



CST4435 P-Ch 30V Fast Switching MOSFETs

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

CST4435 Description

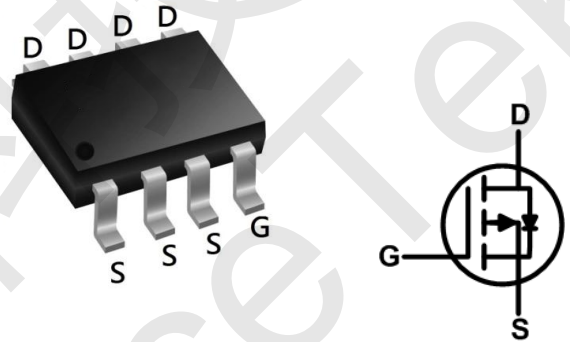
The CST4435 is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The CST4435 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

CST4435 Product Summary

| BVDSS | RDSON | ID |
|-------|-------|------|
| -30V | 12mΩ | -11A |

CST4435 SOP8 Pin Configuration



CST4435 Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

| Symbol | Parameter | Max. | Units | |
|-----------------------------------|---|------------------------|-------|---|
| V _{DSS} | Drain-Source Voltage | -30 | V | |
| V _{GSS} | Gate-Source Voltage | ±20 | V | |
| I _D | Continuous Drain Current | T _C = 25°C | -11 | A |
| | | T _C = 100°C | -8 | A |
| I _{DM} | Pulsed Drain Current ^{note1} | -40 | A | |
| P _D | Power Dissipation | 3.7 | W | |
| R _{θJA} | Thermal Resistance, Junction to Ambient | 33.8 | °C/W | |
| T _J , T _{STG} | Operating and Storage Temperature Range | -55 to +150 | °C | |



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CST4435 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 | 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 | -1.6 | -2.5 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance Note3 | V _{GS} = -10V, I _D = -10A | - | 12 | 15 | mΩ |
| | | V _{GS} = -4.5V, I _D = -5A | - | 18 | 27 | |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} = -15V, V _{GS} =0V, f=1.0MHz | - | 1330 | - | pF |
| C _{oss} | Output Capacitance | | - | 183 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 156 | - | pF |
| Q _g | Total Gate Charge | V _{DS} = -15V, I _D = -5A, V _{GS} = -10V | - | 22 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 1.0 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 1.8 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DD} = -15V, I _D = -10A, V _{GS} =-10V, R _{GEN} =2.5Ω | - | 9 | - | ns |
| t _r | Turn-on Rise Time | | - | 13 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 48 | - | 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 | | - | - | -11 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | -40 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S = -15A | - | -0.8 | -1.2 | V |
| trr | Reverse Recovery Time | T _J =25°C, | - | 64 | - | ns |
| Q _{rr} | Reverse Recovery Charge | V _{DD} = -24V, I _F =-2.8A, di/dt=-100A/μs | - | 25 | - | nC |

