



CST3404 N-Ch 30V Fast Switching MOSFETs

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



CST3404 Product Summary

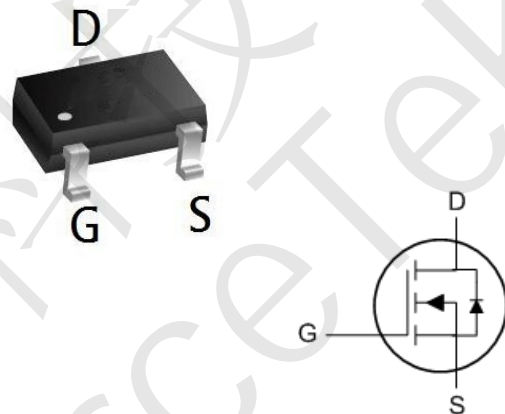
| BVDSS | RDS(on) | ID |
|-------|---------|------|
| 30V | 26mΩ | 5.5A |

CST3404 Description

The CST3404 is the high cell density trenched N-ch MOSFETs, which provides excellent RDS(on) and efficiency for most of the small power switching and load switch applications.

The CST3404 meet the RoHS and Green Product requirement with full function reliability approved.

CST3404 SOT23 Pin Configuration



CST3404 Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|--------------------------|--|------------|------------|
| V_{DS} | Drain-Source Voltage | 30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D @ T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 5.5 | A |
| $I_D @ T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 4.2 | A |
| I_{DM} | Pulsed Drain Current ² | 23.4 | A |
| $P_D @ T_A = 25^\circ C$ | Total Power Dissipation ³ | 1.5 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ C$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ C$ |

CST3404 Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|-----------------|--|------|------|--------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient ¹ | --- | 85 | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case ¹ | --- | --- | $^\circ C/W$ |



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CST3404 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 =250μA | 30 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =30V, V _{GS} =0V, | - | - | 1.0 | μA |
| I _{GSS} | Gate to 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 | 1.0 | 1.5 | 2.5 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance note2 | V _{GS} =10V, I _D =5.5A | - | 26 | 35 | mΩ |
| | | V _{GS} =4.5V, I _D =4.5A | - | 30 | 40 | |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =15V, V _{GS} =0V, f=1.0MHz | - | 490 | - | pF |
| C _{oss} | Output Capacitance | | - | 79 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 61 | - | pF |
| Q _g | Total Gate Charge | V _{DS} =15V, I _D =5.8A, V _{GS} =10V | - | 5.2 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 0.9 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 1.3 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DS} =15V, I _D =3A, R _{GEN} =3Ω, V _{GS} =10V | - | 4.5 | - | ns |
| t _r | Turn-on Rise Time | | - | 2.5 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 14.5 | - | ns |
| t _f | Turn-off Fall Time | | - | 3.5 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 5.5 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 23.2 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S =5.8A | - | - | 1.2 | V |

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



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Figure 1: Output Characteristics

