

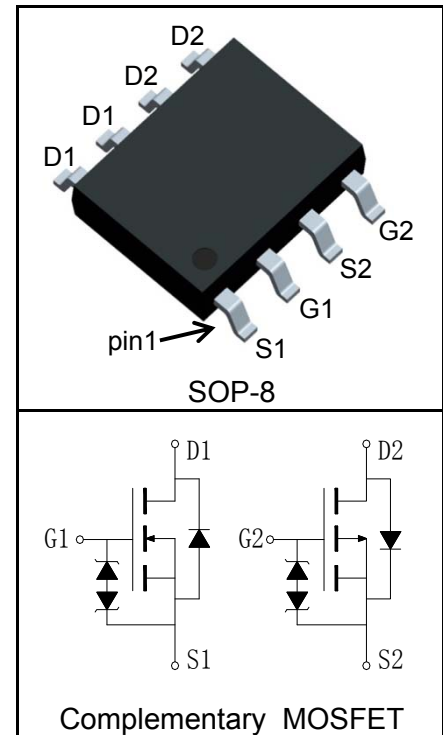
Features

- N-Channel
30V/8A,
 $R_{DS(ON)} = 12m\Omega$ (Typ.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 16m\Omega$ (Typ.) @ $V_{GS} = 4.5V$
- P-Channel
-30V/-7A,
 $R_{DS(ON)} = 18m\Omega$ (Typ.) @ $V_{GS} = -10V$
 $R_{DS(ON)} = 25m\Omega$ (Typ.) @ $V_{GS} = -4.5V$
- Reliable and Rugged
- ESD Protected
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Load Switch

Pin Description



Absolute Maximum Ratings

| Symbol | Parameter | N-Channel | P-Channel | Unit | |
|--|---|--------------------|------------|--------------|---|
| Common Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted) | | | | | |
| V_{DSS} | Drain-Source Voltage | 30 | -30 | V | |
| V_{GSS} | Gate-Source Voltage | ± 12 | ± 12 | | |
| T_J | Maximum Junction Temperature | 150 | 150 | $^\circ C$ | |
| T_{STG} | Storage Temperature Range | -55 to 150 | -55 to 150 | $^\circ C$ | |
| I_S | Diode Continuous Forward Current | $T_A = 25^\circ C$ | 2.7 | -2.5 | A |
| Mounted on Large Heat Sink | | | | | |
| $I_{DP}^{①}$ | 300 μs Pulse Drain Current Tested | $T_A = 25^\circ C$ | 32 | -28 | A |
| $I_D^{②}$ | Continuous Drain Current ($V_{GS} = \pm 10V$) | $T_A = 25^\circ C$ | 8 | -7 | A |
| | | $T_A = 70^\circ C$ | 6.5 | -5.6 | |
| P_D | Maximum Power Dissipation | $T_A = 25^\circ C$ | 2 | 2 | W |
| | | $T_A = 70^\circ C$ | 1.3 | 1.3 | |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | TBD | TBD | $^\circ C/W$ | |
| $R_{\theta JA}^{③}$ | Thermal Resistance-Junction to Ambient | 62.5 | 62.5 | $^\circ C/W$ | |
| Drain-Source Avalanche Ratings | | | | | |
| $E_{AS}^{④}$ | Avalanche Energy, Single Pulsed | TBD | TBD | mJ | |

Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Test Condition | RU30C8H | | | Unit | |
|---|----------------------------------|--|---------|------|------|----------|------------|
| | | | Min. | Typ. | Max. | | |
| Static Characteristics | | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_{DS}=250\mu A$ | N | 30 | | V | |
| | | $V_{GS}=0V, I_{DS}=-250\mu A$ | P | -30 | | | |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=30V, V_{GS}=0V$ | N | | 1 | μA | |
| | | $T_J=125^\circ C$ | | | 30 | | |
| | | $V_{DS}=-30V, V_{GS}=0V$ | P | | -1 | | |
| | | $T_J=125^\circ C$ | | | -30 | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_{DS}=250\mu A$ | N | 1.2 | 1.8 | 2.4 | V |
| | | $V_{DS}=V_{GS}, I_{DS}=-250\mu A$ | P | -1.2 | -1.8 | -2.4 | |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 12V, V_{DS}=0V$ | N | | | ± 10 | μA |
| | | $V_{GS}=\pm 12V, V_{DS}=0V$ | P | | | ± 10 | |
| $R_{DS(ON)}^{(5)}$ | Drain-Source On-state Resistance | $V_{GS}=10V, I_{DS}=8A$ | N | | 12 | 15 | m Ω |
| | | $V_{GS}=-10V, I_{DS}=-6A$ | P | | 18 | 25 | |
| | | $V_{GS}=4.5V, I_{DS}=7A$ | N | | 16 | 25 | |
| | | $V_{GS}=-4.5V, I_{DS}=-5A$ | P | | 25 | 35 | |
| Diode Characteristics | | | | | | | |
| $V_{SD}^{(5)}$ | Diode Forward Voltage | $I_{SD}=1A, V_{GS}=0V$ | N | | | 1.2 | V |
| | | $I_{SD}=-1A, V_{GS}=0V$ | P | | | -1.2 | |
| t_{rr} | Reverse Recovery Time | N-Channel $I_{SD}=8A, di_{SD}/dt=100A/\mu s$ | N | | 12 | | ns |
| | | | P | | 17 | | |
| Q_{rr} | Reverse Recovery Charge | P-Channel $I_{SD}=-7A, di_{SD}/dt=100A/\mu s$ | N | | 3 | | nC |
| | | | P | | 9 | | |
| Dynamic Characteristics ⁽⁶⁾ | | | | | | | |
| R_G | Gate Resistance | $V_{GS}=0V, V_{DS}=0V, F=1MHz$ | N | | 1.8 | | Ω |
| | | | P | | 3 | | |
| C_{iss} | Input Capacitance | N-Channel $V_{GS}=0V, V_{DS}=15V,$ Frequency=1.0MHz | N | | 340 | | pF |
| | | | P | | 780 | | |
| C_{oss} | Output Capacitance | P-Channel $V_{GS}=0V, V_{DS}=-15V,$ Frequency=1.0MHz | N | | 75 | | |
| | | | P | | 155 | | |
| C_{rss} | Reverse Transfer Capacitance | N-Channel $V_{GS}=0V, V_{DS}=-15V,$ Frequency=1.0MHz | N | | 50 | | |
| | | | P | | 95 | | |

