, | - | - | 1 | μA |
| I _{GSS} | Gate to Body Leakage Current | V _{DS} =0V, V _{GS} = ±20V | - | - | ±10 | uA |
| On Characteristics | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = V _{GS} , I _D = 250μA | 1 | - | 2.5 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance <small>note2</small> | V _{GS} =10V, I _D =0.3A | - | 1.6 | 2.1 | Ω |
| | | V _{GS} =4.5V, I _D =0.2A | - | 1.9 | 2.7 | |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz | - | 28 | - | pF |
| C _{oss} | Output Capacitance | | - | 11 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 4 | - | pF |
| Q _g | Total Gate Charge | V _{DS} = 10V, I _D = 0.3A, V _{GS} = 4.5V | - | 1.7 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 0.3 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 0.6 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DD} = 10V, I _D =0.2A, R _{GEN} = 10Ω, V _{GS} =10V, | - | 2 | - | ns |
| t _r | Turn-on Rise Time | | - | 15 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 7 | - | ns |
| t _f | Turn-off Fall Time | | - | 20 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 0.2 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 0.8 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} = 0V, I _S =0.2A | - | - | 1.2 | V |

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



CST7002KW Typical Performance Characteristics

Figure 1: Output Characteristics

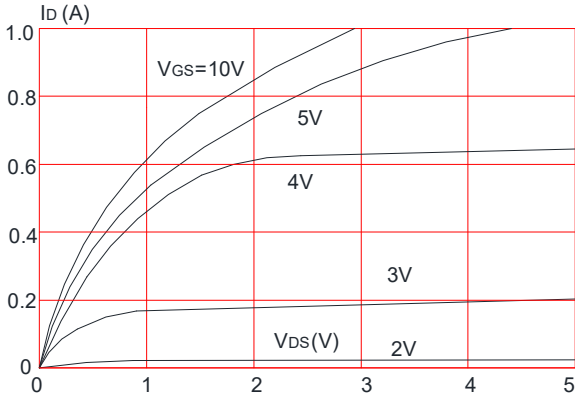


Figure 2: Typical Transfer Characteristics

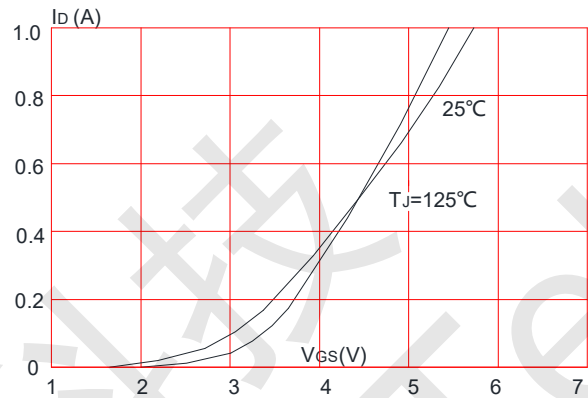


Figure 3: On-resistance vs. Drain Current

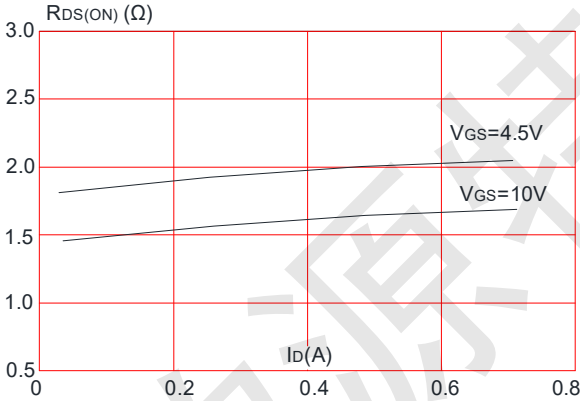


Figure 4: Body Diode Characteristics

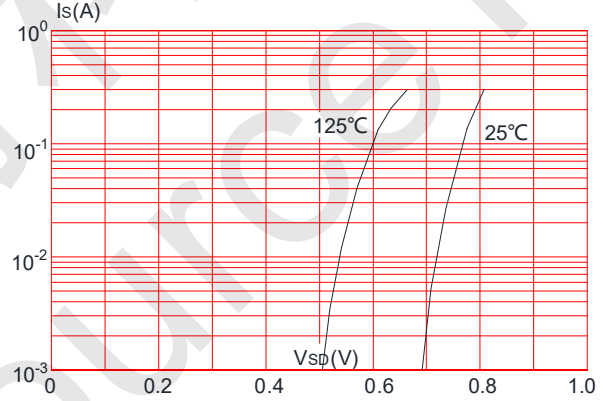


Figure 5: Gate Charge Characteristics

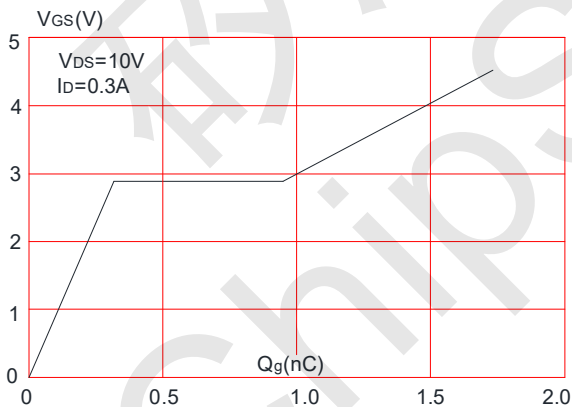
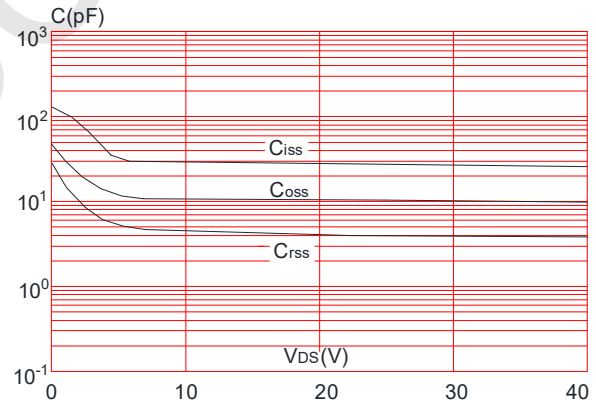


Figure 6: Capacitance Characteristics





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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

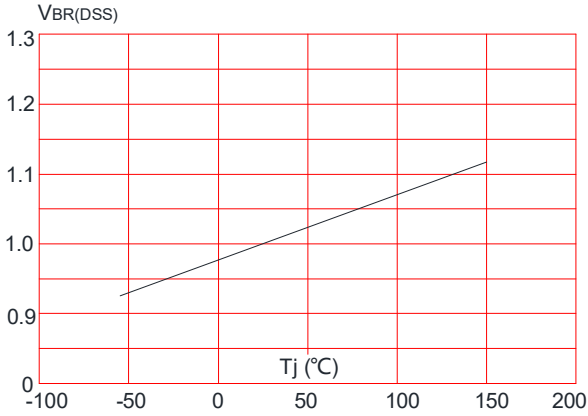


Figure 8: Normalized on Resistance vs. Junction Temperature

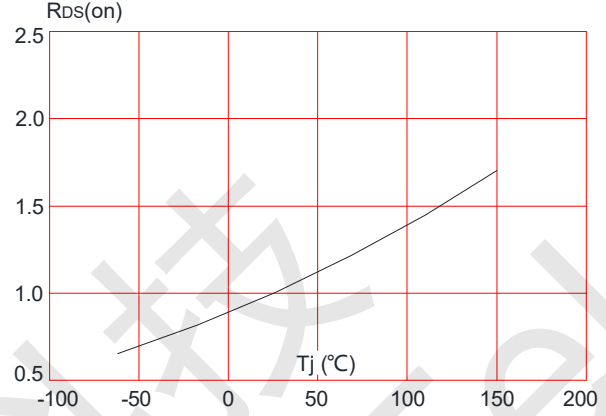


Figure 9: Maximum Safe Operating Area

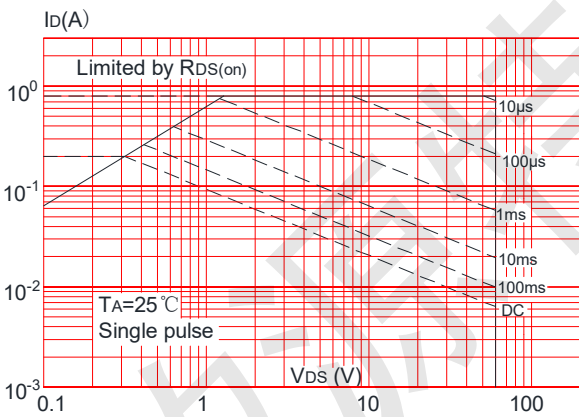


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

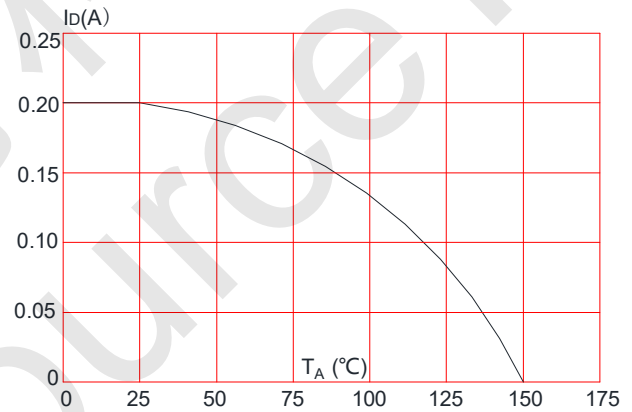
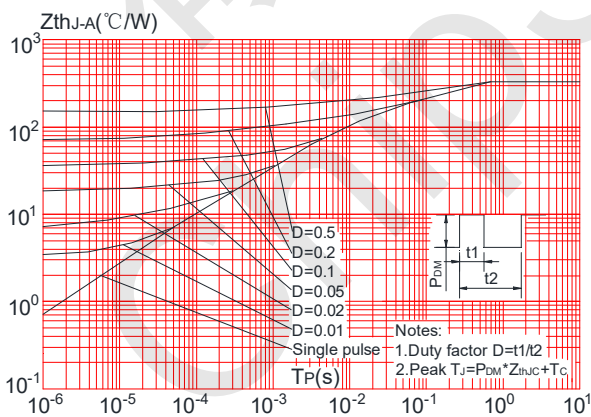


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





CST7002KW Test Circuit

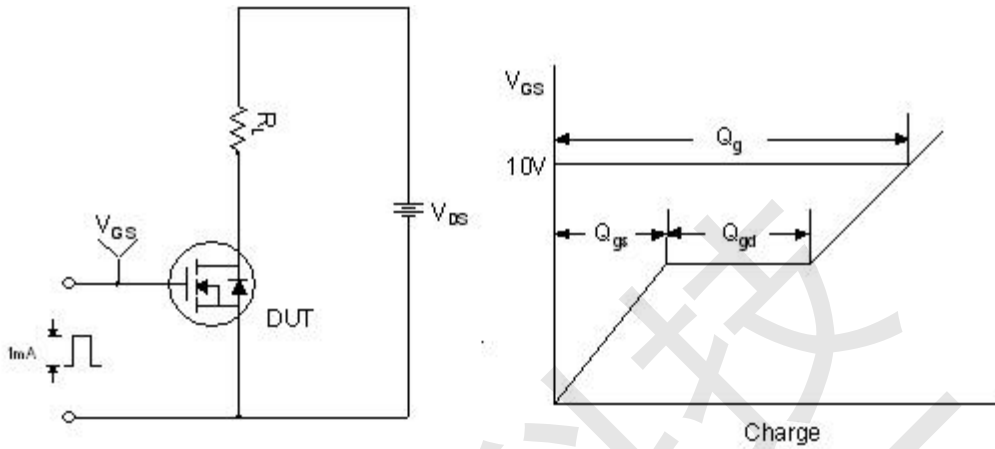


Figure 1. Gate Charge Test Circuit & Waveform

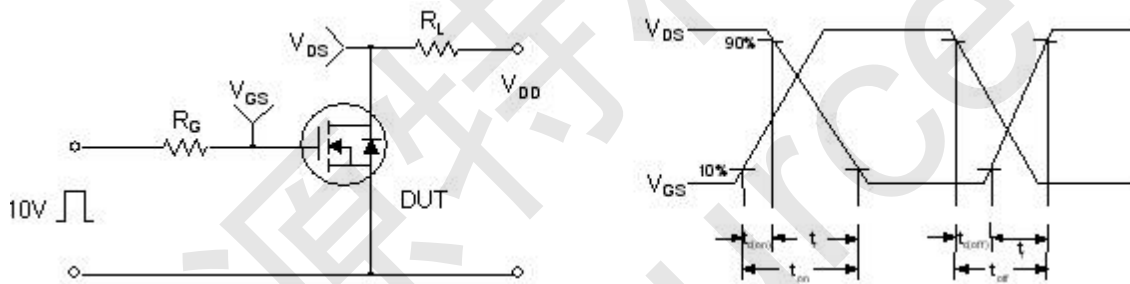


Figure 2. Resistive Switching Test Circuit & Waveforms

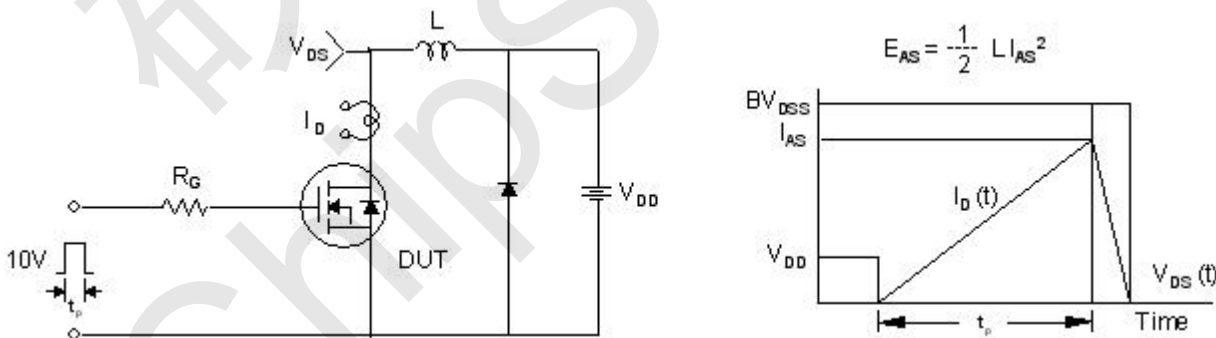
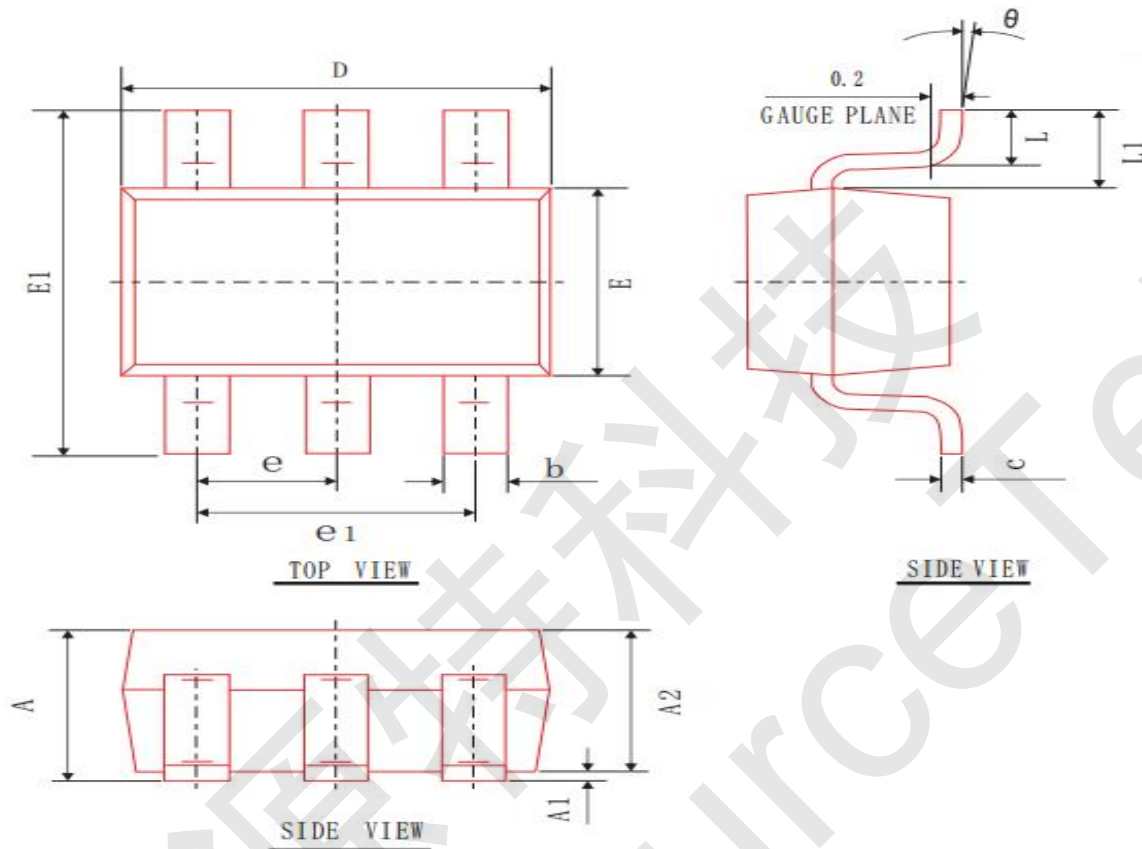


Figure 3. Unclamped Inductive Switching Test Circuit & Waveforms



CST7002KW Package Mechanical Data-SOT-363-6L



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

| SYMBOL | MIN | NOM | MAX |
|----------|------|-----------|------|
| A | 0.90 | 1.00 | 1.10 |
| A1 | 0.00 | 0.05 | 0.10 |
| A2 | 0.90 | 0.95 | 1.00 |
| b | 0.20 | 0.25 | 0.30 |
| c | 0.08 | 0.10 | 0.15 |
| e1 | 1.20 | 1.30 | 1.40 |
| D | 2.00 | 2.10 | 2.20 |
| E | 1.15 | 1.25 | 1.35 |
| E1 | 2.15 | 2.30 | 2.45 |
| L | 0.26 | 0.36 | 0.46 |
| θ | 0° | 4° | 8° |
| L1 | | 0.525 REF | |
| e | | 0.65 TYP | |