



CST30P06F P-Ch 60V Fast Switching MOSFETs

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

CST30P06F Product Summary



| BVDSS | RDSON | ID |
|-------|-------|------|
| -60V | 24mΩ | -30A |

CST30P06F Description

The CST30P06F is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The CST30P06F meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

CST30P06F PDFN5060-8L Pin Configuration

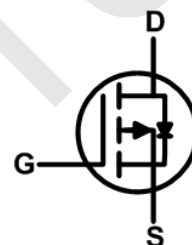
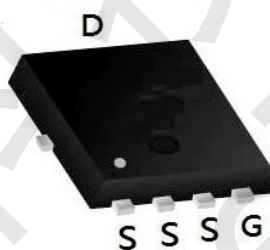


Table 1. Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

| Symbol | Parameter | Limit | Unit |
|-----------------------------------|---|------------|------|
| V _{DS} | Drain-Source Voltage (V _{GS} =0V) | -60 | V |
| V _{GS} | Gate-Source Voltage (V _{DS} =0V) | ±20 | V |
| I _D | Drain Current-Continuous(T _C =25°C) | -30 | A |
| | Drain Current-Continuous(T _C =100°C) | -25.5 | A |
| I _{DM (pluse)} | Drain Current-Continuous@ Current-Pulsed (Note 1) | -144 | A |
| P _D | Maximum Power Dissipation(T _C =25°C) | 79 | W |
| | Maximum Power Dissipation(T _C =100°C) | 39.5 | W |
| E _{AS} | Avalanche energy (Note 2) | 196 | mJ |
| T _J , T _{STG} | Operating Junction and Storage Temperature Range | -55 To 175 | °C |

Table 2. Thermal Characteristic

| Symbol | Parameter | Typ | Max | Unit |
|------------------|--------------------------------------|-----|-----|------|
| R _{θJC} | Thermal Resistance, Junction-to-Case | | 1.9 | °C/W |



Table 3. Electrical Characteristics (T_J=25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|-----------------------------------|---|-----|------|------|------|
| On/Off States | | | | | | |
| B _V DSS | Drain-Source Breakdown Voltage | V _{GS} =0V I _D =-250μA | -60 | | | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =-60V, V _{GS} =0V | | | -1 | μA |
| I _{GSS} | Gate-Body Leakage Current | V _{GS} =±20V, V _{DS} =0V | | | ±100 | nA |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =-250μA | -1 | -1.8 | -2.5 | V |
| g _{FS} | Forward Transconductance | V _{DS} =-5V, I _D =-15A | | 35 | | S |
| R _{DS(ON)} | Drain-Source On-State Resistance | V _{GS} =-10V, I _D =-15A | | 24 | 30 | mΩ |
| | | V _{GS} =-4.5V, I _D =-10A | | 30 | 40 | mΩ |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =-25V, V _{GS} =0V, f=1.0MHz | | 4026 | | pF |
| C _{oss} | Output Capacitance | | | 134 | | pF |
| C _{rss} | Reverse Transfer Capacitance | | | 98 | | pF |
| Switching Parameters | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{GS} =-10V, V _{DS} =-30V, R _L =1.5Ω, R _{GEN} =3Ω | | 12.2 | | nS |
| t _r | Turn-on Rise Time | | | 10 | | nS |
| t _{d(off)} | Turn-Off Delay Time | | | 64 | | nS |
| t _f | Turn-Off Fall Time | | | 14 | | nS |
| Q _g | Total Gate Charge | V _{GS} =-10V, V _{DS} =-30V, I _D =-20A | | 68 | | nC |
| Q _{gs} | Gate-Source Charge | | | 10.5 | | nC |
| Q _{gd} | Gate-Drain Charge | | | 13 | | nC |
| Source-Drain Diode Characteristics | | | | | | |
| I _{SD} | Source-Drain Current (Body Diode) | | | | 30 | A |
| V _{SD} | Forward on Voltage (Note 3) | V _{GS} =0V, I _S =-15A | | | -1.2 | V |
| t _{rr} | Reverse Recovery Time | I _F =-20A, di/dt=100A/μs | | 26 | | ns |
| Q _{rr} | Reverse Recovery Charge | I _F =-20A, di/dt=100A/μs | | 29 | | nC |

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2.E_{AS} condition: T_J=25°C, V_{DD}=40V, V_G=-10V, R_g=25Ω, L=0.5mH.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.



CST30P06F Typical Electrical And Thermal Characteristics (Curves)

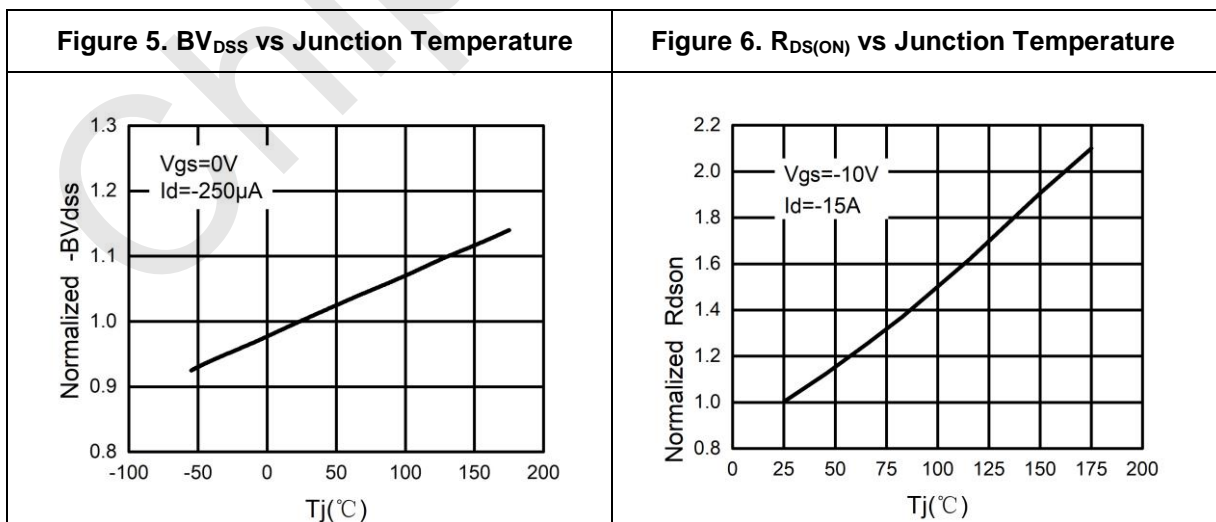
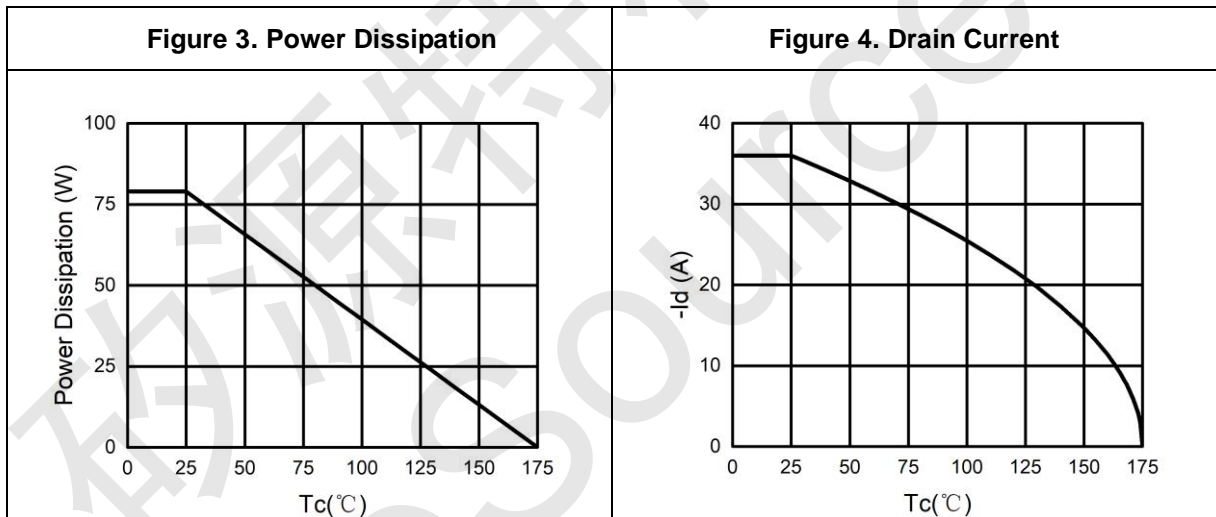
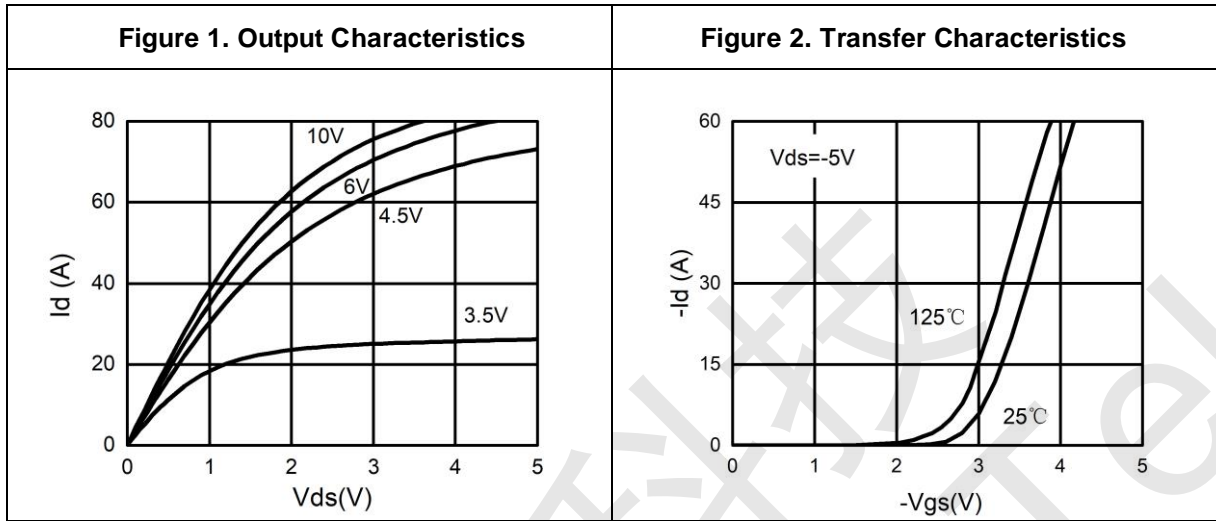




Figure 7. Gate Charge Waveforms

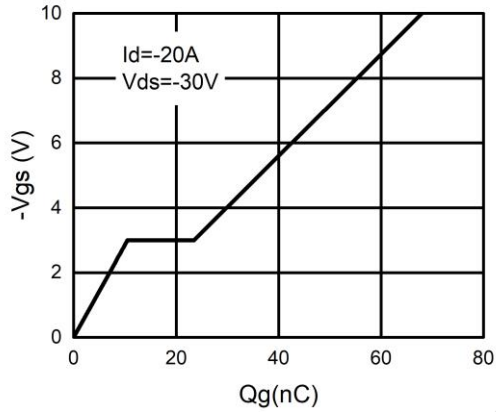


Figure 8. Capacitance

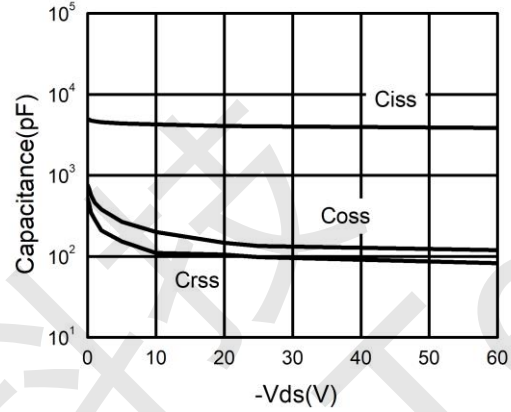


Figure 9. Body-Diode Characteristics

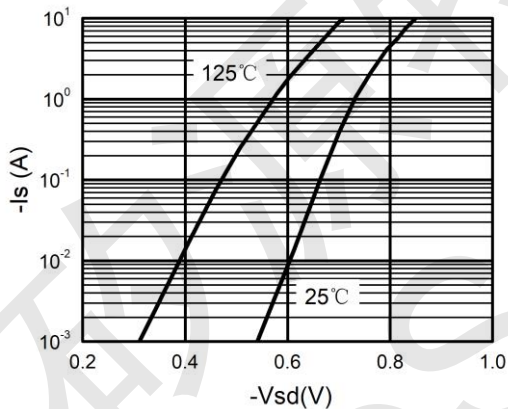
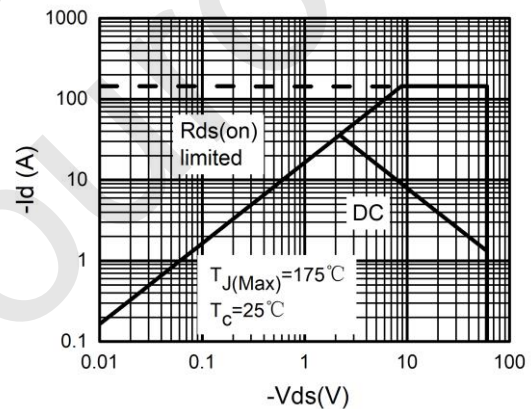
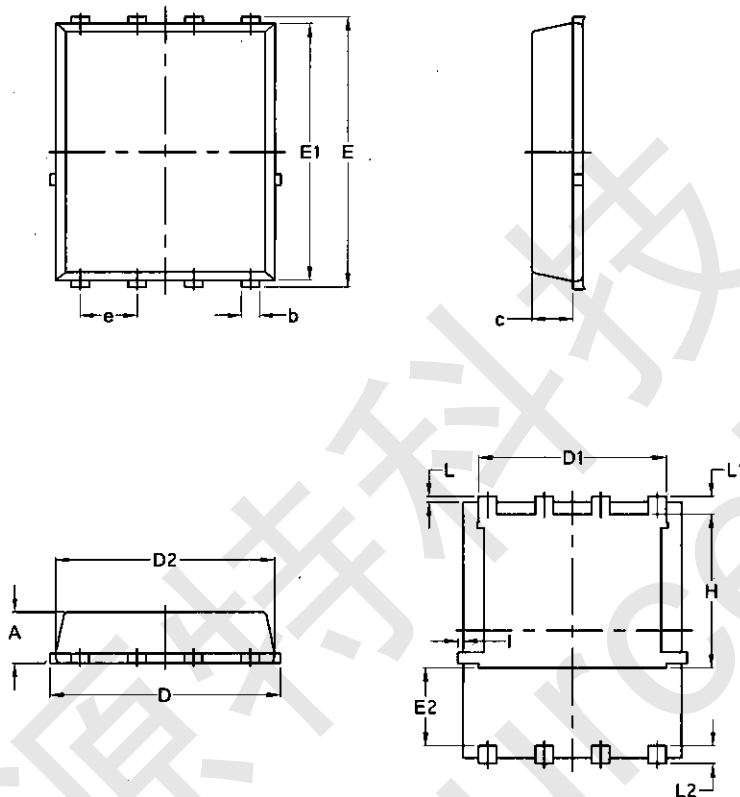


Figure 10. Maximum Safe Operating Area





CST30P06F Package Mechanical Data-PDFN5060-8L-JQ Single



| Symbol | Common | | | |
|--------|----------|--------|----------|--------|
| | mm | | Inch | |
| | Mim | Max | Min | Max |
| A | 1.03 | 1.17 | 0.0406 | 0.0461 |
| b | 0.34 | 0.48 | 0.0134 | 0.0189 |
| c | 0.824 | 0.0970 | 0.0324 | 0.082 |
| D | 4.80 | 5.40 | 0.1890 | 0.2126 |
| D1 | 4.11 | 4.31 | 0.1618 | 0.1697 |
| D2 | 4.80 | 5.00 | 0.1890 | 0.1969 |
| E | 5.95 | 6.15 | 0.2343 | 0.2421 |
| E1 | 5.65 | 5.85 | 0.2224 | 0.2303 |
| E2 | 1.60 | / | 0.0630 | / |
| e | 1.27 BSC | | 0.05 BSC | |
| L | 0.05 | 0.25 | 0.0020 | 0.0098 |
| L1 | 0.38 | 0.50 | 0.0150 | 0.0197 |
| L2 | 0.38 | 0.50 | 0.0150 | 0.0197 |
| H | 3.30 | 3.50 | 0.1299 | 0.1378 |
| I | / | 0.18 | / | 0.0070 |