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

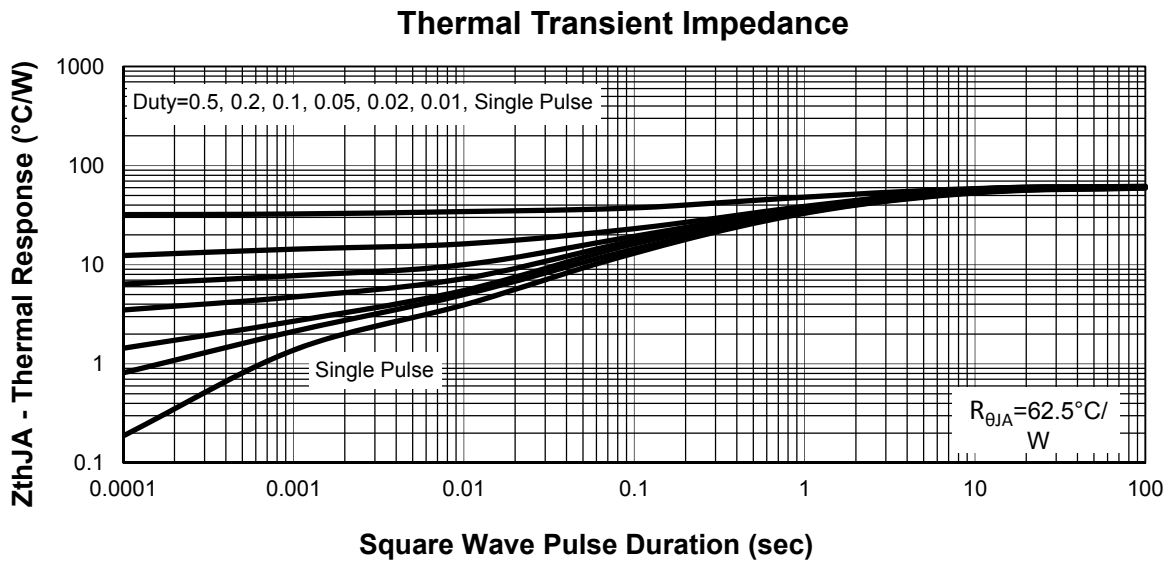
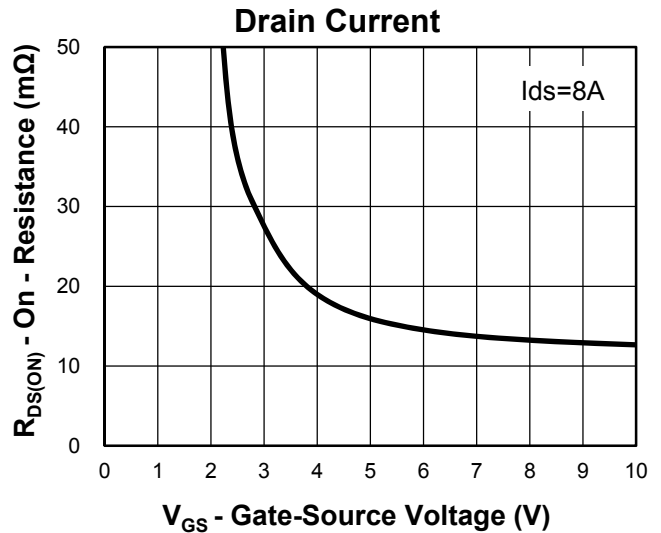
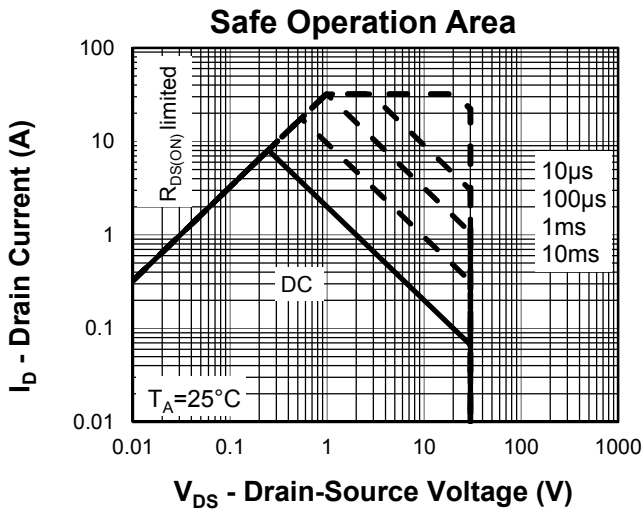
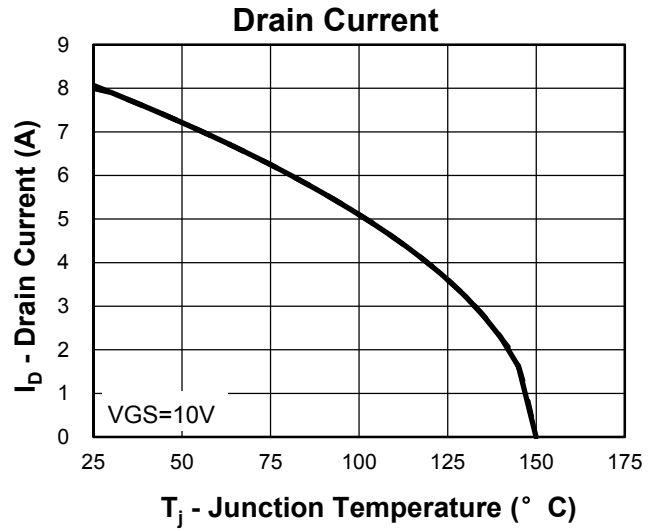
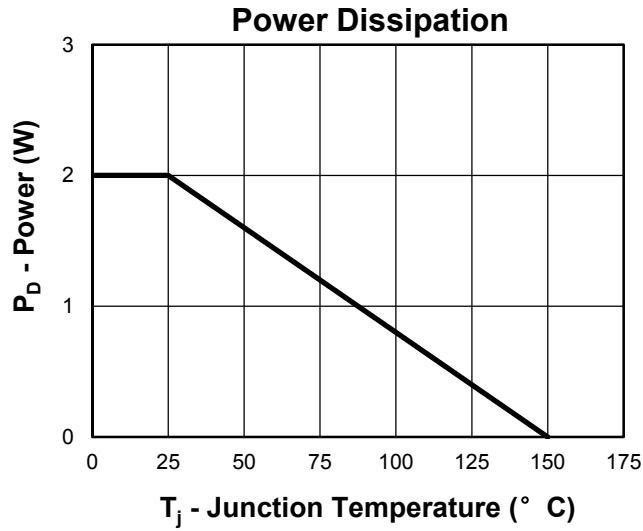
| Symbol | Parameter | Test Condition | RU30C8H | | | Unit | |
|---|---------------------|--|---------|------|------|------|----|
| | | | Min. | Typ. | Max. | | |
| Dynamic Characteristics ^⑥ | | | | | | | |
| $t_{d(ON)}$ | Turn-on Delay Time | N-Channel $V_{DD}=15\text{V}, I_{DS}=8\text{A},$ $V_{GEN}=10\text{V}, R_G=6\Omega$ P-Channel $V_{DD}=-15\text{V}, I_{DS}=-7\text{A},$ $V_{GEN}= -10\text{V}, R_G=6\Omega$ | N | | 5 | | ns |
| | | | P | | 9 | | |
| t_r | Turn-on Rise Time | | N | | 3 | | |
| | | | P | | 6 | | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | N | | 15 | | |
| | | | P | | 21 | | |
| t_f | Turn-off Fall Time | | N | | 4 | | |
| | | | P | | 7 | | |
| Gate Charge Characteristics ^⑥ | | | | | | | |
| Q_g | Total Gate Charge | N-Channel $V_{DS}=24\text{V}, V_{GS}=10\text{V},$ $I_{DS}=8\text{A}$ P-Channel $V_{DS}=-24\text{V}, V_{GS}= -10\text{V},$ $I_{DS}=-7\text{A}$ | N | | 8 | | nC |
| | | | P | | 15 | | |
| Q_{gs} | Gate-Source Charge | | N | | 1.2 | | |
| | | | P | | 2.5 | | |
| Q_{gd} | Gate-Drain Charge | | N | | 2 | | |
| | | | P | | 3.5 | | |

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} . Starting $T_J = 25^{\circ}\text{C}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

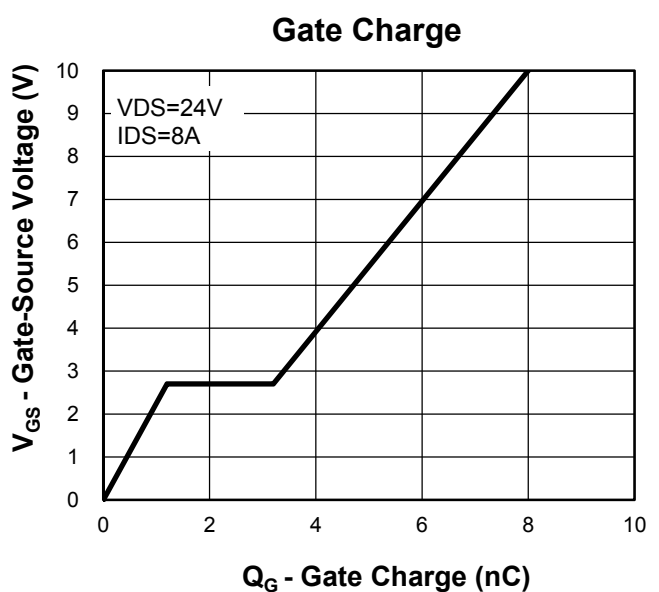
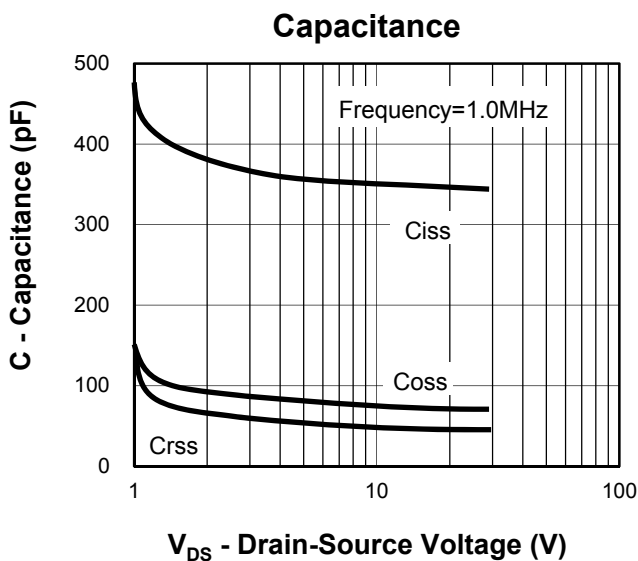
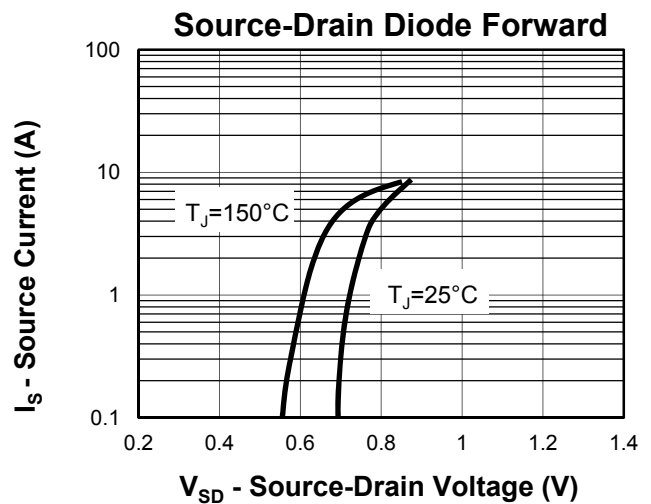
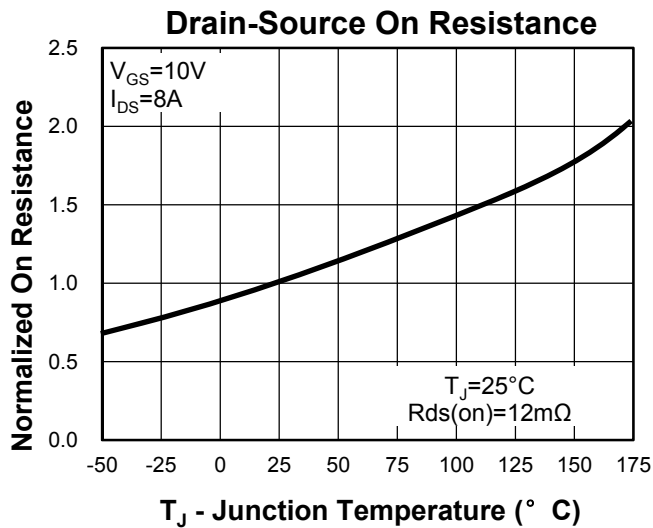
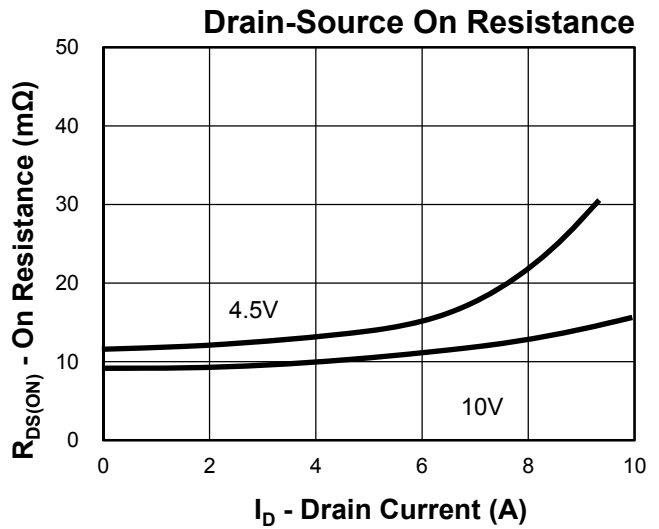
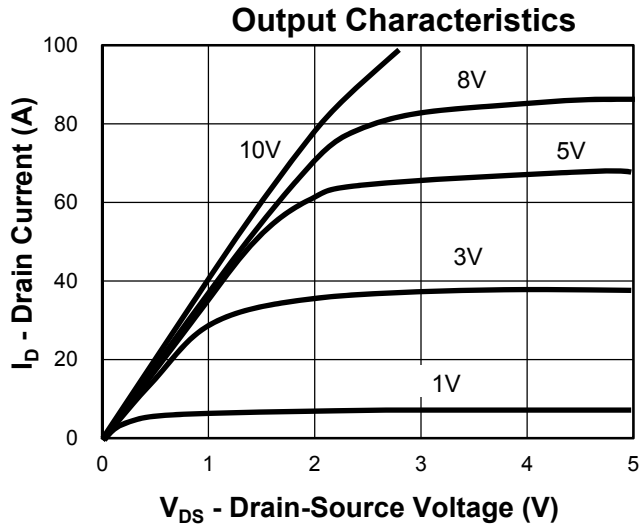
Ordering and Marking Information

| Device | Marking | Package | Packaging | Quantity | Reel Size | Tape width |
|---------------|----------------|----------------|------------------|-----------------|------------------|-------------------|
| RU30C8H | RU30C8H | SOP-8 | Tape&Reel | 2500 | 13" | 12mm |

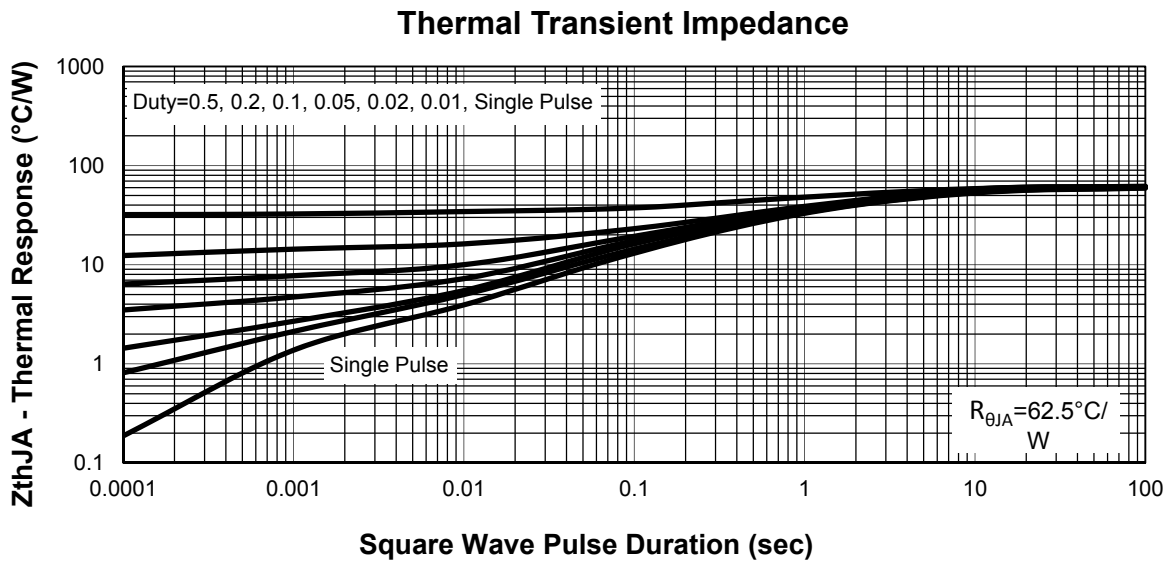
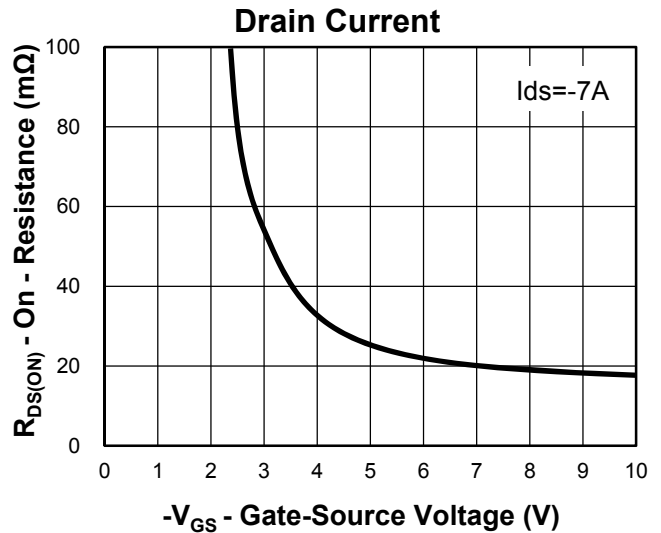
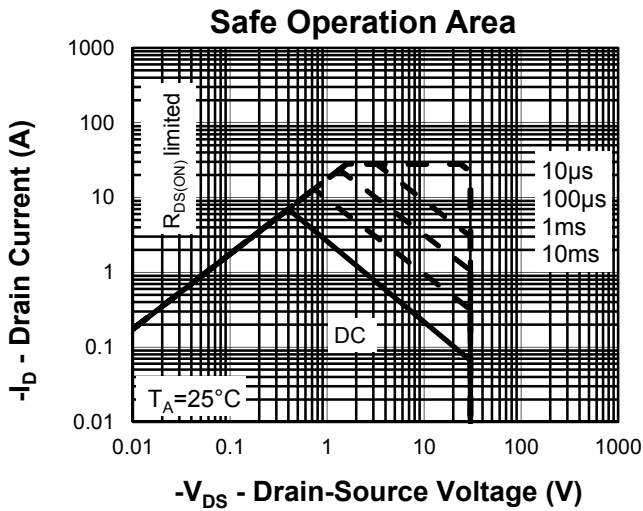
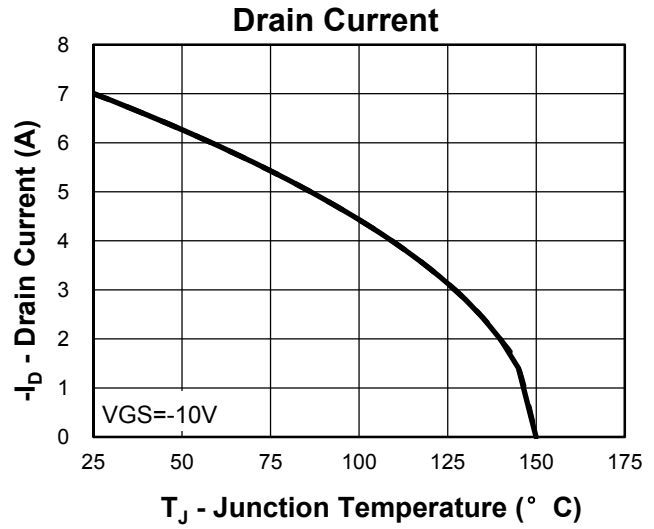
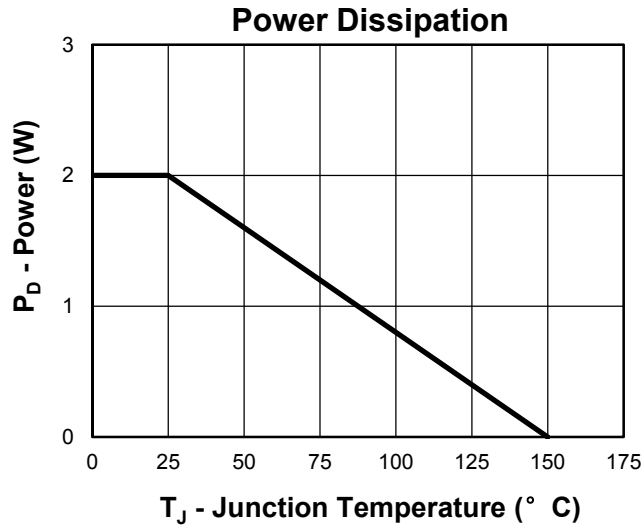
Typical Characteristics(N-Channel)



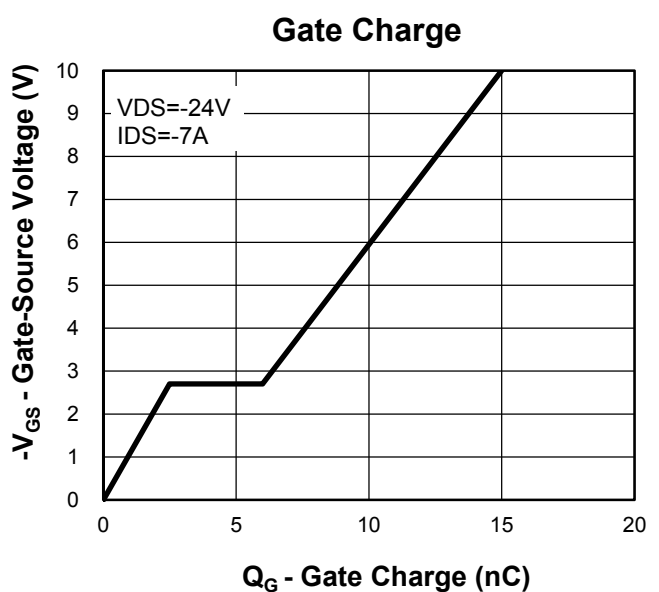
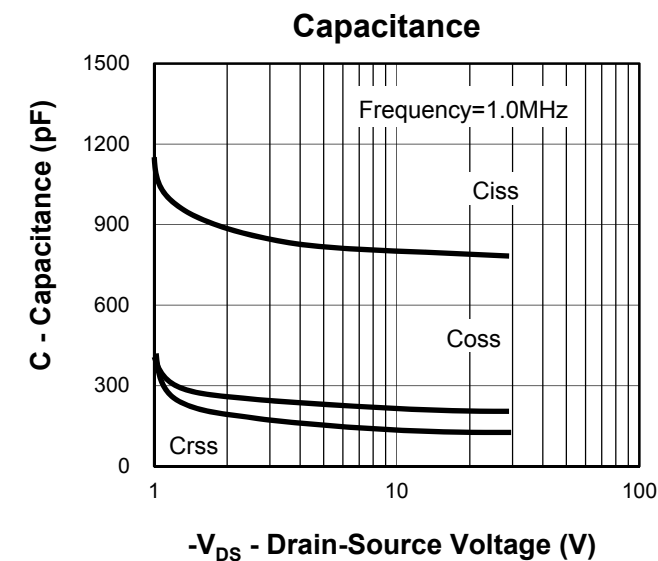
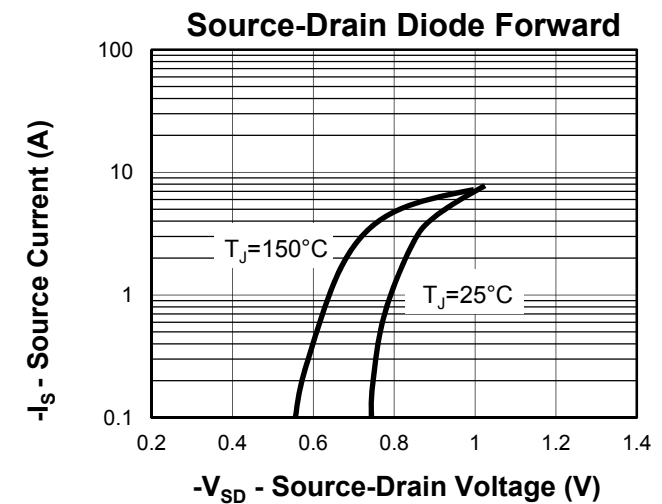
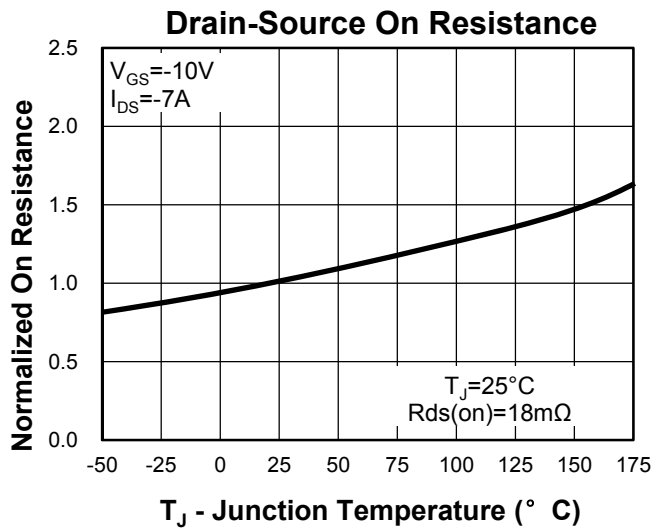
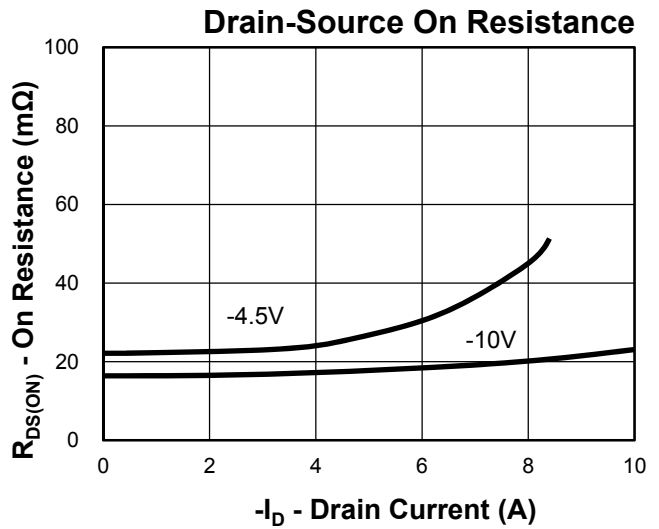
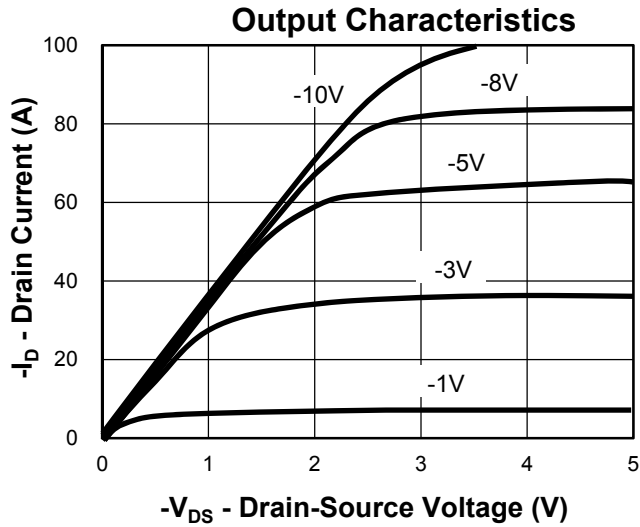
Typical Characteristics(N-Channel)



Typical Characteristics(P-Channel)

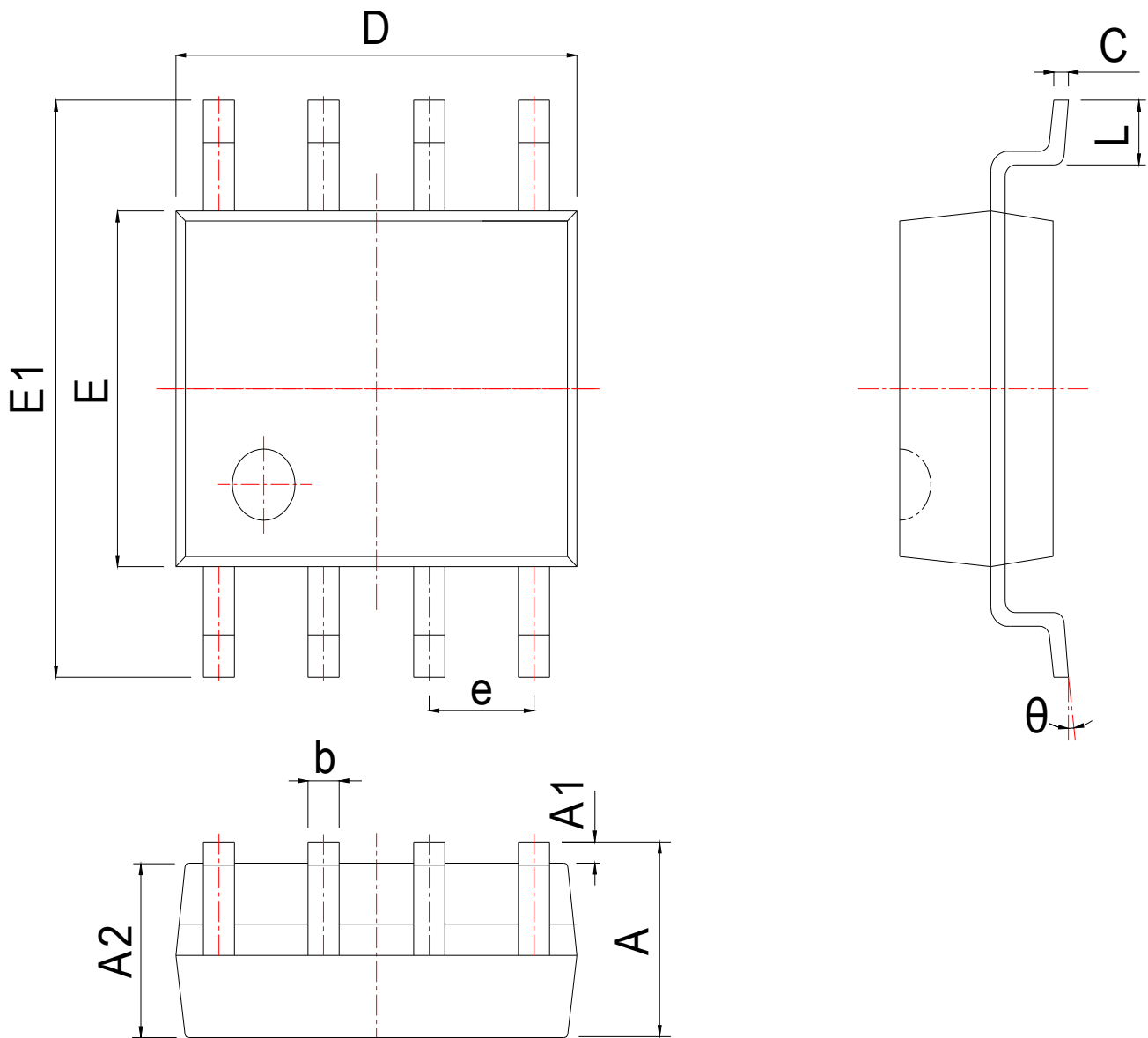


Typical Characteristics(P-Channel)



Package Information

SOP-8



| SYMBOL | MM | | | INCH | | |
|----------|-----------|-------|-------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.300 | 1.525 | 1.750 | 0.051 | 0.060 | 0.069 |
| A1 | 0.050 | 0.150 | 0.250 | 0.002 | 0.006 | 0.010 |
| A2 | 1.350 | 1.450 | 1.550 | 0.053 | 0.057 | 0.061 |
| b | 0.330 | 0.420 | 0.510 | 0.013 | 0.017 | 0.020 |
| c | 0.170 | 0.210 | 0.250 | 0.007 | 0.008 | 0.010 |
| D | 4.700 | 4.900 | 5.100 | 0.185 | 0.193 | 0.201 |
| E | 3.800 | 3.900 | 4.000 | 0.150 | 0.154 | 0.157 |
| E1 | 5.800 | 6.000 | 6.200 | 0.228 | 0.236 | 0.244 |
| e | 1.270 BSC | | | 0.050 BSC | | |
| L | 0.400 | 0.835 | 1.270 | 0.016 | 0.033 | 0.050 |
| θ | 0° | | 8° | 0° | | 8° |

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Shen Zhen RUICHIPS Semiconductor CO., LTD

Room 501, the 5floor An Tong Industrial Building,
NO.207 Mei Hua Road Fu Tian Area Shen Zhen City, CHINA

TEL: (86-755) 8311-5334

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