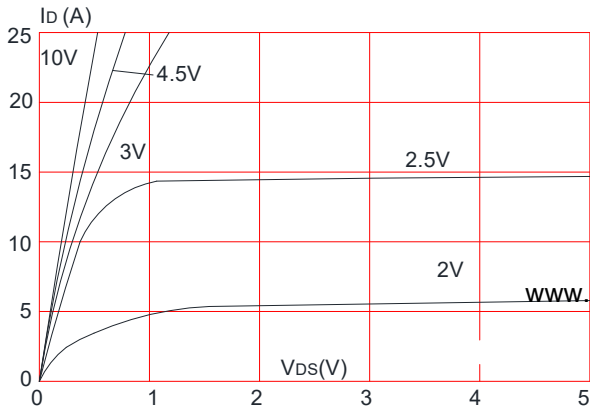


Figure 2: Typical Transfer Characteristics

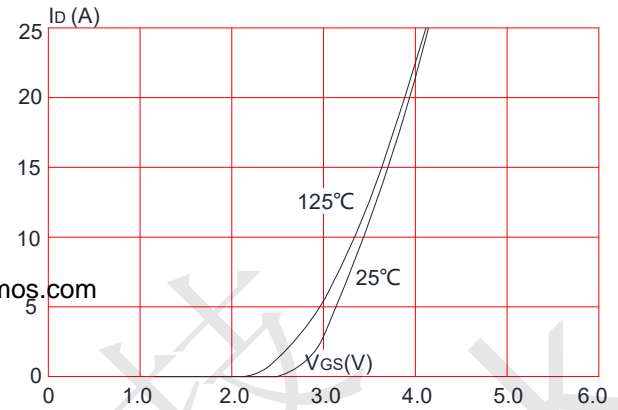


Figure 3: On-resistance vs. Drain Current

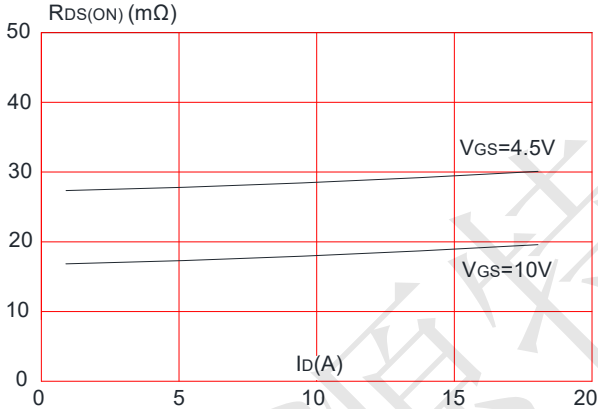


Figure 4: Body Diode Characteristics

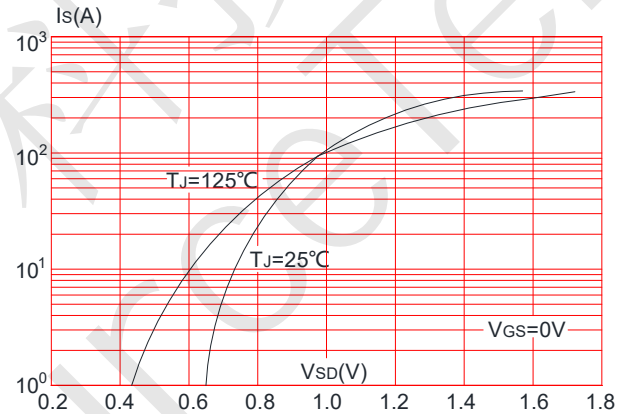


Figure 5: Gate Charge Characteristics

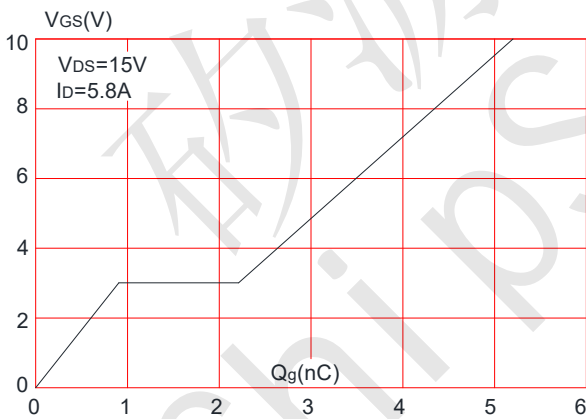
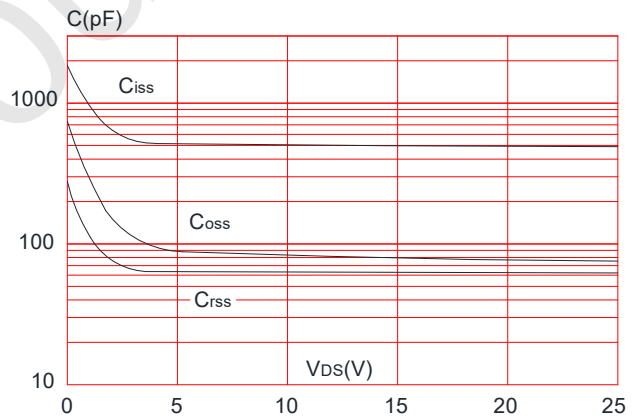


Figure 6: Capacitance Characteristics





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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

