



CST4805A Dual P-Ch 30V Fast Switching MOSFETs

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

CST4805A Product Summary



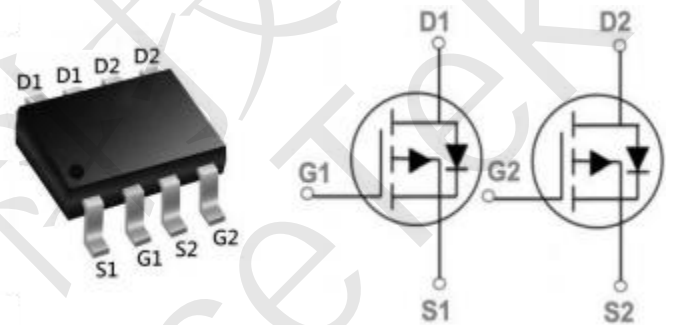
| BVDSS | RDS(on) | ID |
|-------|---------|-------|
| -30V | 18mΩ | -9.5A |

CST4805A Description

The CST4805A is the high cell density trench P-ch MOSFETs, which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications.

The CST4805A meet the RoHS and Green Product

CST4805A SOP8 Pin Configuration



CST4805A Absolute Maximum Ratings (TA=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 _A = 25°C | -9.5 |
| | | T _A = 100°C | -5.9 |
| I _{DM} | Pulsed Drain Current ^{note1} | -36 | A |
| E _{AS} | Single Pulsed Avalanche Energy ^{note2} | 25 | mJ |
| P _D | Power Dissipation | T _A = 25°C | 3.3 |
| R _{θJA} | Thermal Resistance, Junction to Ambient | 38 | °C/W |
| T _J , T _{STG} | Operating and Storage Temperature Range | -55 to + 150 | °C |



CST4805A Dual P-Ch 30V Fast Switching MOSFETs

CST4805A Electrical Characteristics (T_J=25°C, unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------------|--|---|------|--------|------|-------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =-250μA | -30 | --- | --- | V |
| ΔBV _{DSS} /ΔT _J | BV _{DSS} Temperature Coefficient | Reference to 25°C, I _D =-1mA | --- | -0.022 | --- | V/°C |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =-10V, I _D =-6A | --- | 18 | 25 | mΩ |
| | | V _{GS} =-4.5V, I _D =-4A | --- | 25 | 42 | |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} =V _{DS} , I _D =-250μA | -1.0 | --- | -2.5 | V |
| ΔV _{GS(th)} | V _{GS(th)} Temperature Coefficient | | --- | 4.6 | --- | mV/°C |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =-24V, V _{GS} =0V, T _J =25°C | --- | --- | -1 | μA |
| | | V _{DS} =-24V, V _{GS} =0V, T _J =55°C | --- | --- | -5 | |
| I _{GSS} | Gate-Source Leakage Current | V _{GS} =±20V, V _{DS} =0V | --- | --- | ±100 | nA |
| g _{fs} | Forward Transconductance | V _{DS} =-5V, I _D =-6A | --- | 17 | --- | S |
| R _g | Gate Resistance | V _{DS} =0V, V _{GS} =0V, f=1MHz | --- | 13 | --- | Ω |
| Q _g | Total Gate Charge (-4.5V) | V _{DS} =-15V, V _{GS} =-4.5V, I _D =-6A | --- | 12.6 | --- | nC |
| Q _{gs} | Gate-Source Charge | | --- | 4.8 | --- | |
| Q _{gd} | Gate-Drain Charge | | --- | 4.8 | --- | |
| T _{d(on)} | Turn-On Delay Time | V _{DD} =-15V, V _{GS} =-10V, R _G =3.3Ω, I _D =-6A | --- | 4.6 | --- | ns |
| T _r | Rise Time | | --- | 14.8 | --- | |
| T _{d(off)} | Turn-Off Delay Time | | --- | 41 | --- | |
| T _f | Fall Time | | --- | 19.6 | --- | |
| C _{iss} | Input Capacitance | V _{DS} =-15V, V _{GS} =0V, f=1MHz | --- | 1345 | --- | PF |
| C _{oss} | Output Capacitance | | --- | 194 | --- | |
| C _{rss} | Reverse Transfer Capacitance | | --- | 158 | --- | |

CST4805A Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|--|------|------|------|------|
| I _S | Continuous Source Current ^{1,5} | V _G =V _D =0V, Force Current | --- | --- | -6.5 | A |
| I _{SM} | Pulsed Source Current ^{2,5} | | --- | --- | -26 | A |
| V _{SD} | Diode Forward Voltage ² | V _{GS} =0V, I _S =-1A, T _J =25°C | --- | --- | -1.2 | V |
| t _{rr} | Reverse Recovery Time | I _F =-6A, dI/dt=100A/μs, T _J =25°C | --- | 16.3 | --- | ns |
| Q _{rr} | Reverse Recovery Charge | | --- | 5.9 | --- | nC |

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300 μs, duty cycle ≤ 2%
3. The EAS data shows Max. rating. The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-38A
4. The power dissipation is limited by 150°C junction temperature
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.



