

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 for portable equipment and SMPS.

FEATURES

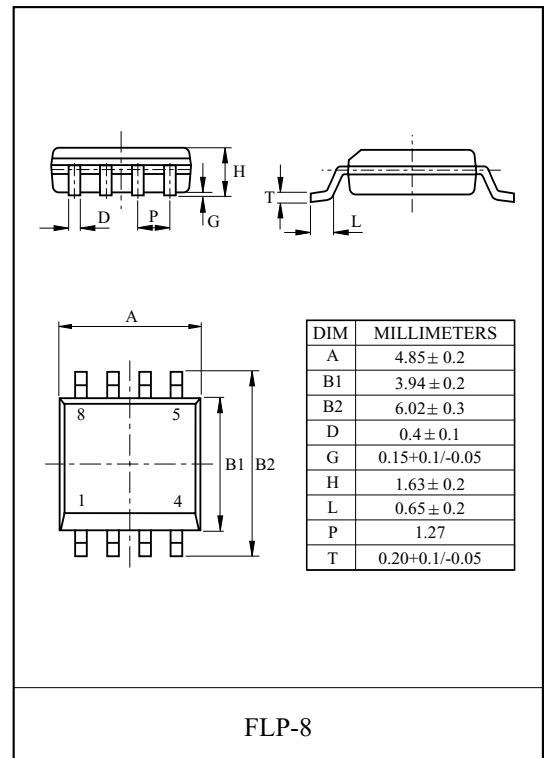
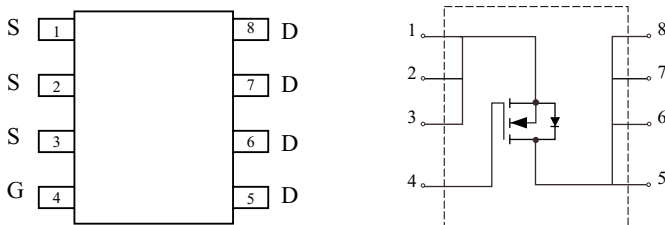
- $V_{DSS}=60V$, $I_D=8.2A$.
- Drain-Source ON Resistance.
 $R_{DS(ON)}=22m\ \Omega$ (Max.) @ $V_{GS}=10V$
 $R_{DS(ON)}=27m\ \Omega$ (Max.) @ $V_{GS}=4.5V$
- Super High Dense Cell Design

MOSFET Maximum Ratings ($T_a=25\ ^\circ C$ Unless otherwise noted)

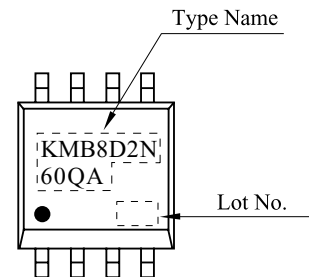
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain Source Voltage		V_{DSS}	60	V
Gate Source Voltage		V_{GSS}	± 25	V
Drain Current	DC@ $T_A=25\ ^\circ C$	I_D^*	8.2	A
	DC@ $T_A=70\ ^\circ C$		6.6	A
	Pulsed	I_{DP}	40	A
Drain Source Diode Forward Current		I_S	3.0	A
Drain Power Dissipation	$T_A=25\ ^\circ C$	P_D^*	3.0	W
	$T_A=70\ ^\circ C$		2.0	W
Maximum Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55~150	$^\circ C$
Thermal Resistance, Junction to Ambient		R_{thJA}^*	41	$^\circ C/W$

Note : *Surface Mounted on 1×1 FR4 Board

PIN CONNECTION (TOP VIEW)



Marking



KMB8D2N60QA

ELECTRICAL CHARACTERISTICS (Ta=25°C) UNLESS OTHERWISE NOTED

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Static							
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	60	-	-	V	
Drain Cut-off Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$	-	-	1	μA	
		$V_{DS}=48V, V_{GS}=0V, T_j=70^\circ C$	-	-	5		
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA	
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	-	3.0	V	
Drain-Source ON Resistance	$R_{DS(ON)*}$	$V_{GS}=10V, I_D=8.2A$	-	16	22	m Ω	
		$V_{GS}=4.5V, I_D=7.6A$	-	20	27		
Forward Transconductance	G_{fs*}	$V_{DS}=5V, I_D=8.2A$	-	2.4	-	S	
Dynamic							
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$	-	1920	2300	pF	
Output Capacitance	C_{oss}		-	155	-		
Reverse Transfer Capacitance	C_{rss}		-	116	-		
Total Gate Charge ($V_{GS}=10V$)	Q_g^*	$V_{DS}=30V, V_{GS}=10V, I_D=8.2A$	-	47.6	58	nC	
Total Gate Charge ($V_{GS}=4.5V$)			-	24.2	30		
Gate-Source Charge			Q_{gs}^*	-	6.0		-
Gate-Drain Charge			Q_{gd}^*	-	14.4		-
Turn-On Delay Time	$t_{d(on)*}$	$V_{DD}=30V, V_{GS}=10V$ $R_L=3.6\Omega, R_G=3\Omega$	-	8.2	-	ns	
Turn-On Rise Time	t_r^*		-	5.5	-		
Turn-Off Delay Time	$t_{d(off)*}$		-	29.7	-		
Turn-Off Fall Time	t_f^*		-	5.2	-		
Source-Drain Diode Ratings							
Source-Drain Forward Voltage	V_{SDF*}	$V_{GS}=0V, I_{DR}=1.7A,$	-	0.74	1.0	V	
Note							
1. Pulse Test : Pulse width $\leq 10\mu s$, Duty cycle $\leq 1\%$							

