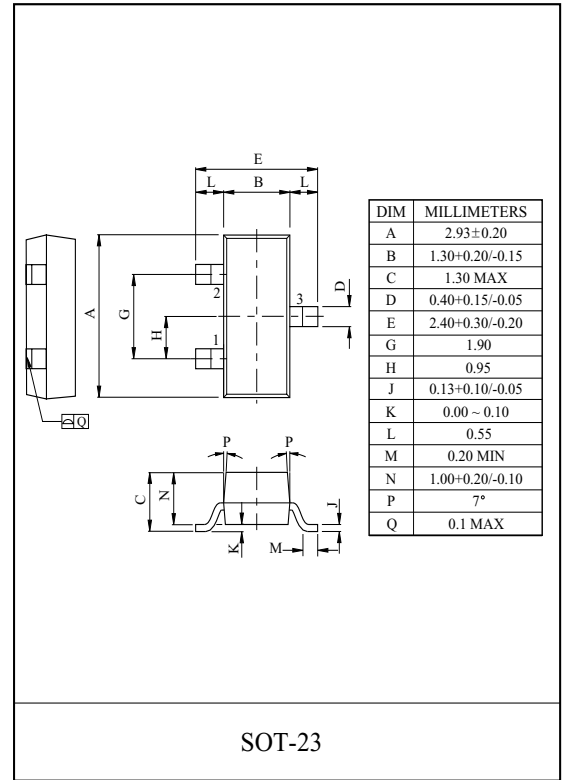


General Description

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for portable equipment.

FEATURES

- $V_{DSS} = -30V$, $I_D = -3A$
- Drain to Source On-state Resistance.
 $R_{DS(ON)} = 80m \text{ (Max.) @ } V_{GS} = -10V$
 $R_{DS(ON)} = 140m \text{ (Max.) @ } V_{GS} = -4.5V$
- Super High Dense Cell Design

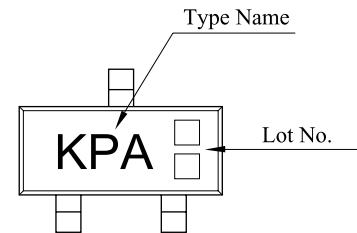


MAXIMUM RATING (Ta=25 °C)

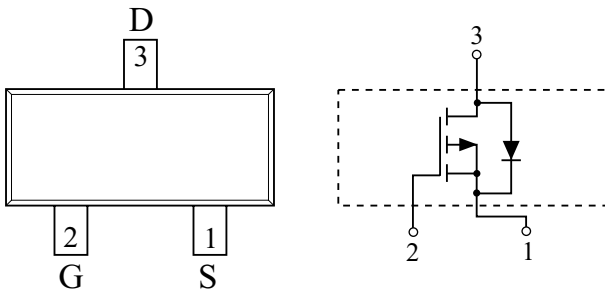
| CHARACTERISTIC | | SYMBOL | P-Ch | UNIT |
|---|------------------|------------|---------|------|
| Drain to Source Voltage | | V_{DSS} | -30 | V |
| Gate to Source Voltage | | V_{GSS} | ± 20 | V |
| Drain Current | DC@Ta=25 (Note1) | I_D | -3 | A |
| | Pulsed (Note1) | I_{DP} | -12 | |
| Drain Power Dissipation | Ta=25 (Note1) | P_D | 1.25 | W |
| | Ta=70 (Note1) | | 0.8 | |
| Maximum Junction Temperature | | T_j | 150 | |
| Storage Temperature Range | | T_{stg} | -55 150 | |
| Thermal Resistance, Junction to Ambient (Note1) | | R_{thJA} | 100 | /W |

Note1) Surface Mounted on 1"×1"FR4 Board, t = 5sec.