CST4805A Dual P-Ch 30V Fast Switching MOSFETs

CST4805A Typical Performance Characteristics

Figure 1 : Output Characteristics - I_D (A)

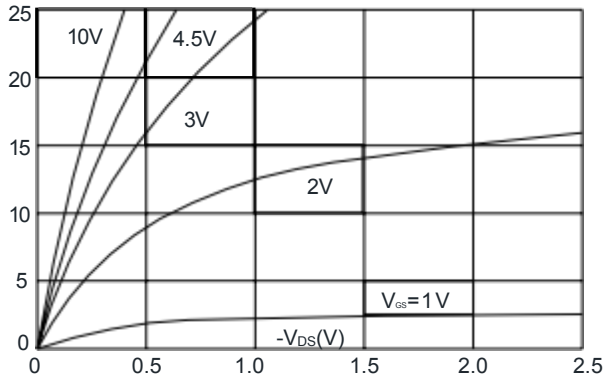


Figure 2 : Typical Transfer Characteristics

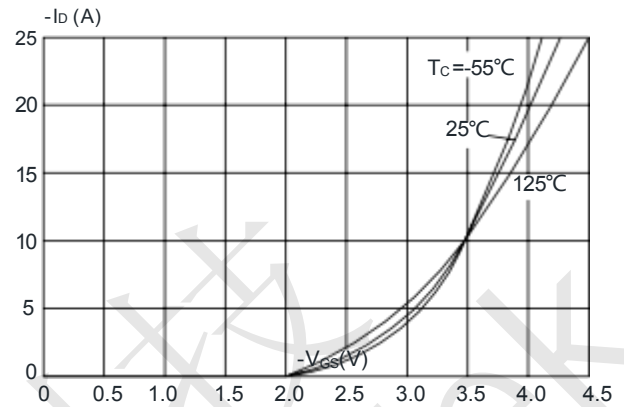


Figure 3 : On-resistance vs. Drain Current
 $R_{DS(ON)}$ (m Ω)

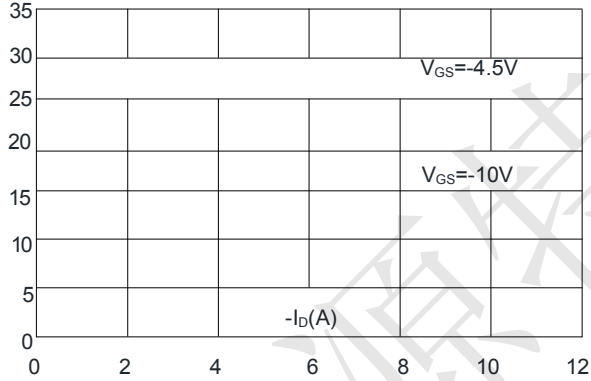


Figure 4 : Body Diode Characteristics

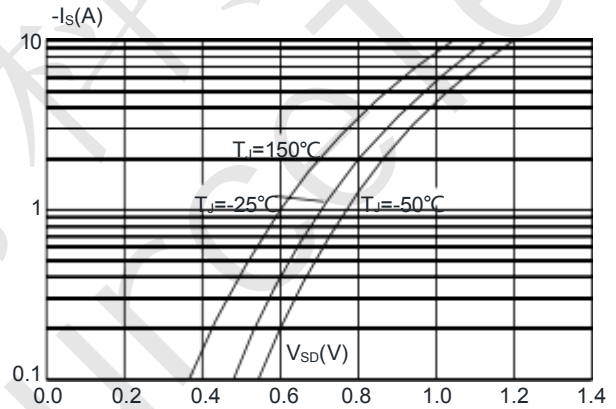


Figure 5 : Gate Charge Characteristics
 $-V_{GS}$ (V)

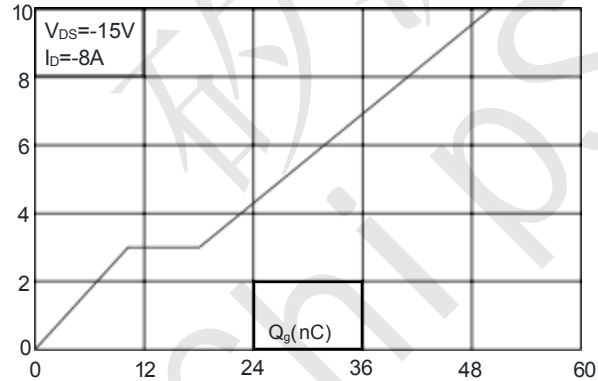
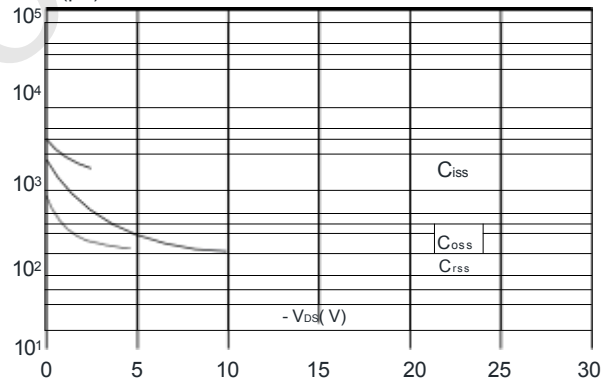


Figure 6 : Capacitance Characteristics
C (pF)





CST4805A Dual P-Ch 30V Fast Switching MOSFETs

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

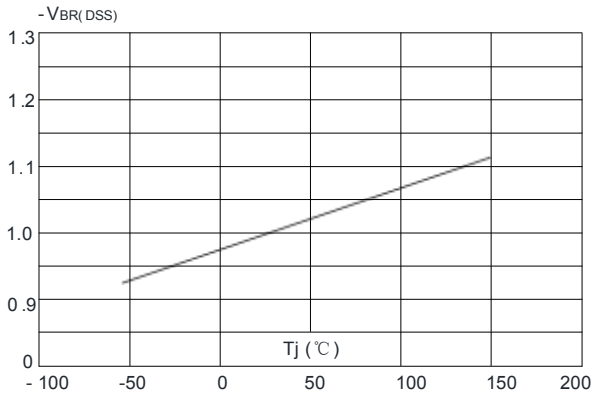


Figure 8: Normalized on Resistance vs. Junction Temperature

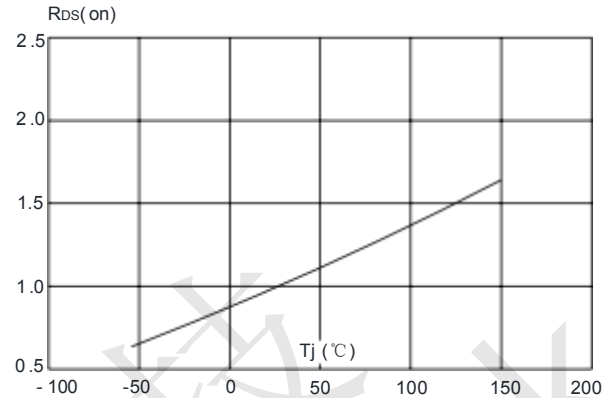


Figure 9: Maximum Safe Operating Area

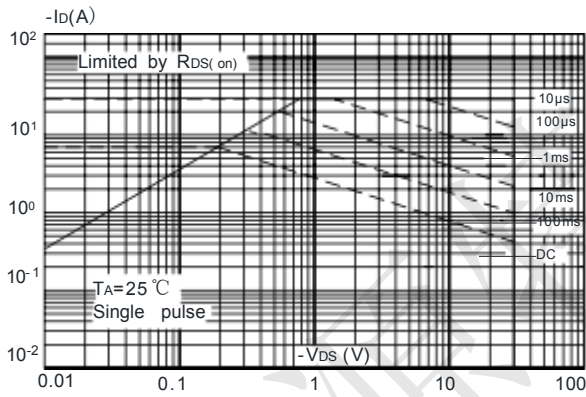
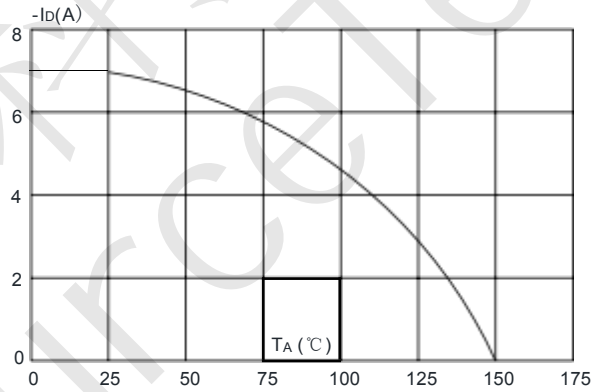
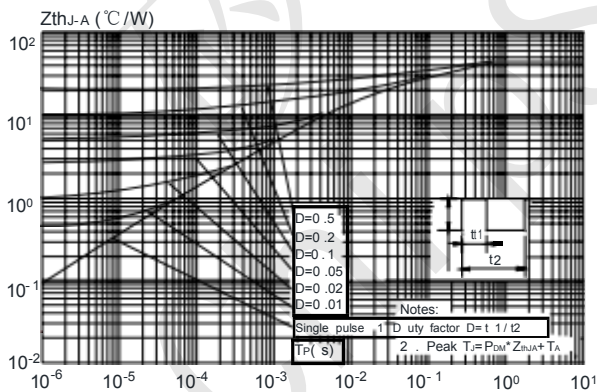


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature



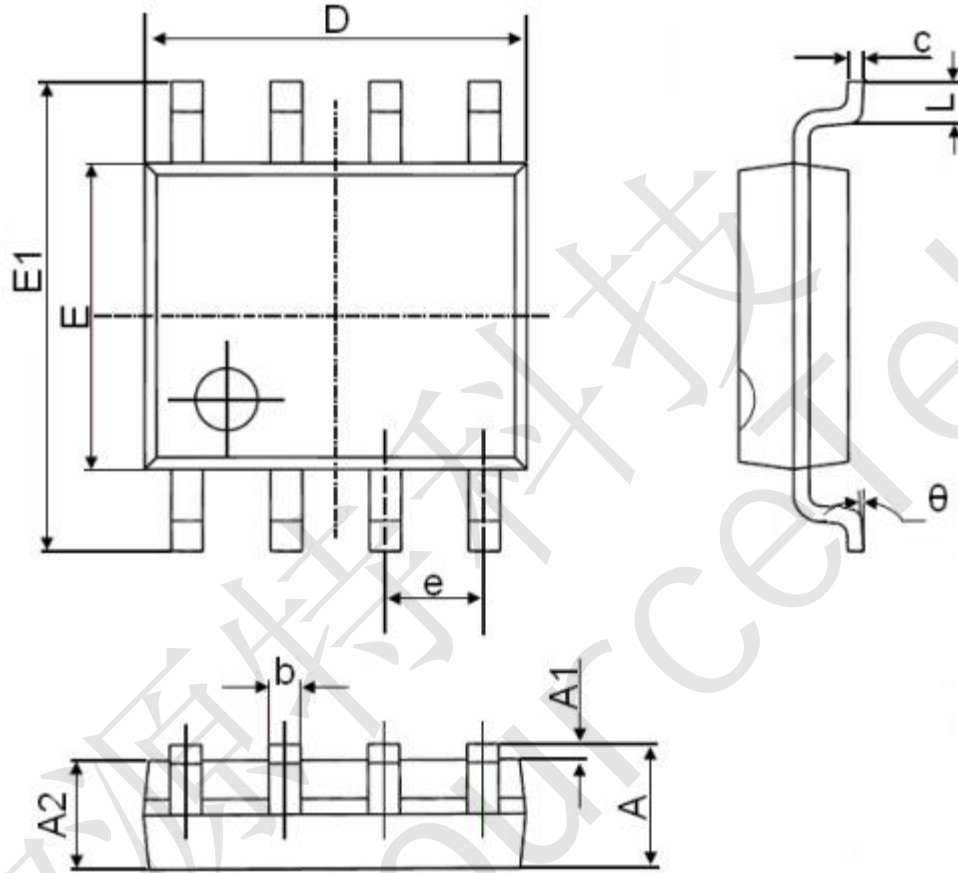
Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





CST4805A Dual P-Ch 30V Fast Switching MOSFETs

CST4805A Package Mechanical Data- SOP-8



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

| SYMBOL | MIN | NOM | MAX |
|----------|-------|----------|-------|
| A | 1.40 | 1.60 | 1.80 |
| A1 | 0.05 | 0.15 | 0.25 |
| A2 | 1.35 | 1.45 | 1.55 |
| b | 0.30 | 0.40 | 0.50 |
| c | 0.153 | 0.203 | 0.253 |
| D | 4.80 | 4.90 | 5.00 |
| E | 3.80 | 3.90 | 4.00 |
| E1 | 5.80 | 6.00 | 6.20 |
| L | 0.45 | 0.70 | 1.00 |
| θ | 2° | 4° | 6° |
| L1 | | 1.04 REF | |
| e | | 1.27 BSC | |
| R1 | | 0.07 TYP | |
| R2 | | 0.07 TYP | |