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Fig1. $I_D - V_{DS}$

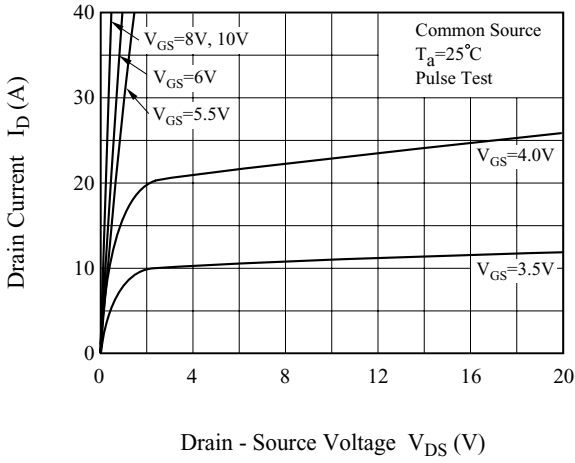


Fig2. $R_{DS(ON)} - I_D$

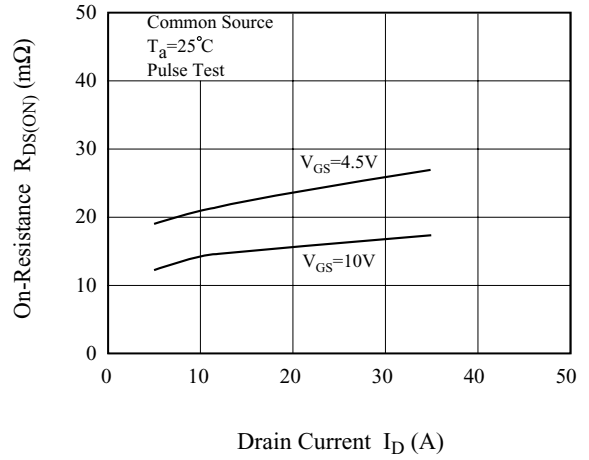


Fig3. $I_D - V_{GS}$

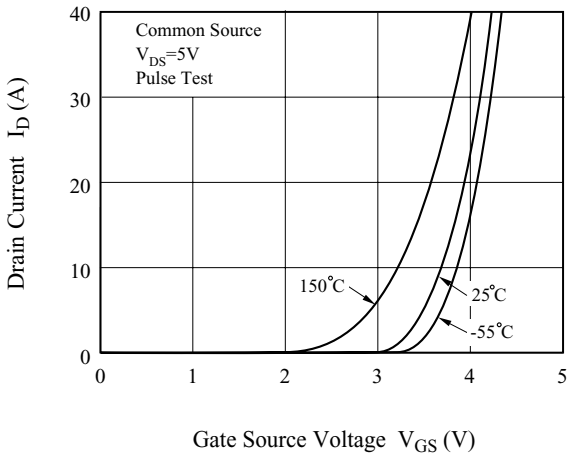


Fig4. $R_{DS(ON)} - T_j$

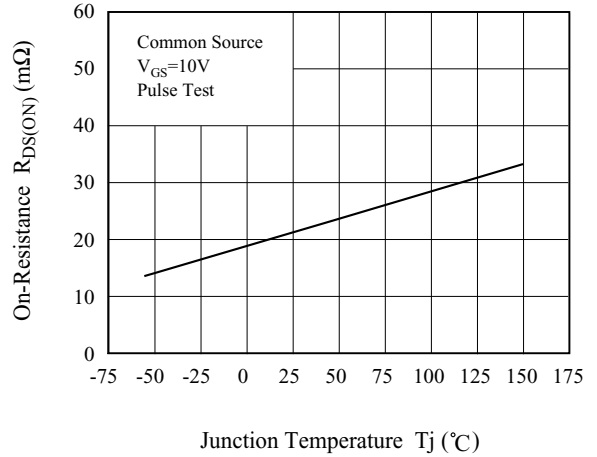


Fig5. $V_{th} - T_j$

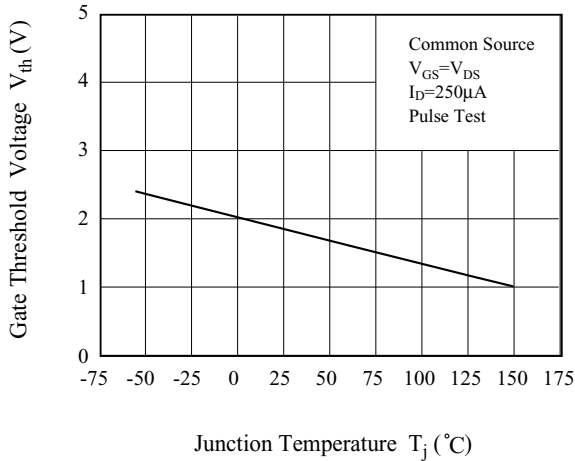