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

2. EAS condition: T_J=25°C, V_{GS}=10V, R_G=25Ω, L=0.5mH, I_{AS}=-12.7A

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



CST4435 Typical Performance Characteristics

Figure 1: Output Characteristics

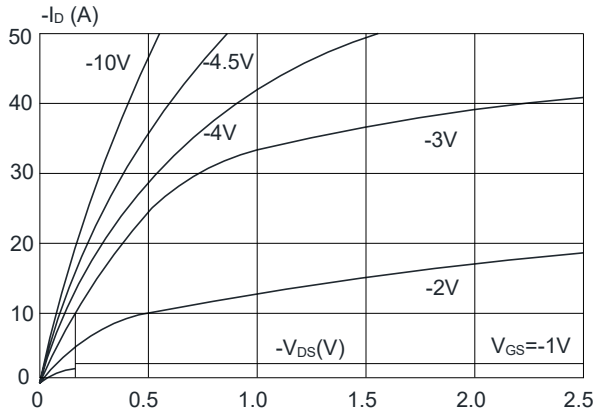


Figure 2: Typical Transfer Characteristics

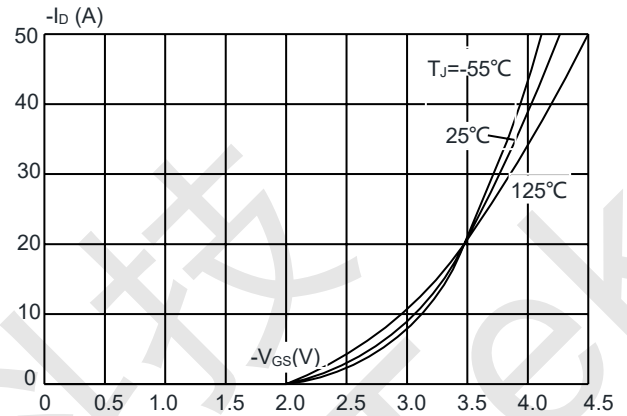


Figure 3: On-resistance vs. Drain Current

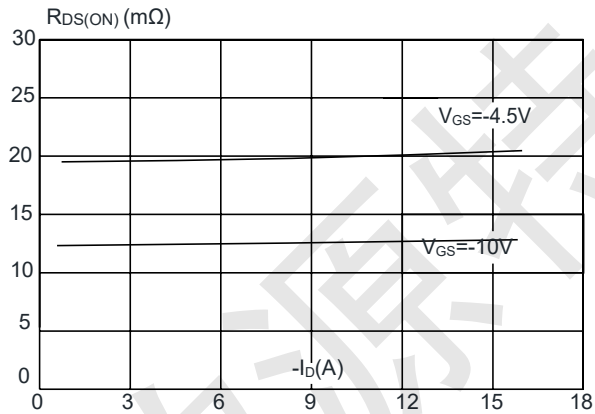


Figure 4: Body Diode Characteristics

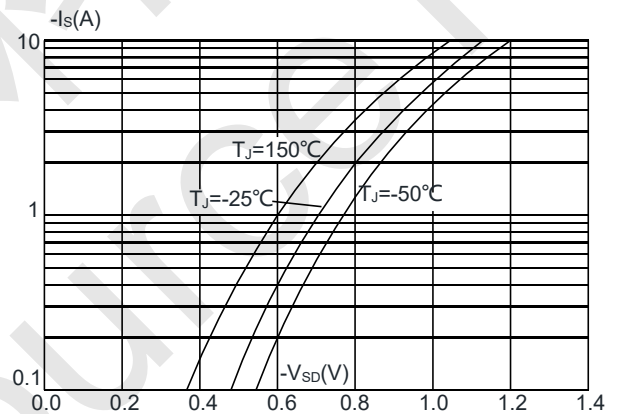


Figure 5: Gate Charge Characteristics

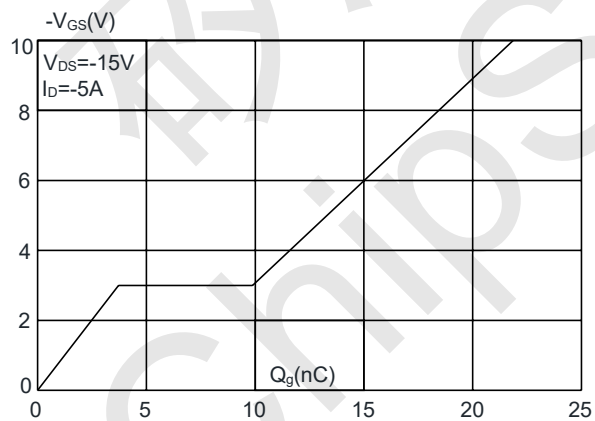
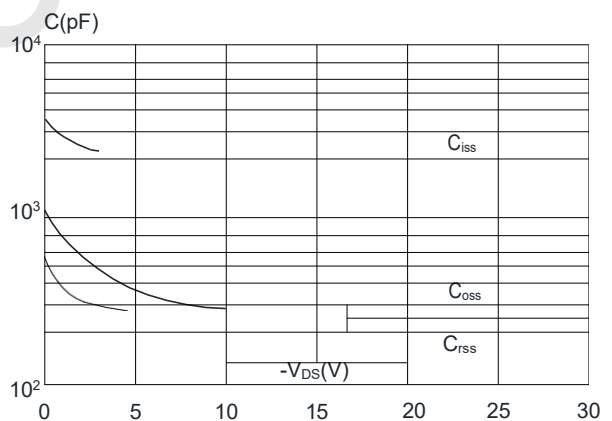


