KMB4D5DN60QA

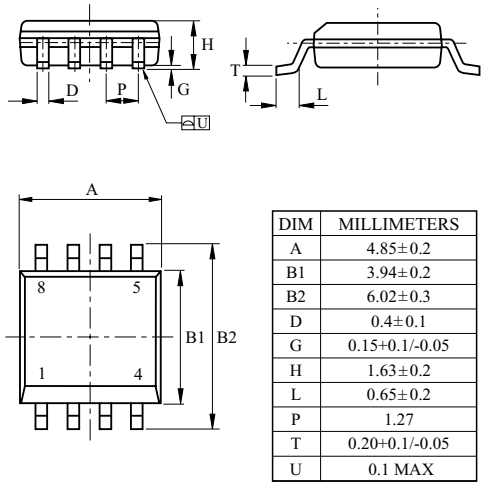
Dual N-Ch Trench MOSFET

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 Back light inverter.

FEATURES

- V_{DSS}=60V, I_D=4.5A.
- Drain-Source ON Resistance.
  $R_{DS(ON)}$=56mΩ(Max.) @ V_{GS}=10V
  $R_{DS(ON)}$=77mΩ(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
U	0.1 MAX

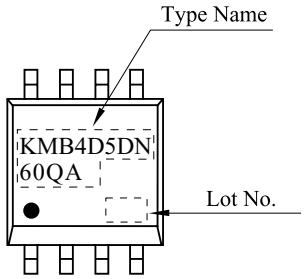
FLP-8

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

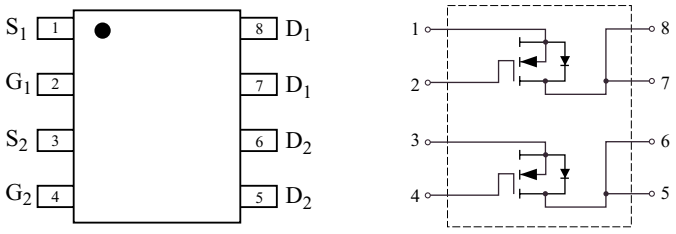
CHARACTERISTIC		SYMBOL	PATING	UNIT
Drain Source Voltage		V_{DSS}	60	V
Gate Source Voltage		V_{GSS}	±20	V
Drain Current	DC@Ta=25℃	I_D*	4.5	A
	Pulsed	I_{DP}	20	A
Drain Source Diode Forward Current		I_S	3	A
Drain Power Dissipation	@Ta=25℃	P_D*	2	W
Maximum Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55~150	℃
Thermal Resistance, Junction to Ambient		R_{thJA}*	62.5	℃/W

Note> *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-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_{DS}=250 μA	60	-	-	V
Drain Cut-off Current		I_{DSS}	V_{GS}=0V, V_{DS}=48V	-	-	1	μA
Gate Leakage Current		I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage		V_{th}	V_{DS}=V_{GS}, I_D=250 μA	1.0	-	3.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$*	V_{GS}=10V, I_D=4.5A	-	46	56	mΩ
			V_{GS}=4.5V, I_D=3A	-	64	77	
Forward Transconductance		g_{fs}*	V_{DS}=5V, I_D=4.5A	-	11	-	S
Dynamic							
Input Capaclitance		C_{iss}*	V_{DS}=30V, V_{GS}=0V, f=1MHz	-	490	-	pF
Ouput Capacitance		C_{oss}*		-	45	-	
Reverse Transfer Capacitance		C_{rss}*		-	25	-	
Total Gate Charge	V_{GS}=10V	Q_g*	V_{DS}=30V, V_{GS}=10V, I_D=4.5A	-	10.4	-	nC
	V_{GS}=4.5V			-	5.1	-	
Gate-Source Charge		Q_{gs}*		-	2.3	-	
Gate-Drain Charge		Q_{gd}*		-	2.2	-	
Turn-On Delay Time		$t_{d(on)}$*	V_{DS}=30V, V_{GS}=10V I_D=4.5A, R_G=3Ω	-	12.4	-	ns
Turn-On Rise Time		t_r*		-	34.5	-	
Turn-Off Delay Time		$t_{d(off)}$*		-	30.7	-	
Turn-Off Fall Time		t_f*		-	5.0	-	
Source-Drain Diode Ratings							
Source-Drain Forward Voltage		V_{SDF}*	V_{GS}=0V, I_S=1A	-	0.7	1.0	V
Note> *Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%							