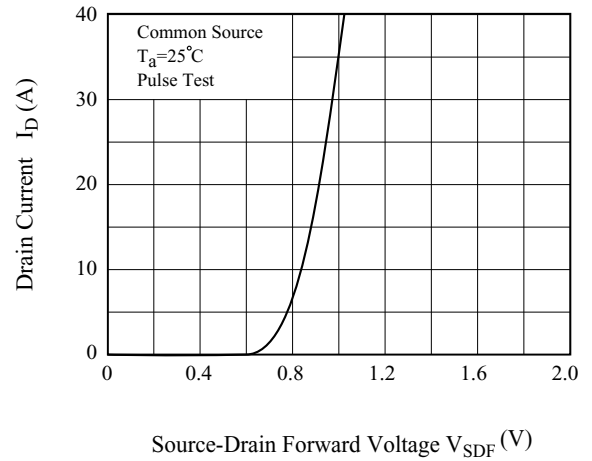


Fig 6. $I_S - V_{SDF}$



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Fig7. $V_{GS} - Q_g$

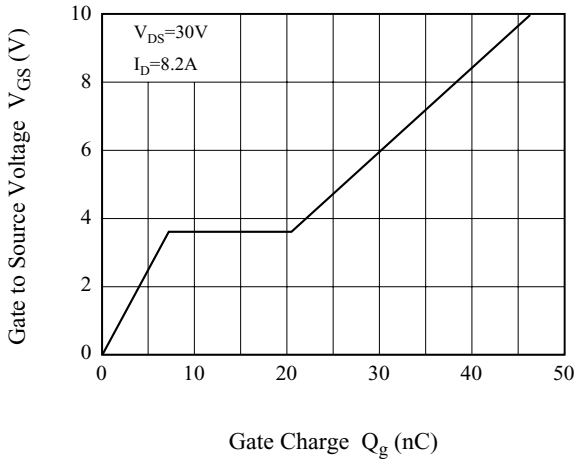


Fig8. $C - V_{DS}$

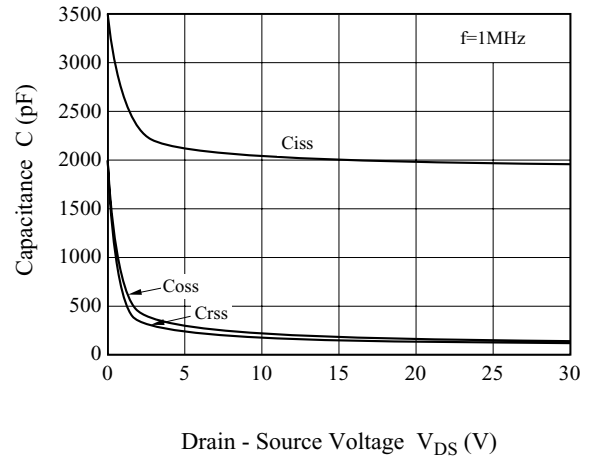


Fig9. Safe Operation Area

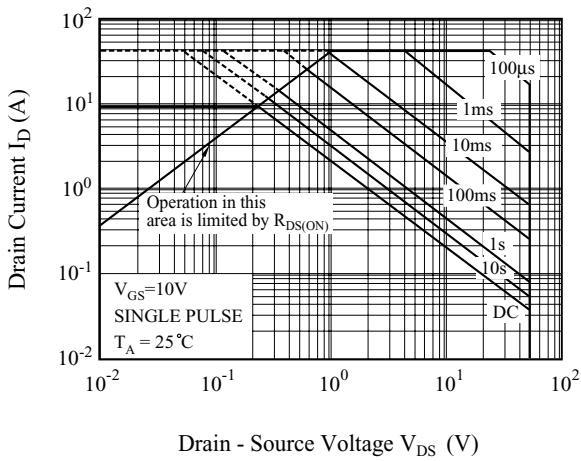


Fig10. Transient Thermal Response Curve

