KMB7D0N40QA

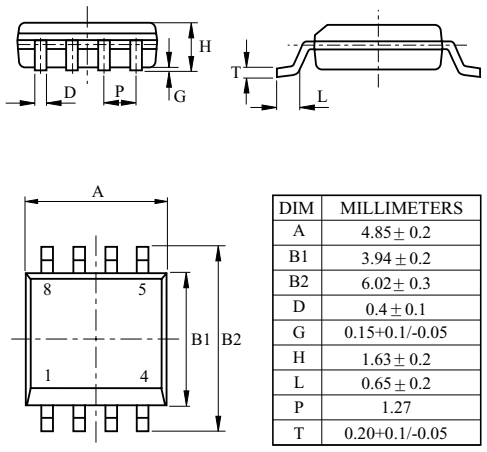
N-Ch Trench MOSFET

GENERAL DESCRIPTION

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

FEATURES

- V_{DSS}=40V, I_D=7A.
- Drain-Source ON Resistance.
  $R_{DS(ON)}$=25mΩ (Max.) @V_{GS}=10V
  $R_{DS(ON)}$=45mΩ (Max.) @V_{GS}=4.5V
- Super High Dense Cell Design
- High Power and Current Handing Capability



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

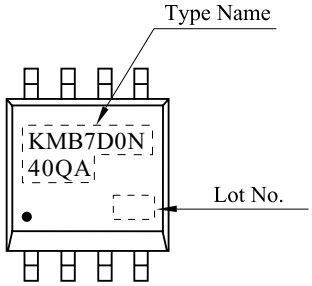
FLP-8

Maximum Ratings (Ta=25℃ Unless otherwise noted)

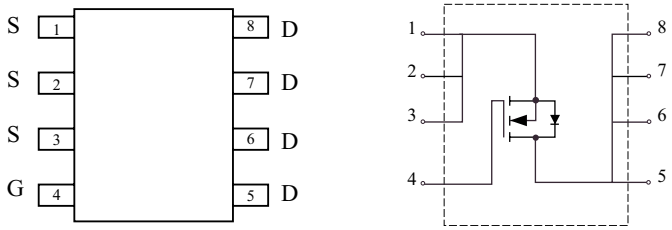
CHARACTERISTIC		SYMBOL	PATING	UNIT
Drain Source Voltage		V_{DSS}	40	V
Gate Source Voltage		V_{GSS}	±25	V
Drain Current	DC	I_D*	7	A
	Pulsed	I_{DP}	22	A
Drain Source Diode Forward Current		I_S	1.7	A
Drain Power Dissipation	T_A=25℃	P_D*	2	W
	T_A=100℃		1.44	W
Maximum Junction Temperature		T_j	-55~150	℃
Storage Temperature Range		T_{stg}	-55~150	℃
Thermal Resistance, Junction to Ambient		R_{thJA}*	62.5	℃/W

Note) *Surface Mounted on 1 ×1 FR4 Board.

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}	I_D=250㎂, V_{GS}=0V	40	-	-	V
Drain Cut-off Current	I_{DSS}	V_{DS}=32V, V_{GS}=0V	-	-	1	㎂
Gate Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	V_{th}	V_{DS}=V_{GS}, I_D=250㎂	1	1.8	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$*	V_{GS}=10.0V, I_D=6A	-	20	25	mΩ
		V_{GS}=4.5V, I_D=5A	-	35	45	
On-State Drain Current	$I_{D(ON)}$*	V_{DS}=5V, V_{GS}=10V	15	-	-	A
Forward Transconductance	g_{fs}*	V_{DS}=5V, I_D=6A	-	8	-	S
Dynamic						
Input Capaclitance	C_{iss}	V_{DS}=25V, f=1MHz, V_{GS}=OV	-	947	1231	pF
Ouput Capacitance	C_{oss}		-	117	152	
Reverse Transfer Capacitance	C_{rss}		-	77	100	
Total Gate Charge	Q_g*	V_{DS}=20V, V_{GS}=10V, I_D=6A	-	18.2	24	nC
		V_{DS}=20V, V_{GS}=4.5V, I_D=6A	-	8.7	12	
Gate-Source Charge	Q_{gs}*	V_{DS}=20V, V_{GS}=4.5V, I_D=6A	-	2.8	4	
Gate-Drain Charge	Q_{gd}*		-	3.3	5	
Turn-On Delat Time	$t_{d(on)}$*	V_{DD}=20V, V_{GS}=10V I_D=1A, R_G=3.3 Ω	-	16.7	19	ns
Turn-On Rise Time	t_r*		-	3.6	5	
Turn-On Deley Time	$t_{d(off)}$*		-	28.7	38	
Turn-On Fall Time	t_f*		-	10.1	14	
Source-Drain Diode Ratings						
Source-Drain Forward Voltage	V_{SDF}*	I_{DR}=1.7A, V_{GS}=0V	-	0.78	1.2	V
Note) *Pulse Test : Pulse width ≤ 10㎲, Duty cycle ≤ 1%						