Fig1. I_D - V_{DS}

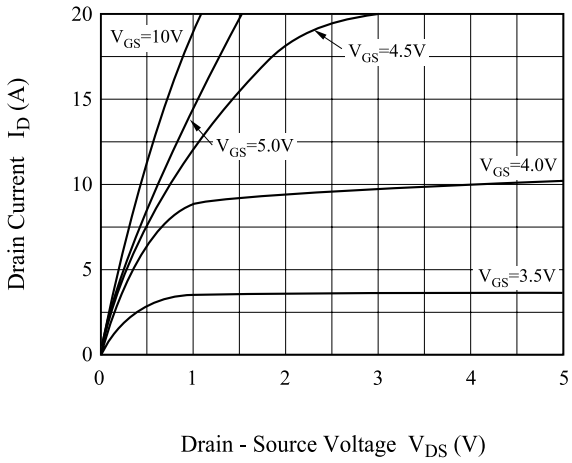


Fig2. $R_{DS(ON)}$ - I_D

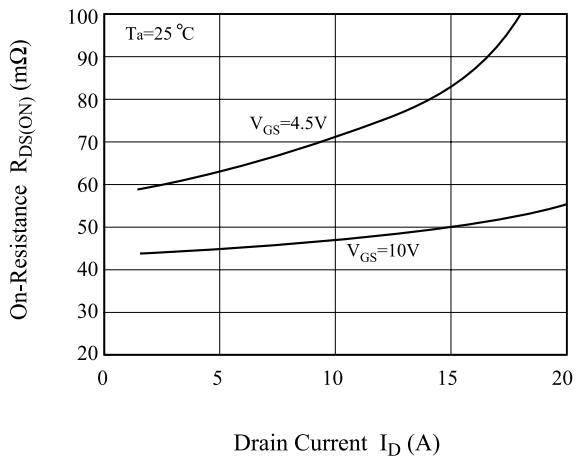


Fig3. I_D - V_{GS}

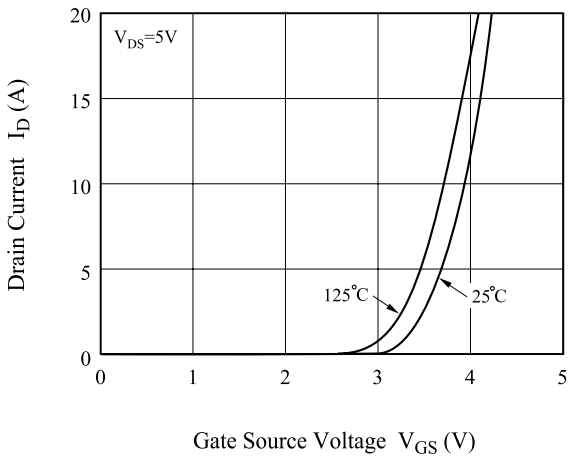


Fig4. $R_{DS(on)}$ - T_j

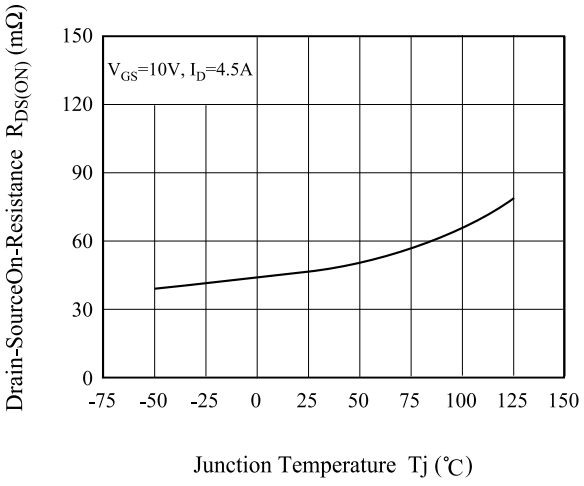


Fig5. V_{th} - T_j

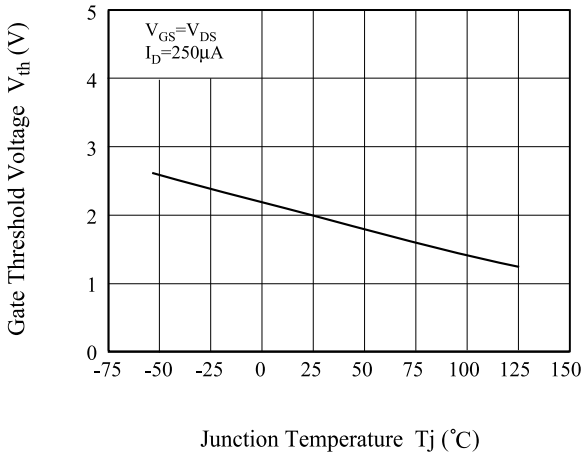


Fig 6. I_S - V_{SDF}

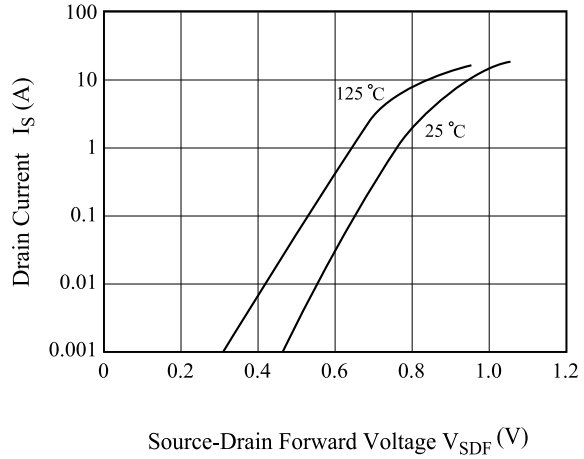


Fig7. V_{GS} - Q_g

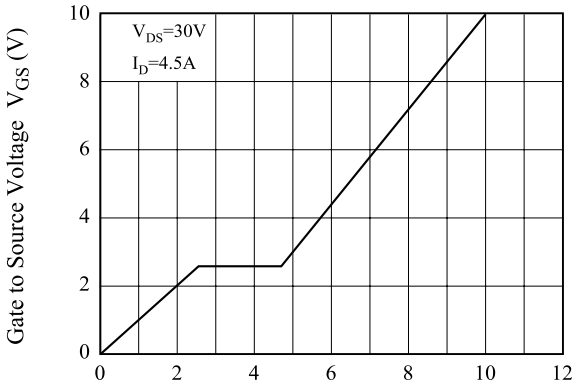


Fig8. C - V_{DS}

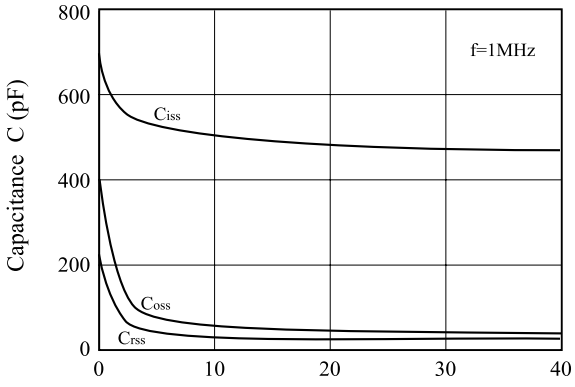


Fig9. Safe Operation Area

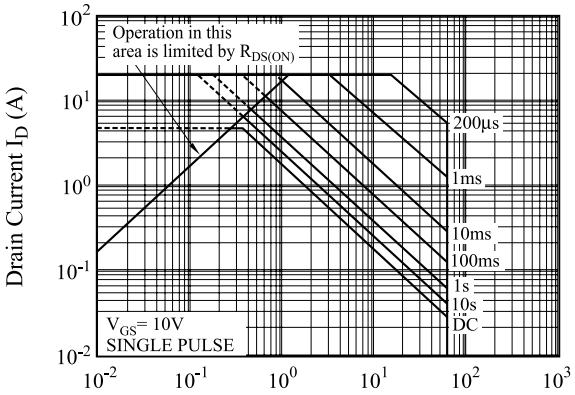


Fig9. Transient Thermal Response Curve