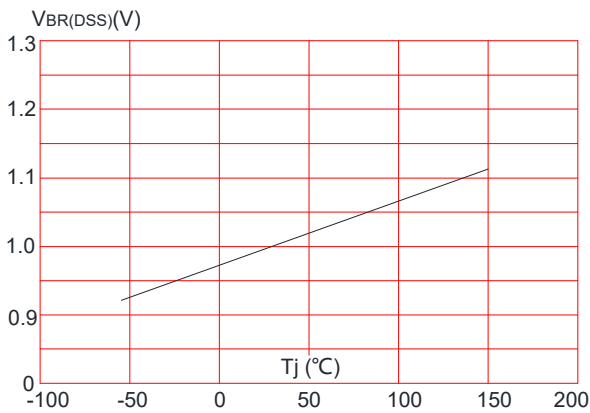


Figure 8: Normalized on Resistance vs. Junction Temperature

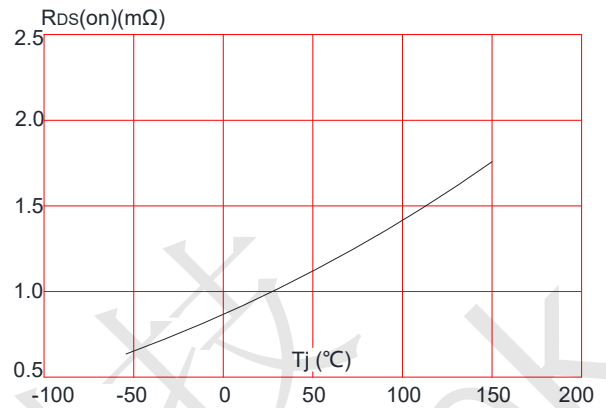


Figure 9: Maximum Safe Operating Area

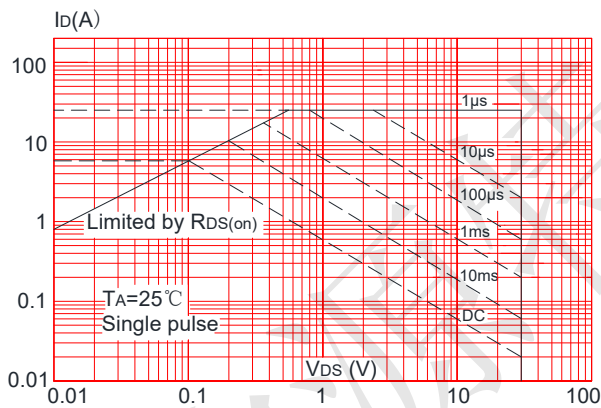


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