Figure 6: Capacitance Characteristics





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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

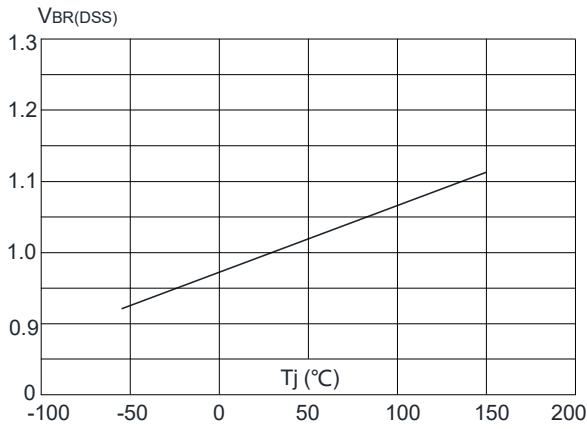


Figure 8: Normalized on Resistance vs. Junction Temperature

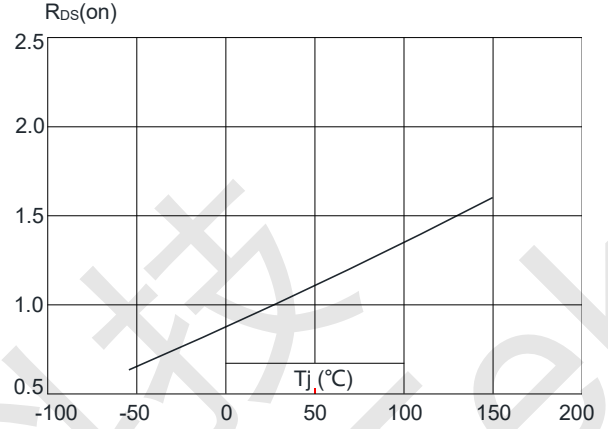


Figure 9: Maximum Safe Operating Area

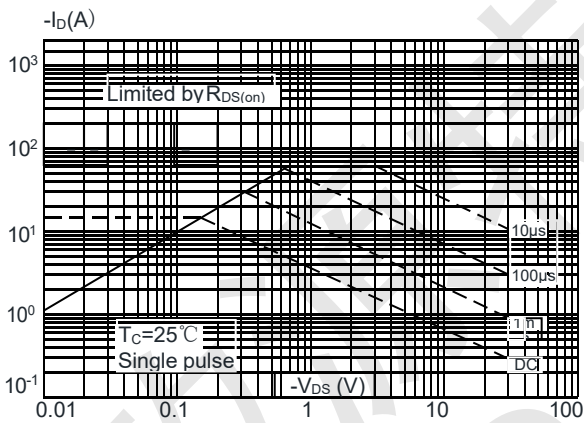


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

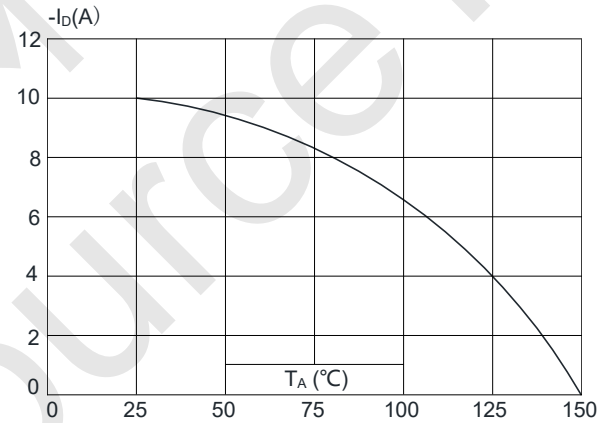
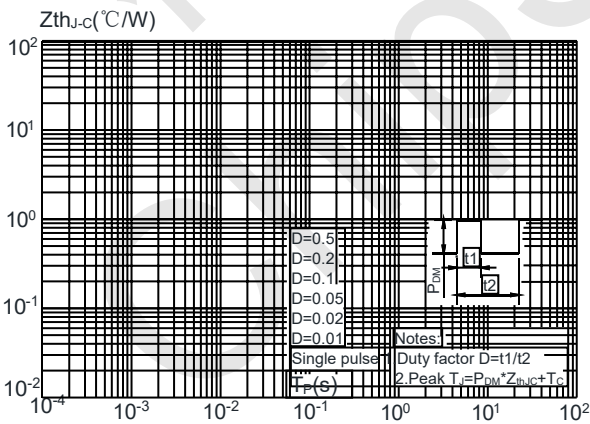


