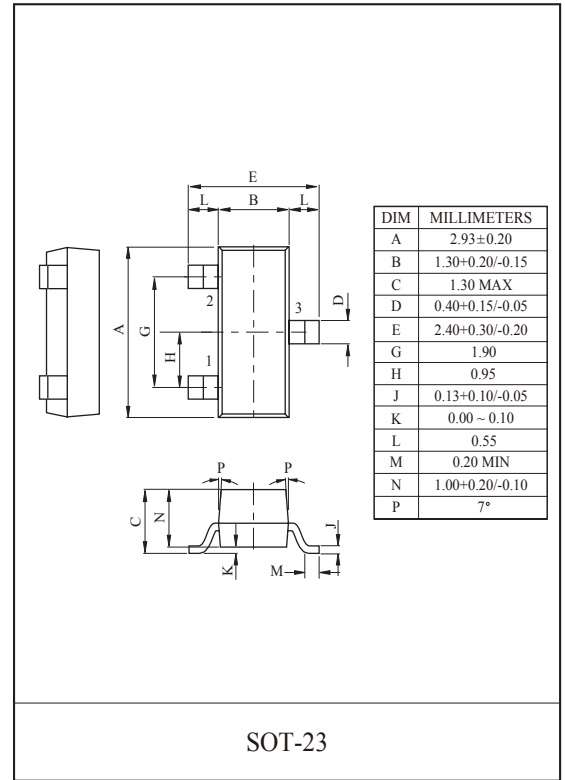


### General Description

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.  
 $R_{DS(ON)} = 80m\Omega$  (Max.) @  $V_{GS} = -10V$   
 $R_{DS(ON)} = 140m\Omega$  (Max.) @  $V_{GS} = -4.5V$
- Super High Dense Cell Design

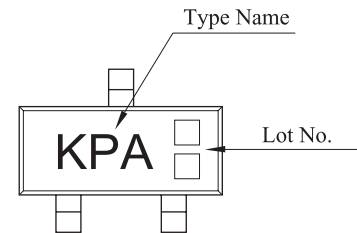


### MAXIMUM RATING (Ta=25°C)

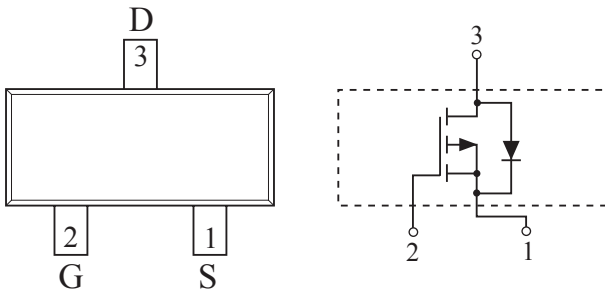
| CHARACTERISTIC                                  |                                 | SYMBOL     | P-Ch    | UNIT |
|---|---------------------------------|------------|---------|------|
| Drain to Source Voltage                         |                                 | $V_{DSS}$  | -30     | V    |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

Note1) Surface Mounted on 1" × 1" FR4 Board,  $t \leq 5sec$ .

