

FEATURE

- ◆ -30V/-4.3A, $R_{DS(ON)}=44m\Omega$ (typ.)@ $V_{GS}=-10V$
- ◆ -30V/-3.5A, $R_{DS(ON)}=50m\Omega$ (typ.)@ $V_{GS}=-4.5V$
- ◆ -30V/-2.5A, $R_{DS(ON)}=65m\Omega$ (typ.)@ $V_{GS}=-2.5V$
- ◆ Super high design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ Full RoHS compliance
- ◆ SOT23-3 package design

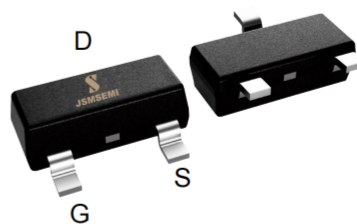
DESCRIPTION

The CES2323 is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density advanced trench technology..

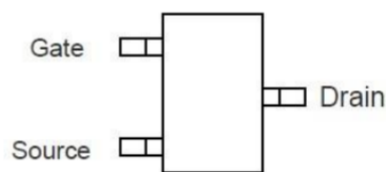
This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, and low in-line power loss are needed in a very small outline surface mount package.

APPLICATIONS

- ◆ Power Management
- ◆ Portable Equipment
- ◆ DC/DC Converter
- ◆ Load Switch
- ◆ DSC
- ◆ LCD Display inverter



P-Channel



TOP VIEW
SOT-23

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ Unless otherwise noted)

| Symbol | Parameter | | Typical | Unit |
|-----------------|---|------------------|----------|--------------|
| V_{DSS} | Drain-Source Voltage | | -30 | V |
| V_{GSS} | Gate-Source Voltage | | ± 12 | V |
| I_D | Continuous Drain Current ($T_C=25^\circ C$) | $V_{GS}=-10V$ | -4.3 | A |
| | Continuous Drain Current ($T_J=70^\circ C$) | | -4.0 | |
| I_{DM} | Pulsed Drain Current | | -20 | A |
| I_S | Continuous Source Current (Diode Conduction) | | -1.5 | A |
| P_D | Power Dissipation | $T_A=25^\circ C$ | 1.5 | W |
| | | $T_A=70^\circ C$ | 0.9 | |
| T_J | Operation Junction Temperature | | 150 | $^\circ C$ |
| T_{STG} | Storage Temperature Range | | -55~+150 | $^\circ C$ |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | | 120 | $^\circ C/W$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress rating only and functional device operation is not implied

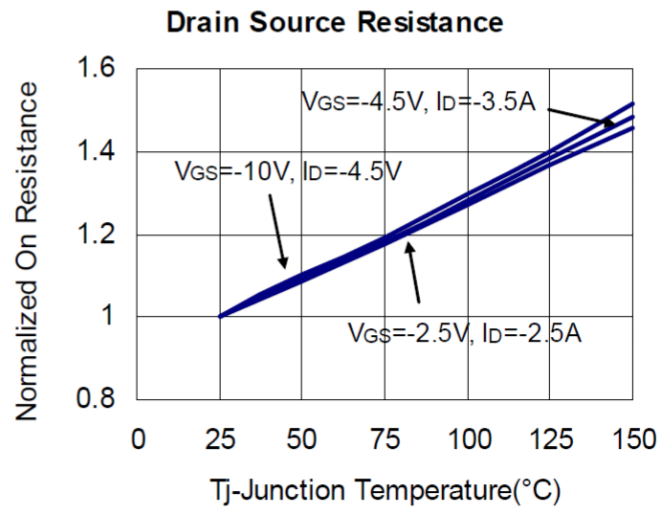
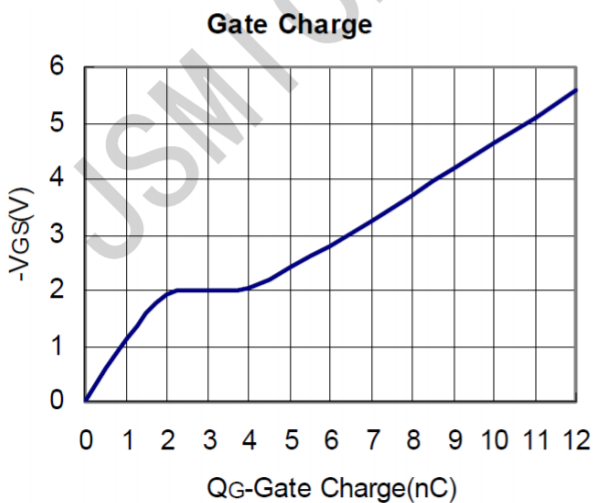
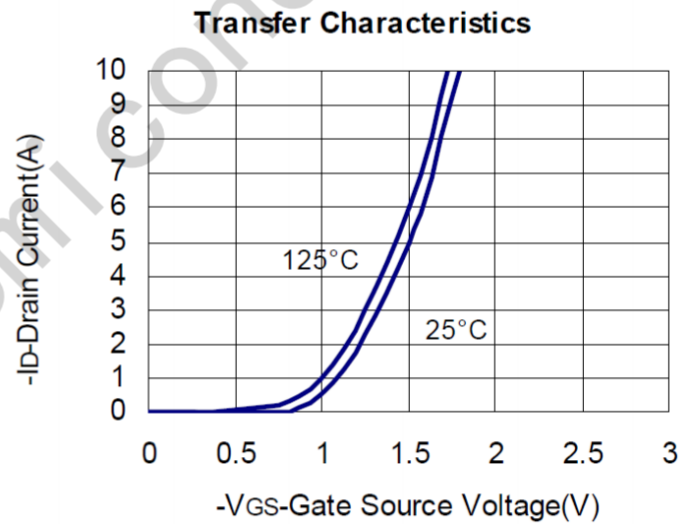
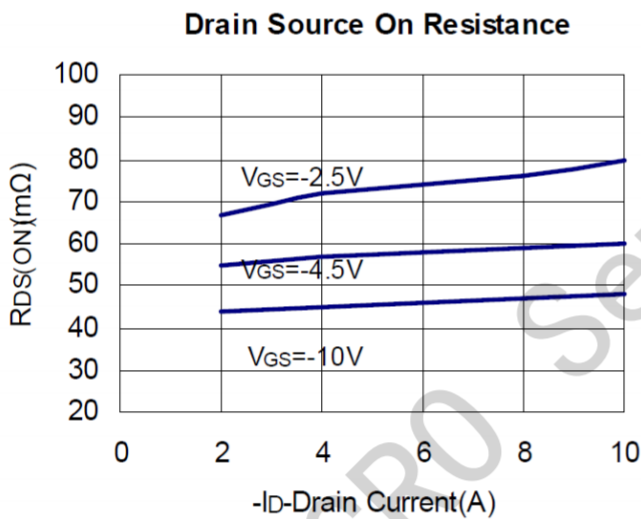
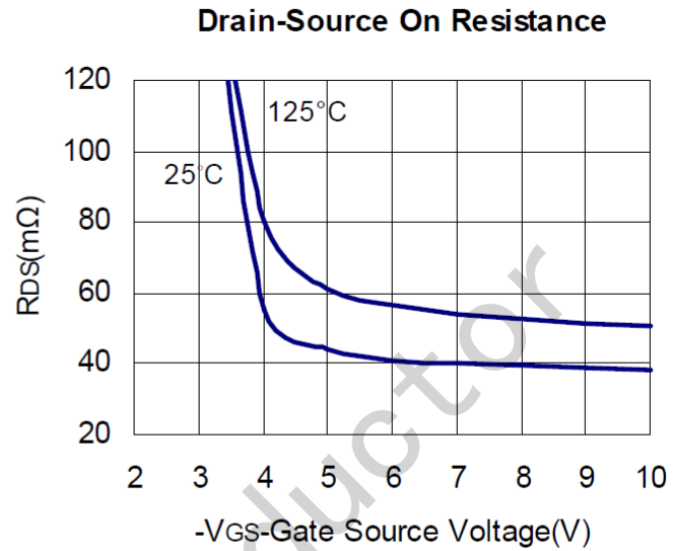
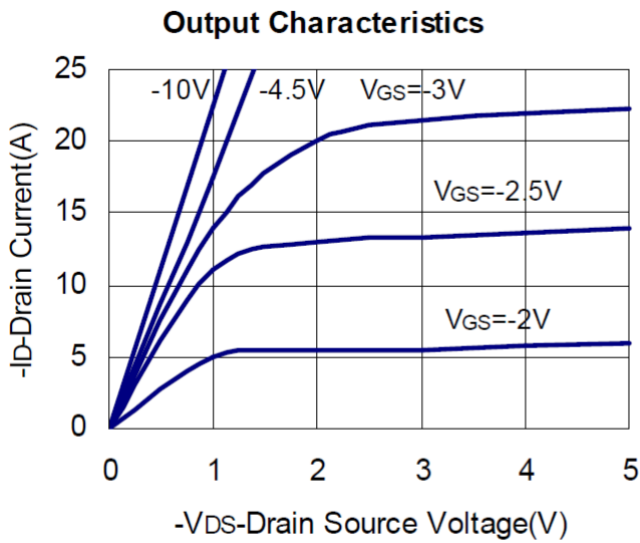
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ Unless otherwise noted)

| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|---------------------------|---------------------------------|---|------|------|-----------|------------|
| Static Parameters | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=-250\mu A$ | -30 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -0.6 | | -1.2 | V |
| I_{GSS} | Gate Leakage Current | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | ± 100 | nA |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=-24V, V_{GS}=0$ | | | -1 | uA |
| | | $V_{DS}=-24V, V_{GS}=0$ $T_J=55^\circ\text{C}$ | | | -5 | |
| $R_{DS(on)}$ | Drain-Source On-Resistance | $V_{GS}=-10V, I_D=-4.3A$ | | 44 | 52 | m Ω |
| | | $V_{GS}=-4.5V, I_D=-3.5A$ | | 50 | 58 | |
| | | $V_{GS}=-2.5V, I_D=-2.5A$ | | 65 | 78 | |
| Source-Drain Diode | | | | | | |
| V_{SD} | Diode Forward Voltage | $I_S=-1.0A, V_{GS}=0V$ | | -0.7 | -1.0 | V |
| Dynamic Parameters | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=-20V$ $V_{GS}=-4.5V$ $I_D=-4.0A$ | | 6.2 | | nC |
| Q_{gs} | Gate-Source Charge | | | 2.8 | | |
| Q_{gd} | Gate-Drain Charge | | | 3.0 | | |
| C_{iss} | Input Capacitance | $V_{DS}=-12V$ $V_{GS}=0V$ $f=1\text{MHz}$ | | 672 | | pF |
| C_{oss} | Output Capacitance | | | 280 | | |
| C_{rss} | Reverse Transfer Capacitance | | | 102 | | |
| $T_{d(on)}$ | Turn-On Time | $V_{DS}=-12V$ $I_D=-4A$ | | 9 | | nS |
| T_r | | | | 15 | | |
| $T_{d(off)}$ | Turn-Off Time | $V_{GEN}=-10V$ $R_G=3.3\Omega$ | | 23 | | |
| T_f | | | | 21 | | |

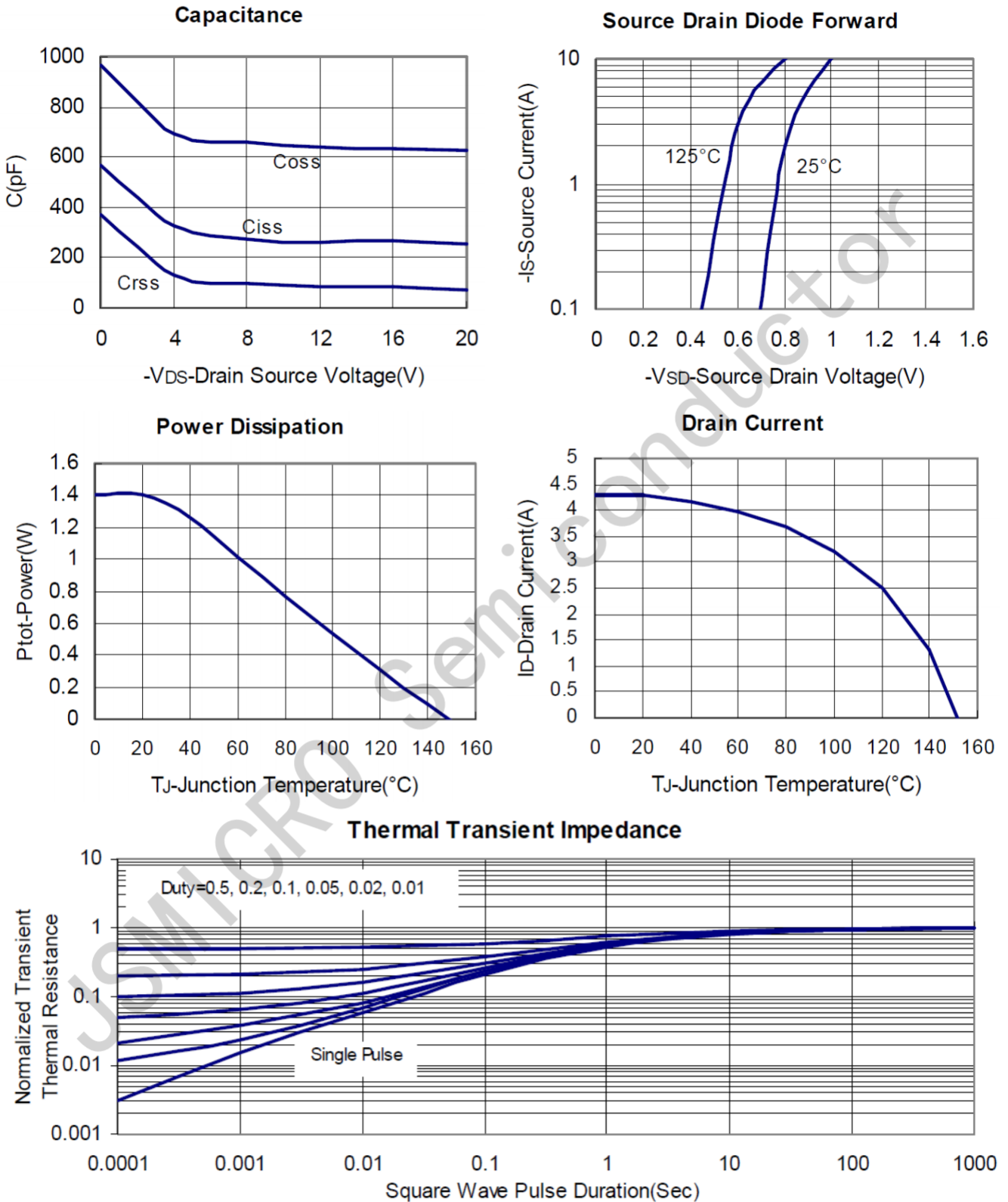
Note: 1. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

2. Static parameters are based on package level with recommended wire bonding

■ **TYPICAL CHARACTERISTICS** (25 °C Unless Note)

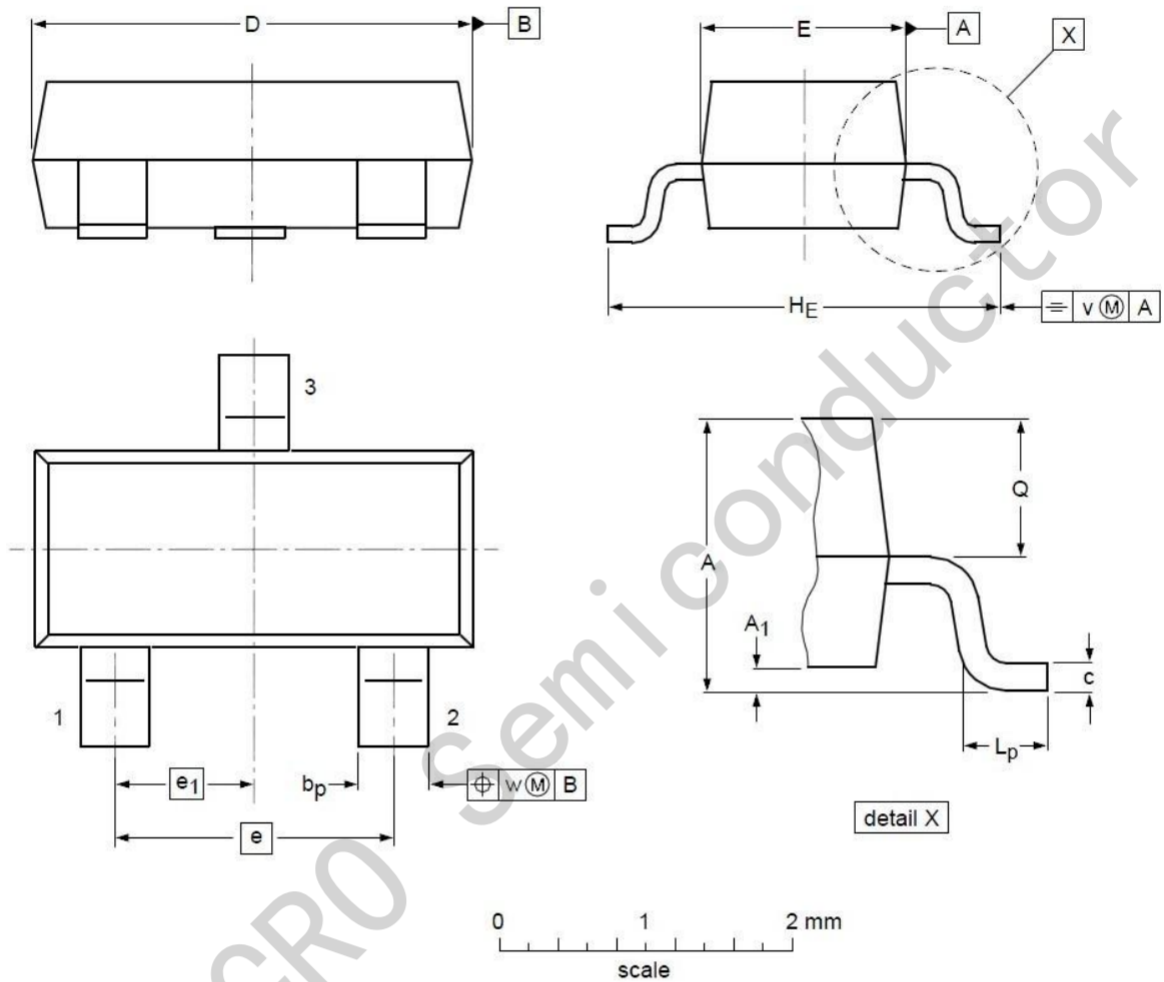


■ **TYPICAL CHARACTERISTICS** (continuous)



Package Information

SOT-23-3



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 | -- | | | | |