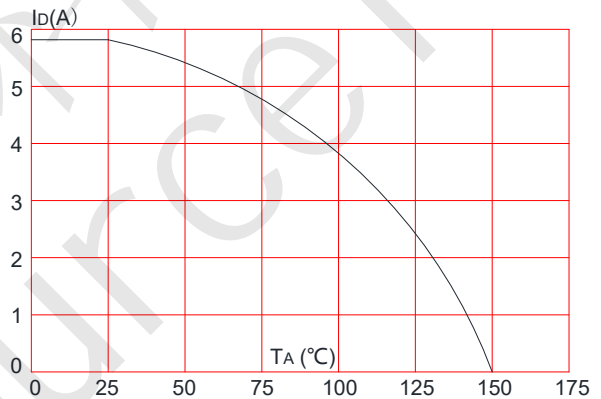
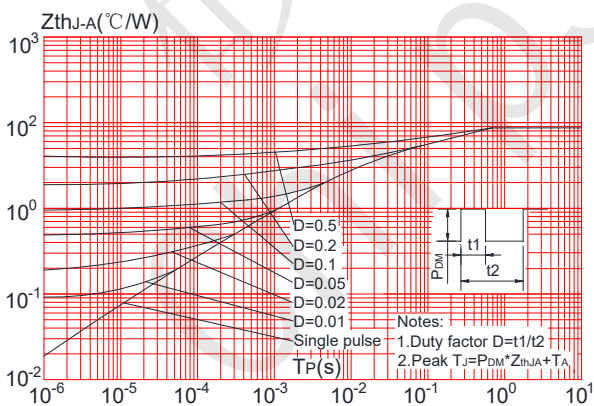
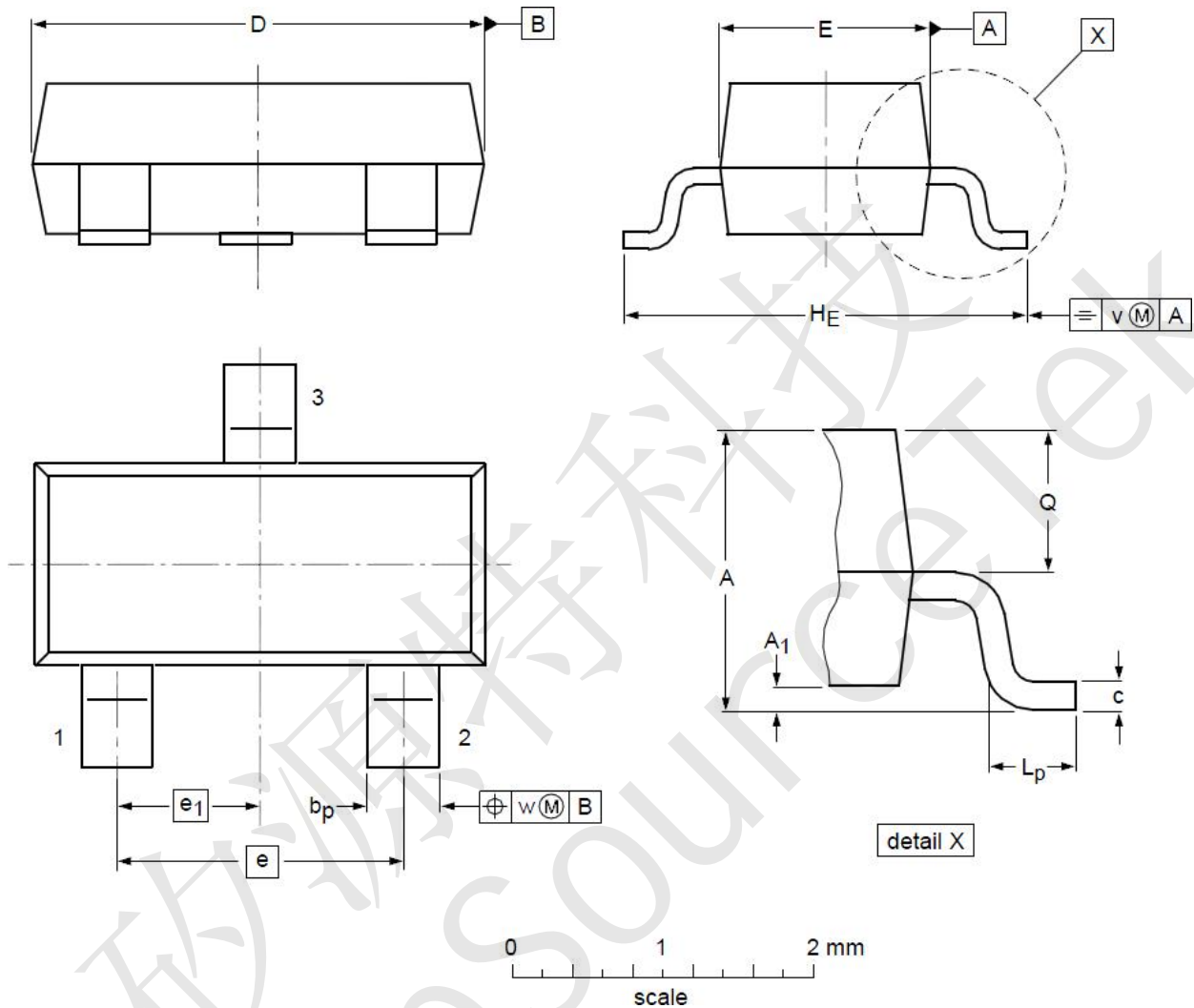


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





CST3404 Package Mechanical Data-SOT-23



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 | -- | | | | |