### Marking



### PIN CONNECTION (TOP VIEW)



# KMB3D0P30SA

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC  | SYMBOL              | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT |
|---|---------------------|---|------|------|------|------|
| <b>Static</b>   |                     |   |      |      |      |      |
| Drain to Source Breakdown Voltage                       | BV <sub>DSS</sub>   | I <sub>DS</sub> =-250μA, V <sub>GS</sub> =0V,   | -30  | -    | -    | V    |
| Drain Cut-off Current                                   | I <sub>DSS</sub>    | V <sub>GS</sub> =0V, V <sub>DS</sub> =-24V  | -    | -    | -1   | μA   |
|   |                     | V <sub>GS</sub> =0V, V <sub>DS</sub> =-24V, T <sub>J</sub> =55°C                                | -    | -    | -10  |      |
| Gate to Source Leakage Current                          | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V  | -    | -    | ±100 | nA   |
| Gate to Source Threshold Voltage                        | V <sub>th</sub>     | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                                       | -1.0 | -    | -3.0 | V    |
| Drain to SourceSource On Resistance                     | R <sub>DS(ON)</sub> | V <sub>GS</sub> =-10V, I <sub>D</sub> =-3A (Note2)  | -    | 64   | 80   | mΩ   |
|   |                     | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.5A (Note2)   | -    | 103  | 140  |      |
| On State Drain Current                                  | I <sub>D(ON)</sub>  | V <sub>GS</sub> =-10V, V <sub>DS</sub> =-5V (Note2)   | -12  | -    | -    | A    |
| Forward Transconductance                                | g <sub>fs</sub>     | V <sub>DS</sub> =-10V, I <sub>D</sub> =-3A (Note2)  | -    | 4.5  | -    | S    |
| <b>Dynamic</b>  |                     |   |      |      |      |      |
| Input Capacitance                                       | C <sub>iss</sub>    | V <sub>DS</sub> =-15V, V <sub>GS</sub> = 0V, f=1MHz,  | -    | 365  | -    | pF   |
| Output Capacitance                                      | C <sub>oss</sub>    |   | -    | 72   | -    |      |
| Reverse Transfer Capacitance                            | C <sub>rss</sub>    |   | -    | 37   | -    |      |
| Total Gate Charge                                       | Q <sub>g</sub>      | V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-3A (Note2)                       | -    | 6.3  | -    | nC   |
| Gate to Source Charge                                   | Q <sub>gs</sub>     |   | -    | 1.1  | -    |      |
| Gate to Drain Charge                                    | Q <sub>gd</sub>     |   | -    | 1.6  | -    |      |
| Turn-on Delay time                                      | t <sub>d(on)</sub>  | V <sub>DD</sub> =-15V, V <sub>GS</sub> =-10V<br>I <sub>D</sub> =-1A, R <sub>G</sub> =6Ω (Note2) | -    | 6.9  | -    | ns   |
| Turn-on Rise time                                       | t <sub>r</sub>      |   | -    | 16   | -    |      |
| Turn-off Delay time                                     | t <sub>d(off)</sub> |   | -    | 18   | -    |      |
| Turn-off Fall time                                      | t <sub>f</sub>      |   | -    | 15   | -    |      |
| <b>Source-Drain Diode Ratings</b>                       |                     |   |      |      |      |      |
| Continuous Source Current                               | I <sub>S</sub>      | -   | -    | -    | -3.0 | A    |
| Pulsed Source Current                                   | I <sub>SP</sub>     | - (Note2)   | -    | -    | -12  | A    |
| Source to Drain Forward Voltage                         | V <sub>SD</sub>     | V <sub>GS</sub> =0V, I <sub>S</sub> =-1.25A (Note2)   | -    | -    | -1.2 | V    |
| Note2) Pulse Test : Pulse width <300μA, Duty cycle < 2% |                     |   |      |      |      |      |