Marking



PIN CONNECTION (TOP VIEW)



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ELECTRICAL CHARACTERISTICS (Ta=25)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--|--------------|--|------|------|-----------|---------|
| Static | | | | | | |
| Drain to Source Breakdown Voltage | BV_{DSS} | $I_{DS}=-250\ \mu A, V_{GS}=0V,$ | -30 | - | - | V |
| Drain Cut-off Current | I_{DSS} | $V_{GS}=0V, V_{DS}=-24V$ | - | - | -1 | μA |
| | | $V_{GS}=0V, V_{DS}=-24V, T_J=55$ | - | - | -10 | |
| Gate to Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 100 | nA |
| Gate to Source Threshold Voltage | V_{th} | $V_{DS}=V_{GS}, I_D=-250\ \mu A$ | -1.0 | - | -3.0 | V |
| Drain to SourceSource On Resistance | $R_{DS(ON)}$ | $V_{GS}=-10V, I_D=-3A$ (Note2) | - | 64 | 80 | m |
| | | $V_{GS}=-4.5V, I_D=-2.5A$ (Note2) | - | 103 | 140 | |
| On State Drain Current | $I_{D(ON)}$ | $V_{GS}=-10V, V_{DS}=-5V$ (Note2) | -12 | - | - | A |
| Forward Transconductance | g_{fs} | $V_{DS}=-10V, I_D=-3A$ (Note2) | - | 4.5 | - | S |
| Dynamic | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=-15V, V_{GS}=0V, f=1MHz,$ | - | 365 | - | pF |
| Output Capacitance | C_{oss} | | - | 72 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 37 | - | |
| Total Gate Charge | Q_g | $V_{DS}=-15V, V_{GS}=-10V, I_D=-3A$ (Note2) | - | 6.3 | - | nC |
| Gate to Source Charge | Q_{gs} | | - | 1.1 | - | |
| Gate to Drain Charge | Q_{gd} | | - | 1.6 | - | |
| Turn-on Delay time | $t_{d(on)}$ | $V_{DD}=-15V, V_{GS}=-10V$ $I_D=-1A, R_G=6$ (Note2) | - | 6.9 | - | ns |
| Turn-on Rise time | t_r | | - | 16 | - | |
| Turn-off Delay time | $t_{d(off)}$ | | - | 18 | - | |
| Turn-off Fall time | t_f | | - | 15 | - | |
| Source-Drain Diode Ratings | | | | | | |
| Continuous Source Current | I_S | - | - | - | -3.0 | A |
| Pulsed Source Current | I_{SP} | - | - | - | -12 | A |
| Source to Drain Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=-1.25A$ (Note2) | - | - | -1.2 | V |
| Note2) Pulse Test : Pulse width <300 μs , Duty cycle < 2% | | | | | | |

