# KMB8D0P30QA

**P-Ch Trench MOSFET**

## GENERAL DESCRIPTION

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristiscs. It is mainly suitable for Load Switch and Battery pack.

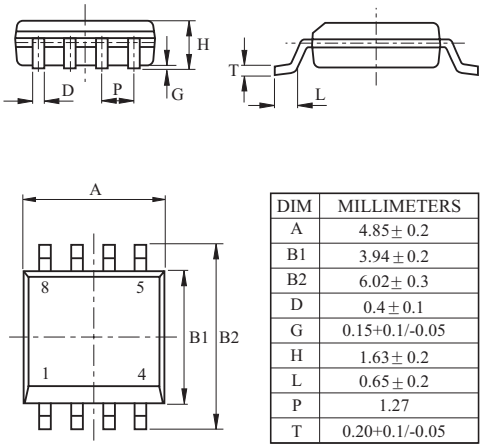
## FEATURES

· $V_{DSS}$=-30V, $I_D$=-8A.

· Drain to Source On Resistance.

$R_{DS(ON)}$=20mΩ(Max.) @ $V_{GS}$=-10V

$R_{DS(ON)}$=35mΩ(Max.) @ $V_{GS}$=-4.5V




| DIM | MILLIMETERS |
|---|---|
| A | 4.85± 0.2 |
| B1 | 3.94± 0.2 |
| B2 | 6.02± 0.3 |
| D | 0.4± 0.1 |
| G | 0.15+0.1/-0.05 |
| H | 1.63± 0.2 |
| L | 0.65± 0.2 |
| P | 1.27 |
| T | 0.20+0.1/-0.05 |

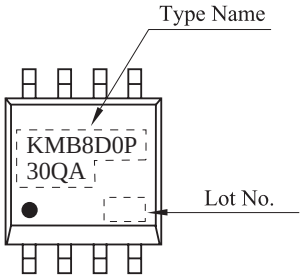
FLP-8

## MOSFET Maximum Ratings (Ta=25℃ Unless otherwise noted)

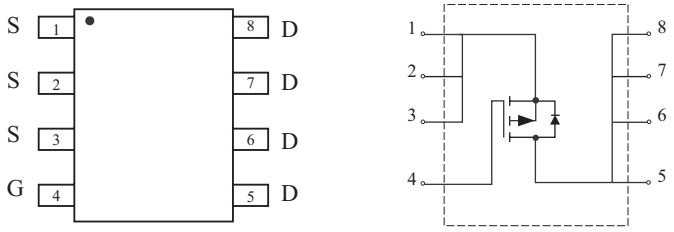
| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|
| Drain to Source Voltage | | $V_{DSS}$ | 30 | V |
| Gate to Source Voltage | | $V_{GSS}$ | ±20 | V |
| Drain Current | DC@Ta=25℃ (Note 1) | $I_D$ | -8 | A |
| | Pulsed | $I_{DP}$ | -40 | A |
| Drain Power Dissipation | @Ta=25℃ (Note 1) | $P_D$ | 2.5 | W |
| Maximum Junction Temperature | | $T_j$ | 150 | ℃ |
| Storage Temperature Range | | $T_{stg}$ | -55~150 | ℃ |
| Thermal Resistance, Junction to Ambient (Note 1) | | $R_{thJA}$ | 50 | ℃/W |

Note1) Surface Mounted on 1″×1″FR4 Board, t≤10sec.