# KMB3D0P30SA

Fig1.  $I_D - V_{DS}$

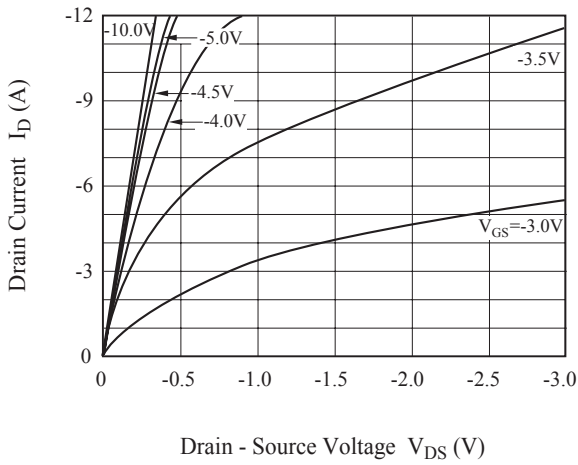


Fig2.  $R_{DS(ON)} - I_D$

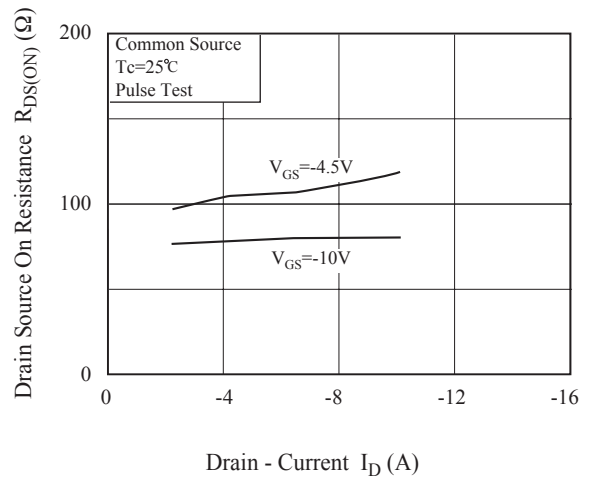


Fig3.  $I_D - V_{GS}$

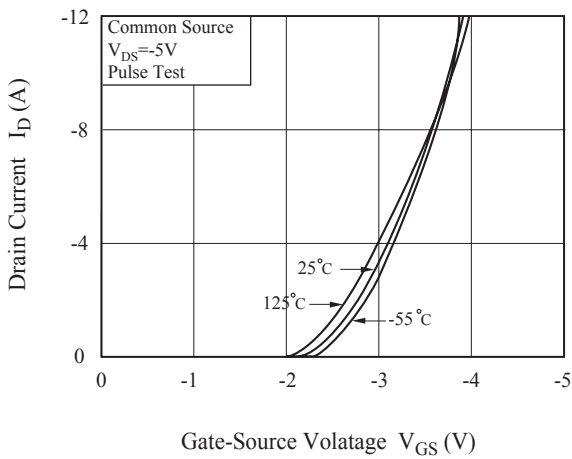


Fig4.  $R_{DS(on)} - T_j$

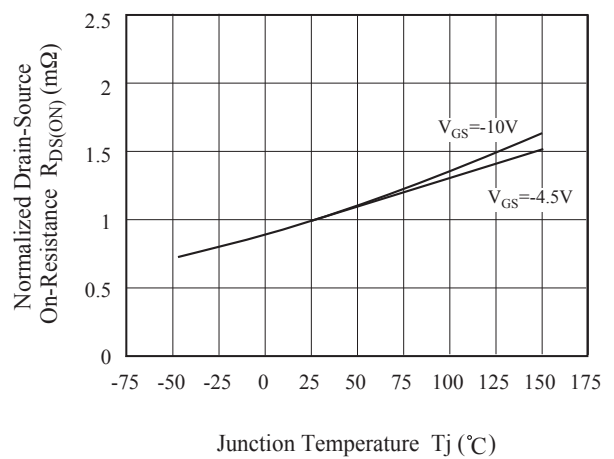


Fig5.  $V_{th} - T_j$

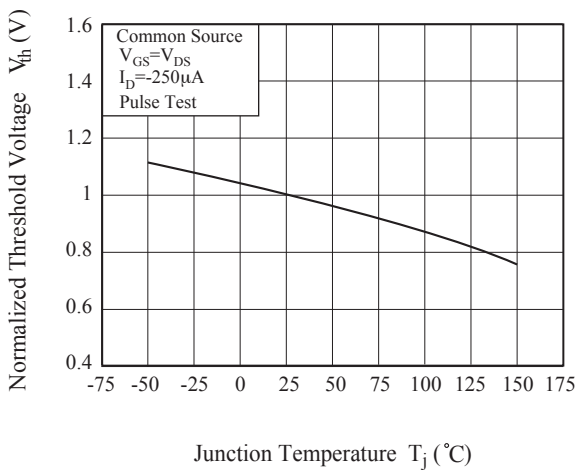
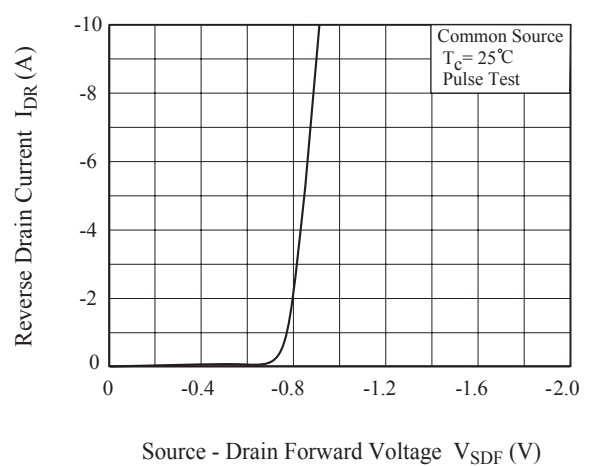