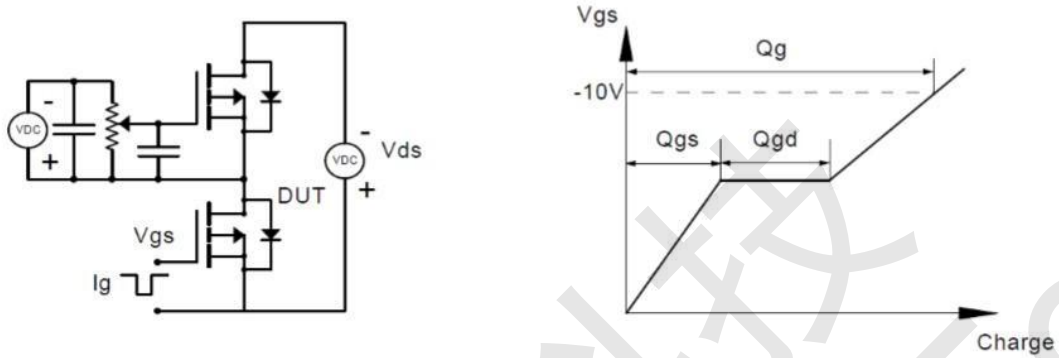
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



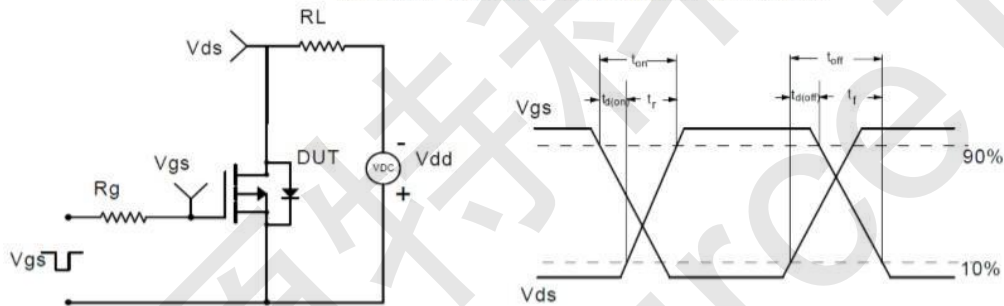


CST4435 Test Circuit

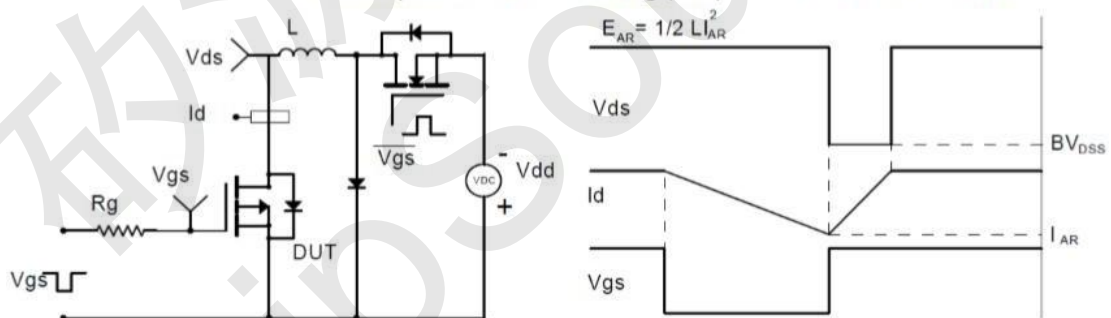
Gate Charge Test Circuit & Waveform



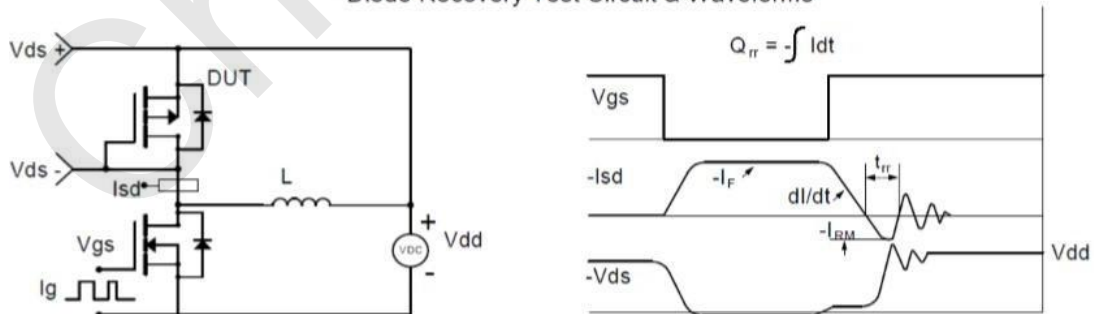
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