Marking




## PIN CONNECTION (TOP VIEW)



**ELECTRICAL CHARACTERISTICS (Ta=25℃) UNLESS OTHERWISE NOTED**

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| **Static** | | | | | | | |
| Drain to Source Breakdown Voltage | | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=-250㎂ | -30 | - | - | V |
| Drain Cut-off Current | | $I_{DSS}$ | $V_{GS}$=0V, $V_{DS}$=-24V | - | - | -1 | ㎂ |
| Gate to Source Leakage Current | | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | - | - | ±100 | nA |
| Gate to Source Threshold Voltage | | $V_{th}$ | $V_{DS}$=$V_{GS}$, $I_D$=-250㎂ | -1.0 | - | -3.0 | V |
| Drain to Source On Resistance | | $R_{DS(ON)}$ | $V_{GS}$=-10V, $I_D$=-8A (Note2) | - | 15 | 20 | mΩ |
| | | | $V_{GS}$=-4.5V, $I_D$=-5A (Note2) | - | 25 | 35 | |
| Forward Transconductance | | $g_{fs}$ | $V_{DS}$=-5V, $I_D$=-8A (Note2) | - | 6 | - | S |
| **Dynamic** | | | | | | | |
| Input Capaclitance | | $C_{iss}$ | $V_{DS}$=-15V, $V_{GS}$=0V, f=1MHz (Note2) | - | 1371 | - | pF |
| Ouput Capacitance | | $C_{oss}$ | | - | 295 | - | |
| Reverse Transfer Capacitance | | $C_{rss}$ | | - | 176 | - | |
| Total Gate Charge | $V_{GS}$=10V | $Q_g$ | $V_{DS}$=-15V, $V_{GS}$=-10V, $I_D$=-8A (Note2) | - | 28.2 | - | nC |
| | $V_{GS}$=4.5V | | | - | 15.0 | - | |
| Gate to Source Charge | | $Q_{gs}$ | | - | 5.0 | - | |
| Gate to Drain Charge | | $Q_{gd}$ | | - | 6.4 | - | |
| Turn-On Delay Time | | $t_{d(on)}$ | $V_{DS}$=-15V, $V_{GS}$=-10V<br>$I_D$=-8A, $R_G$=1.6Ω (Note2) | - | 11.2 | - | ns |
| Turn-On Rise Time | | $t_r$ | | - | 5.8 | - | |
| Turn-Off Delay Time | | $t_{d(off)}$ | | - | 65.0 | - | |
| Turn-Off Fall Time | | $t_f$ | | - | 25.0 | - | |
| **Source to Drain Diode Ratings** | | | | | | | |
| Source to Drain Forward Voltage | | $V_{SD}$ | $V_{GS}$=0V, $I_S$=-1.7A (Note2) | - | -0.75 | -1.2 | V |
| Note2) Pulse Test : Pulse Width ≤300㎲, Duty Cycle ≤2% | | | | | | | |

Fig1. $I_D$ - $V_{DS}$

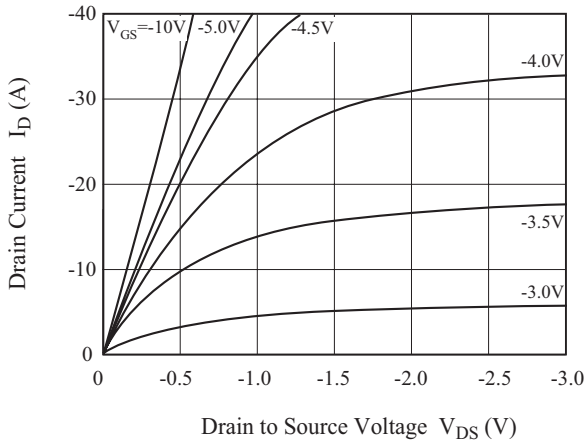



Fig2. $R_{DS(on)}$ - $I_D$

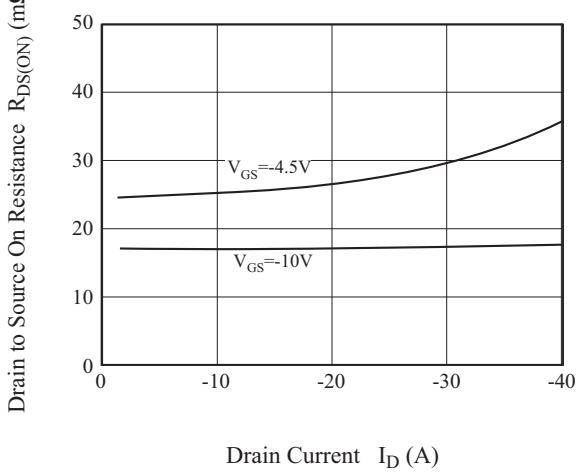



Fig3. $I_D$ - $V_{GS}$

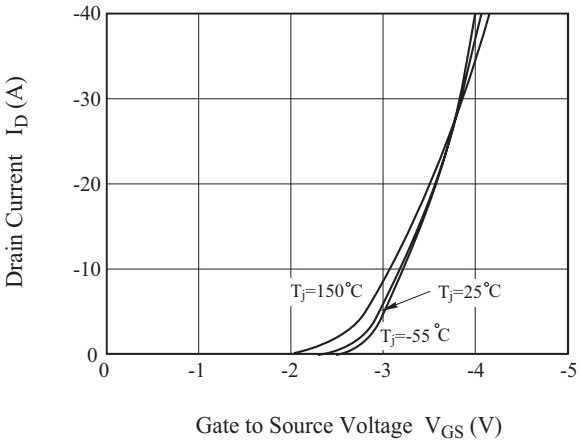



Fig4. $R_{DS(ON)}$ - $T_j$

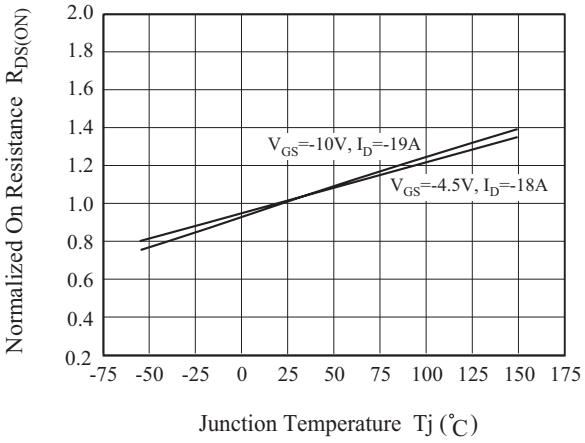



Fig5. $V_{th}$ - $T_j$

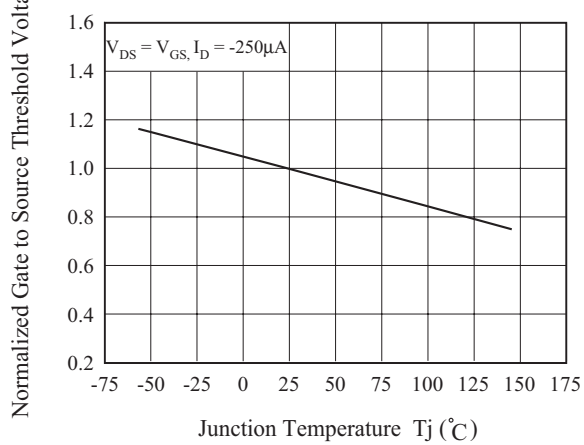



Fig6. $I_S$ - $V_{SD}$

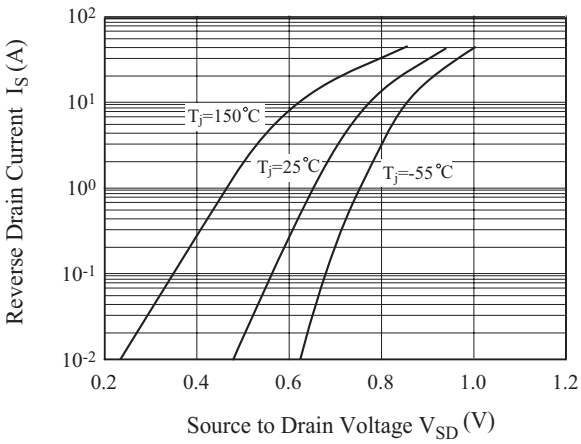


Fig7. $R_{DS(ON)}$ - $V_{GS}$

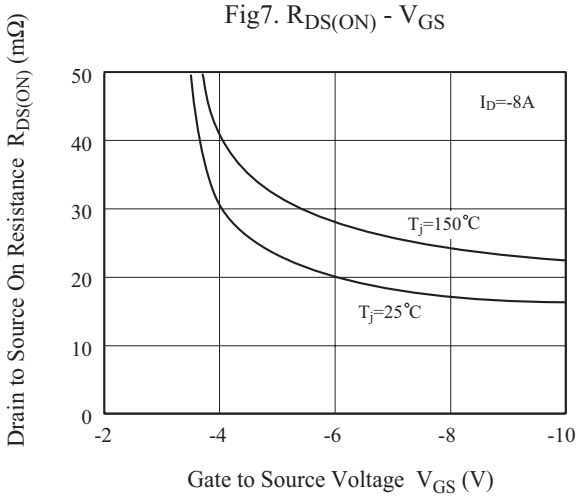



Fig8. C - $V_{DS}$

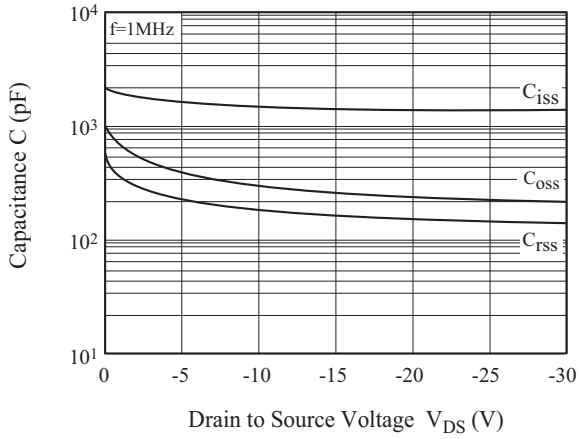



Fig9. $V_{GS}$ - $Q_g$

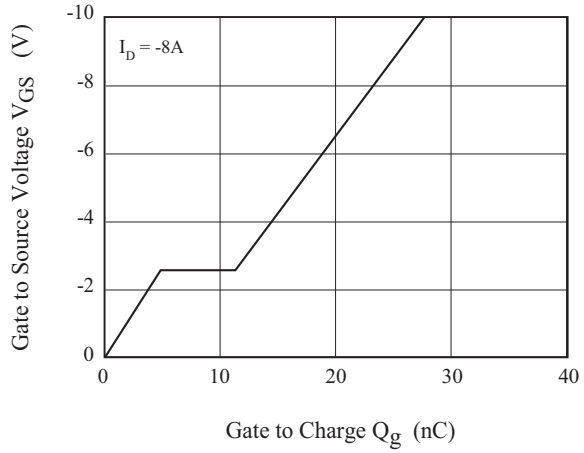



Fig10. Safe Operation Area

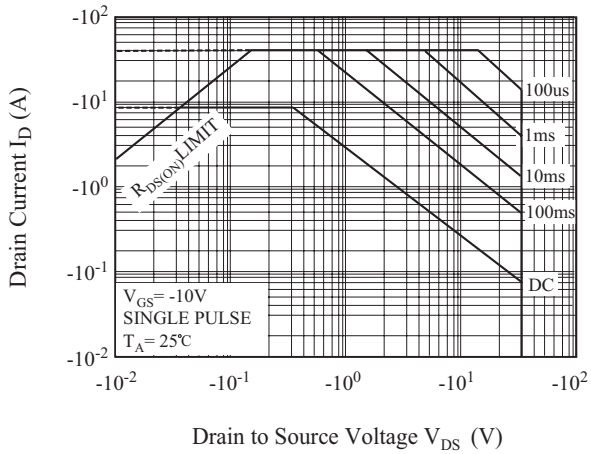



Fig11. Transient Thermal Response Curve