Fig6.  $I_{DR} - V_{SDF}$



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

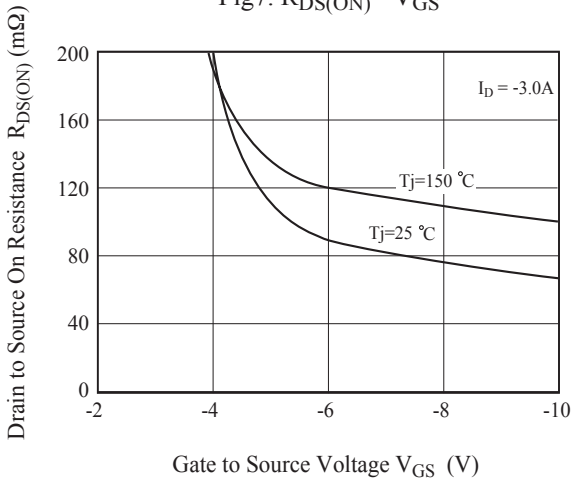


Fig8.  $C - V_{DS}$

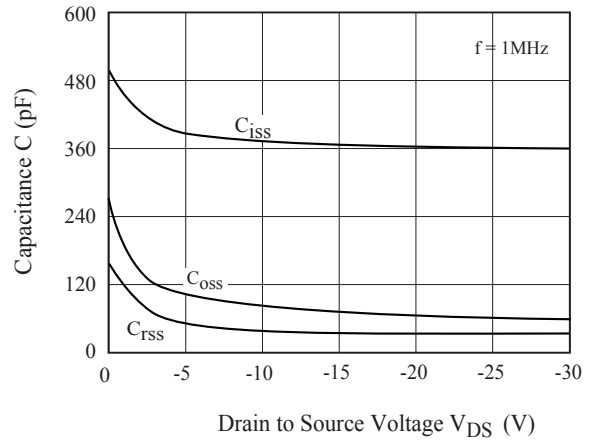


Fig9.  $Q_g - V_{GS}$

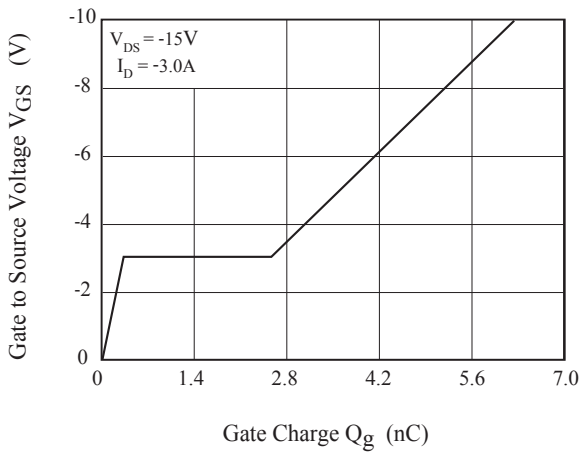


Fig10. Safe Operation Area

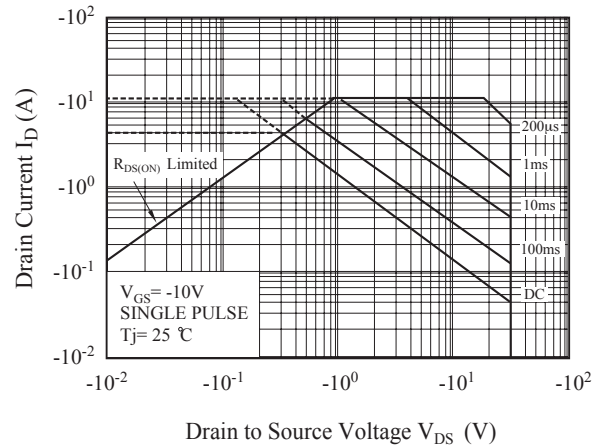


Fig11 . Transient Thermal Response Curve