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Fig1. $I_D - V_{DS}$

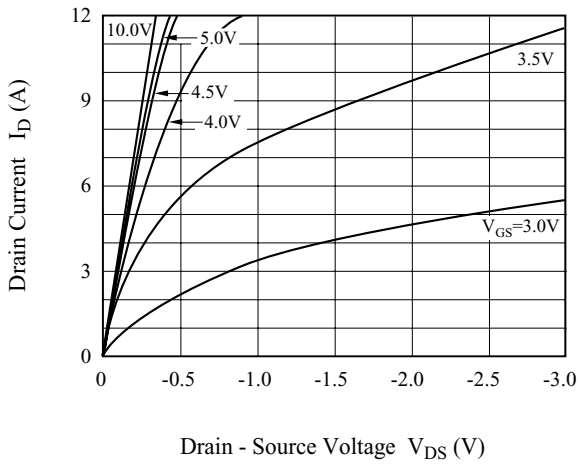


Fig2. $R_{DS(on)} - I_D$

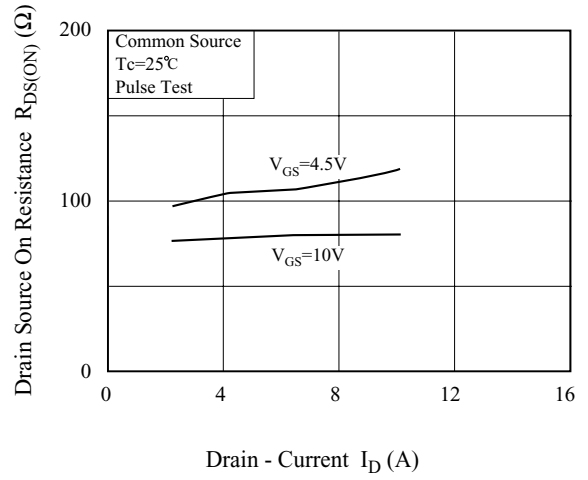


Fig3. $I_D - V_{GS}$

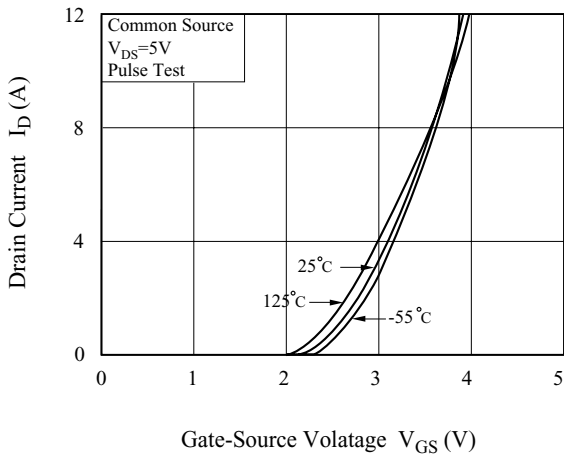


Fig4. $R_{DS(on)} - T_j$

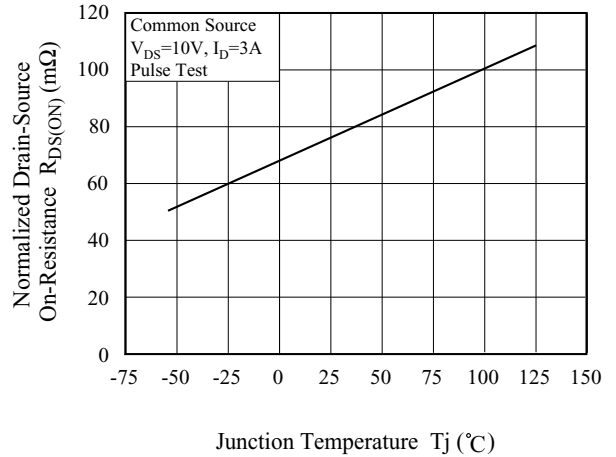


Fig5. $V_{th} - T_j$

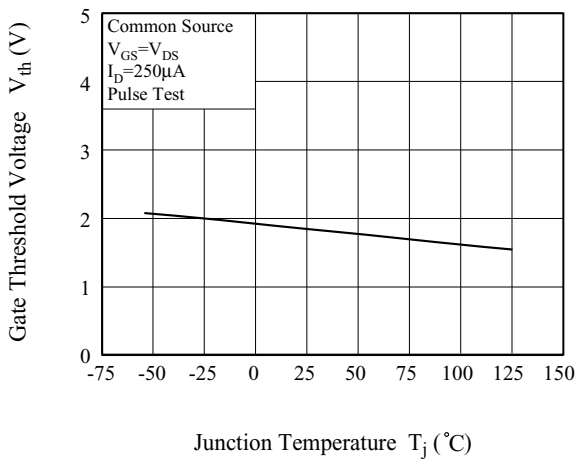
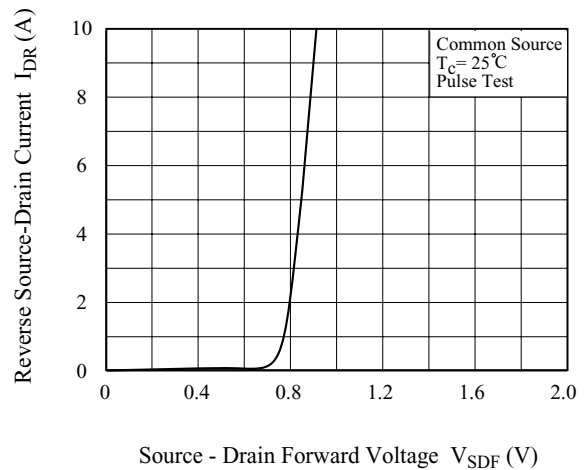