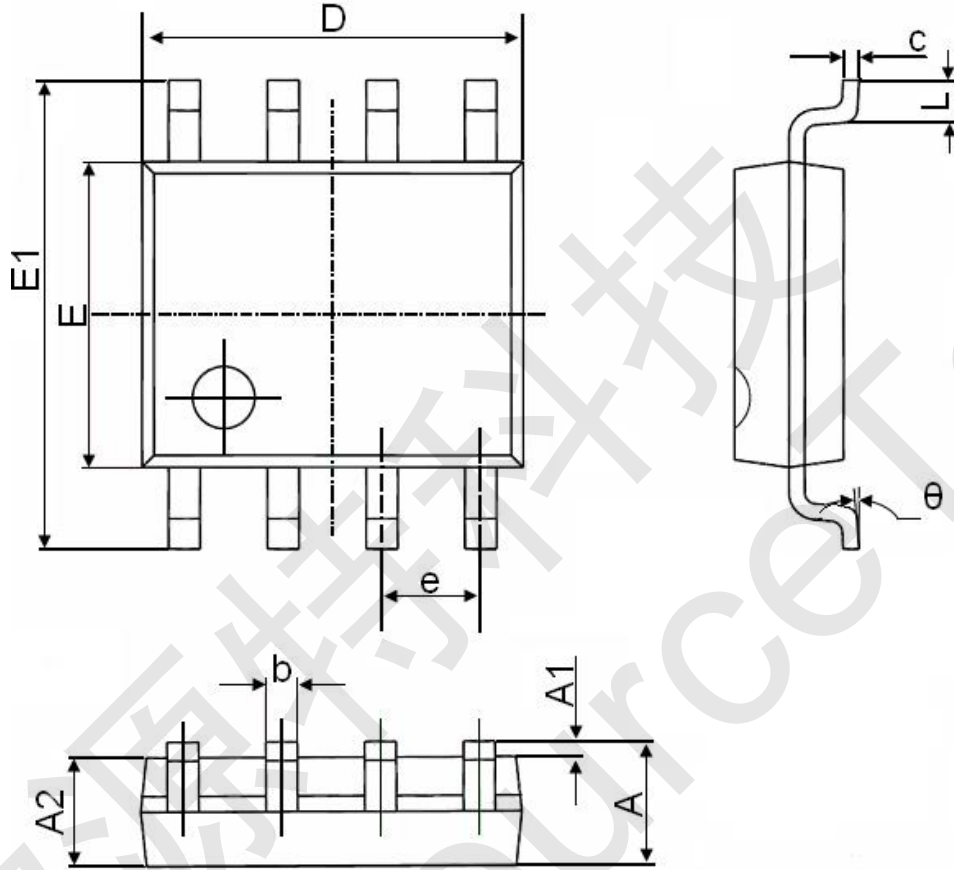


Diode Recovery Test Circuit & Waveforms





CST4435 SOP-8 Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.006 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270(BSC) | | 0.050(BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |