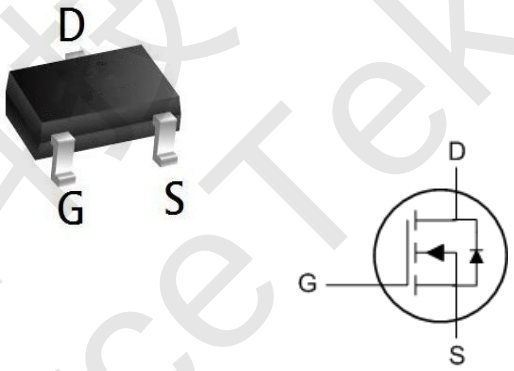
# CSTS1005 N-Ch 100V Fast Switching MOSFETs

★ Green Device Available
★ Super Low Gate Charge
★ Excellent Cdv/dt effect decline
★ Advanced high cell density Trench technology

**CSTS1005 Product Summary**

| BVDSS | RDSON | ID |
|---|---|---|
| 100V | 91 mΩ | 4.5A |

**CSTS1005 SOT23 Pin Configuration**




**CSTS1005 Description**

The CSTS1005 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The CSTS1005 meet the RoHS and Green Product requirement with full function reliability approved.

## CSTS1005 Absolute Maximum Rating ($T_A$=25°C unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_A$ = 25°C | $I_D$ | 4.5 | A |
| Pulsed Drain Current[1] | | $I_{DM}$ | 13.2 | A |
| Power Dissipation | $T_A$ = 25°C | $P_D$ | 1.5 | W |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to 150 | °C |

## Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance from Junction to Ambient[2] | $R_{\theta JA}$ | 83.3 | °C/W |

## CSTS1005 Electrical Characteristics ($T_J$=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 100 | - | - | V |
| Gate-body Leakage Current | $I_{GSS}$ | $V_{DS}$ = 0V, $V_{GS}$ = ±20V | - | - | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 100V, $V_{GS}$ = 0V | - | - | 1 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 1 | 1.65 | 2.5 | V |
| Drain-Source On-state Resistance[3] | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 3A | - | 91 | 130 | mΩ |
| | | $V_{GS}$ = 6V, $I_D$ = 2A | - | 105 | 160 | |
| | | $V_{GS}$ = 4.5V, $I_D$ = 1A | - | 120 | 190 | |
| **Dynamic Characteristics**[4] | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 50V, f = 1MHz | - | 200 | - | pF |
| Output Capacitance | $C_{oss}$ | | - | 35 | - | |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 2.5 | - | |
| **Switching Characteristics**[4] | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ = 50V, $V_{GS}$ =10V, $I_D$ =3A | - | 4 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 0.6 | - | |
| Gate-Drain Charge | $Q_{gd}$ | | - | 1.4 | - | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = 50V, $V_{GS}$ =10V, $I_D$ =3A, $R_G$=3Ω | - | 12.5 | - | ns |
| Turn-on Rise Time | $t_r$ | | - | 19.5 | - | |
| Turn-off Delay Time | $t_{d(off)}$ | | - | 20 | - | |
| Turn- off Fall Time | $t_f$ | | - | 29 | - | |
| **Source-Drain Diode characteristics** | | | | | | |
| Body Diode Voltage[3] | $V_{SD}$ | $I_S$ = 3A, $V_{GS}$ = 0V | - | - | 1.2 | V |
| Continuous Source Current | $I_S$ | | - | - | 4.5 | A |

**Notes:**

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. This value is guaranteed by design hence it is not included in the production test.

TEL: +86-0755-27595155 27595165
FAX: +86-0755-27594792
WEB:Http://www.ChipSourceTek.com
E-mail: Sales@ChipSourceTek.com Tony.Wang@ChipSourceTek.com

## CSTS1005 Typical Characteristics

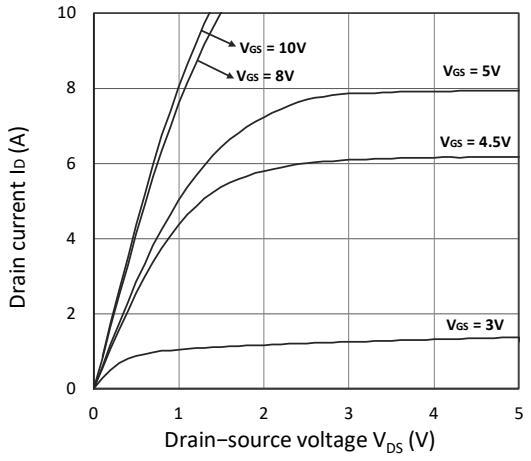



Figure 1. Output Characteristics

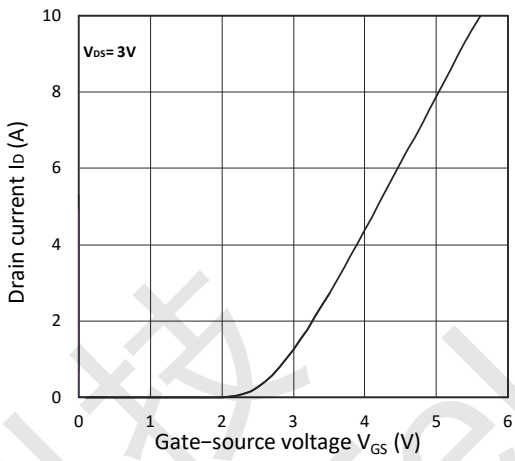



Figure 2. Transfer Characteristics

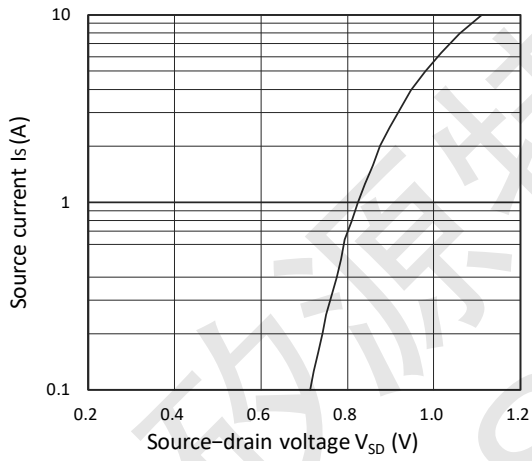



Figure 3. Forward Characteristics of Reverse

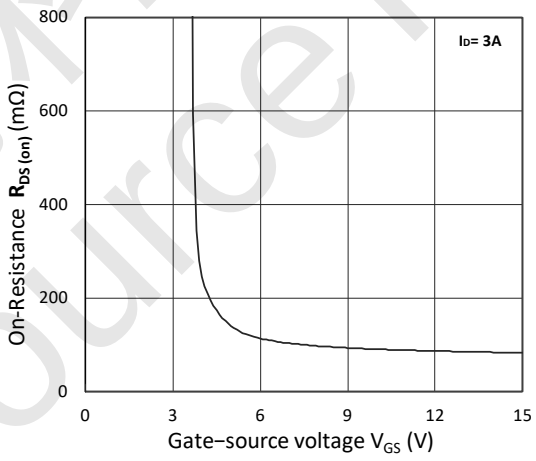



Figure 4. $R_{DS(ON)}$ vs. $V_{GS}$

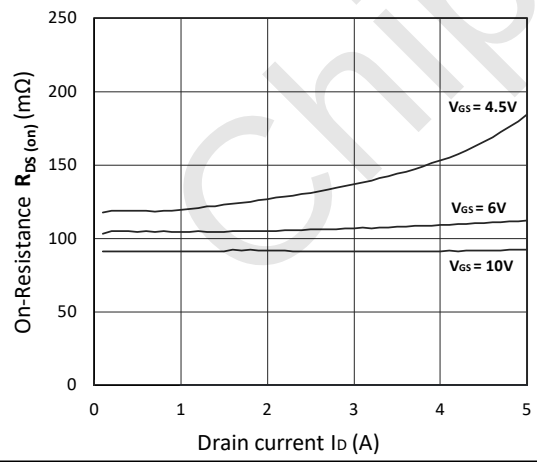



Figure 5. $R_{DS(ON)}$ vs. $I_D$

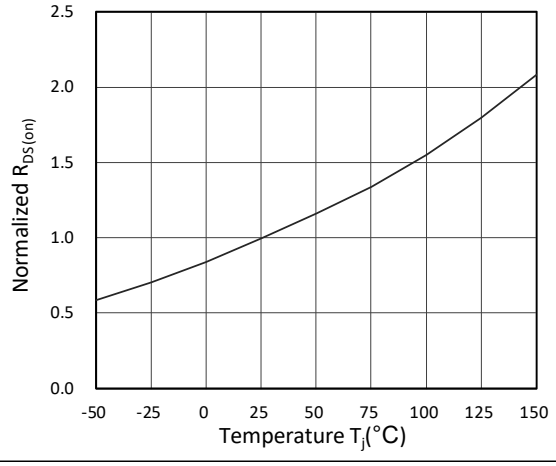



Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

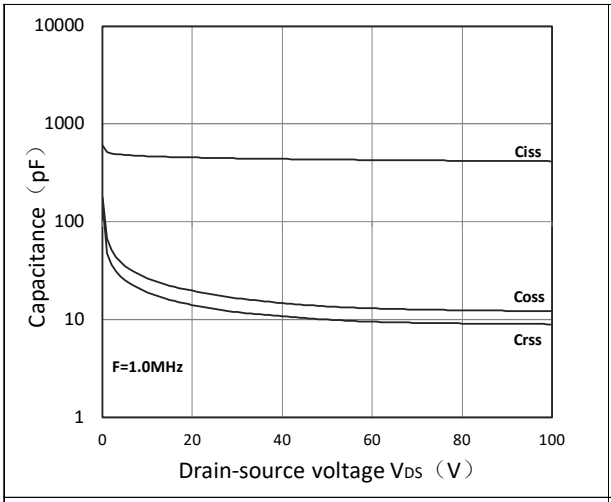



Figure 7. Capacitance Characteristics

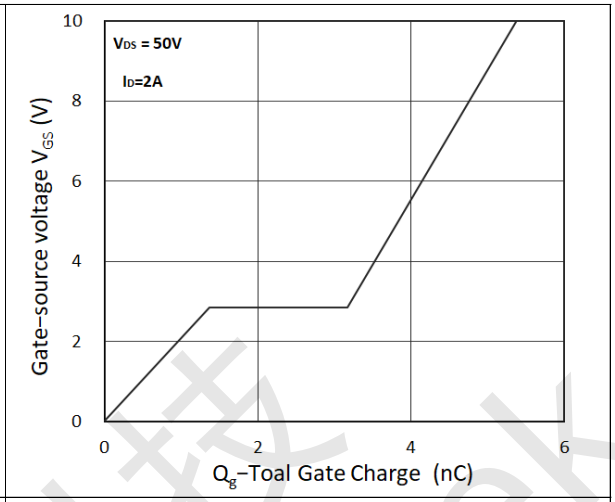
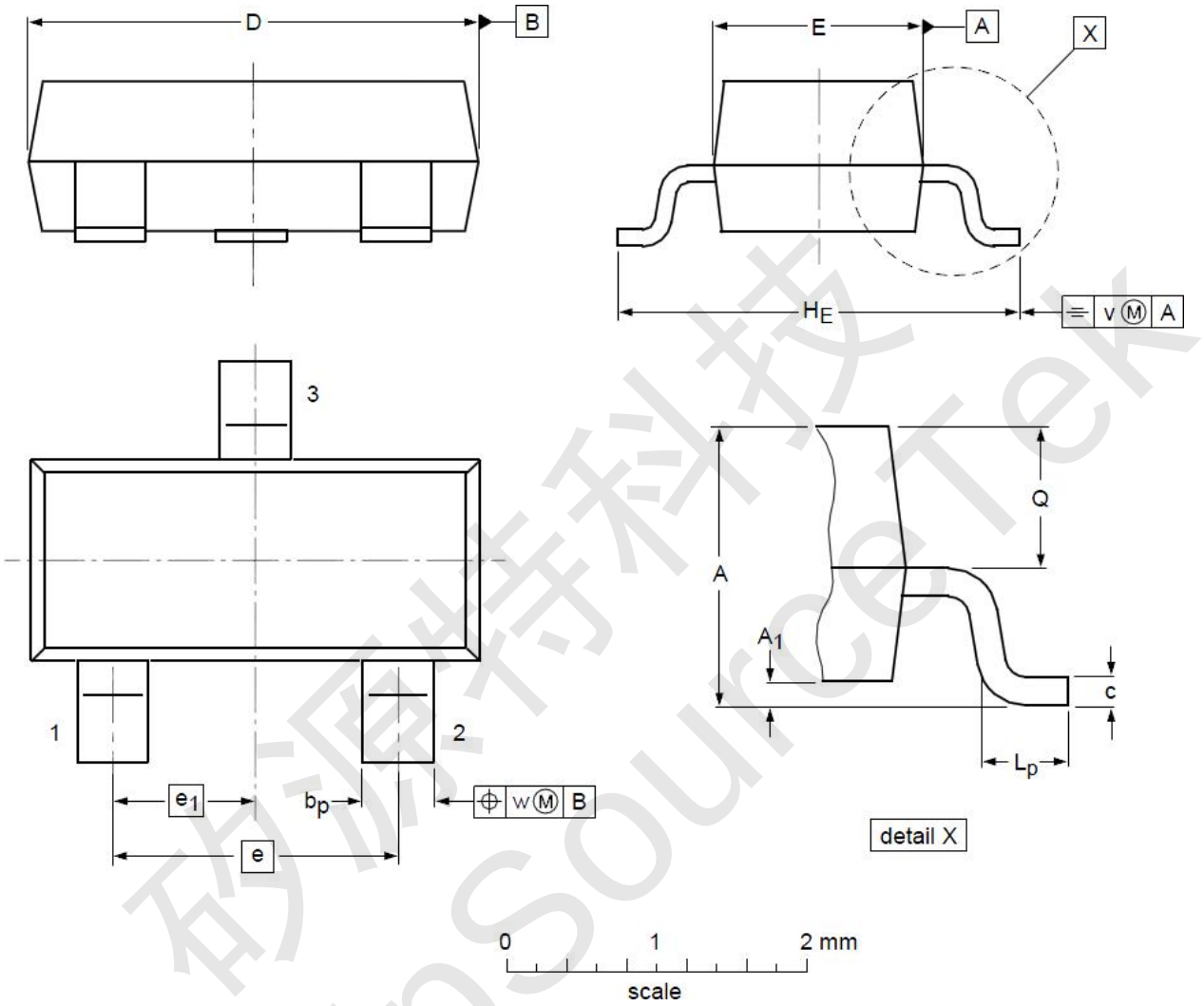



Figure 8. Gate Charge Characteristics

## CSTS1005 SOT23 Mechanical Data




**DIMENSIONS** ( unit : mm )

| Symbol | Min | Typ | Max | Symbol | Min | Typ | Max |
|---|---|---|---|---|---|---|---|
| **A** | 0.90 | 1.01 | 1.15 | **$A_1$** | 0.01 | 0.05 | 0.10 |
| **$b_p$** | 0.30 | 0.42 | 0.50 | **c** | 0.08 | 0.13 | 0.15 |
| **D** | 2.80 | 2.92 | 3.00 | **E** | 1.20 | 1.33 | 1.40 |
| **e** | -- | 1.90 | -- | **$e_1$** | -- | 0.95 | -- |
| **$H_E$** | 2.25 | 2.40 | 2.55 | **$L_p$** | 0.30 | 0.42 | 0.50 |
| **Q** | 0.45 | 0.49 | 0.55 | **v** | -- | 0.20 | -- |
| **w** | -- | 0.10 | -- | | | | |



TEL: +86-0755-27595155 27595165
FAX: +86-0755-27594792
WEB:Http://www.ChipSourceTek.com
E-mail: Sales@ChipSourceTek.com Tony.Wang@ChipSourceTek.com