Fig6. $I_{DR} - V_{SDF}$



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Fig7. $R_{DS(ON)} - V_{GS}$

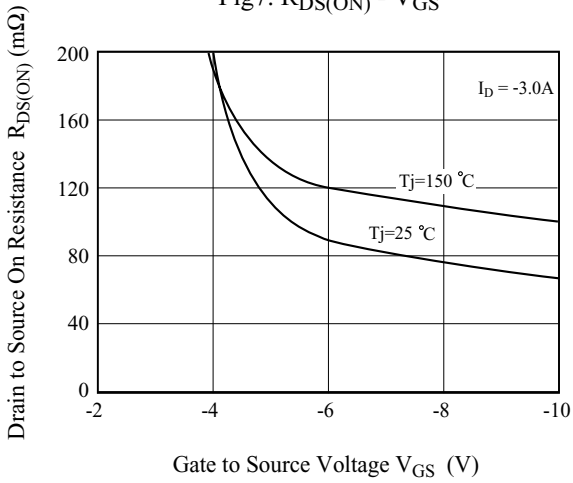


Fig8. $C - V_{DS}$

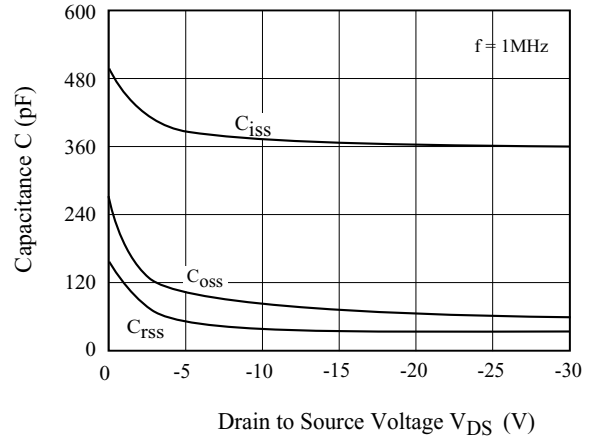


Fig9. $Q_g - V_{GS}$

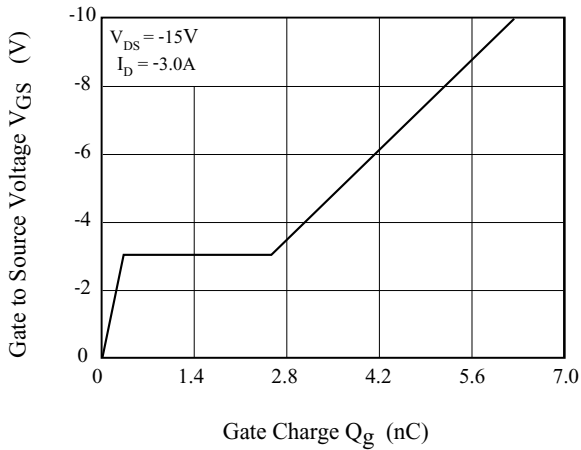


Fig10. Safe Operation Area

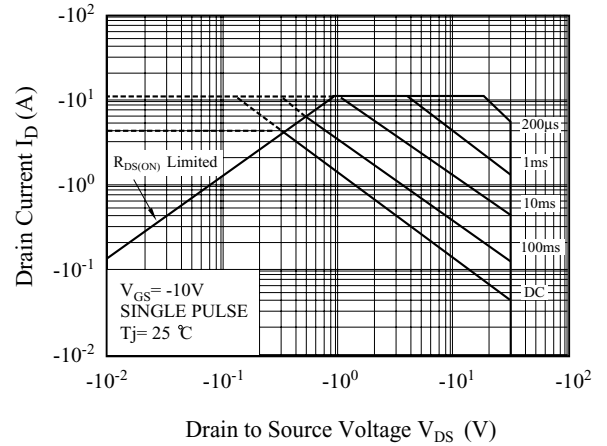


Fig11 . Transient Thermal Response Curve