Fig1. I_D - V_{DS}

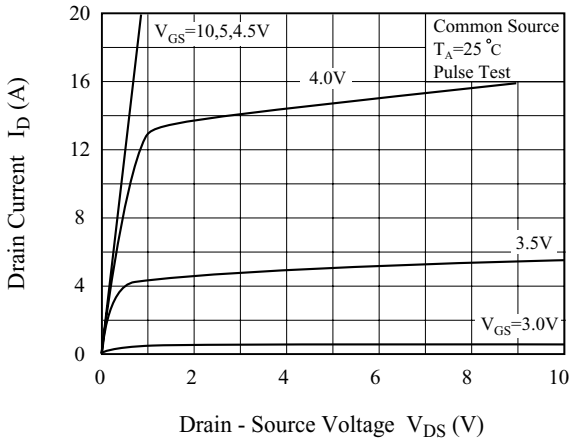


Fig2. $R_{DS(on)}$ - I_D

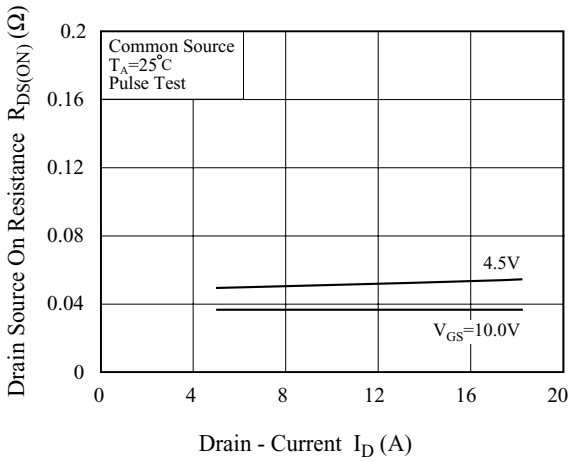


Fig3. I_D - V_{GS}

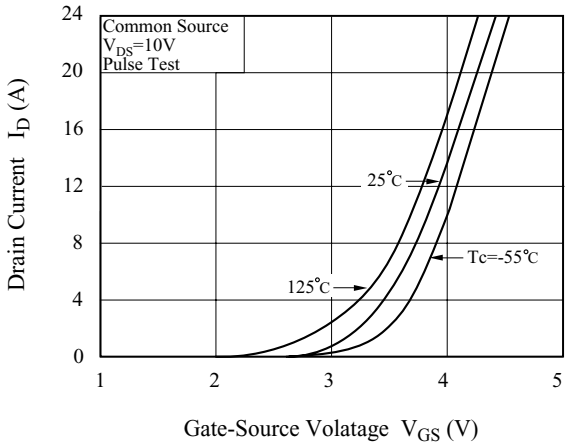


Fig4. $R_{DS(on)}$ - T_j

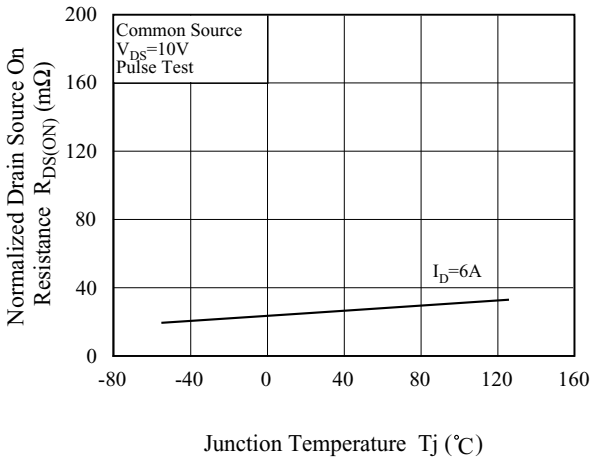


Fig5. V_{th} - T_j

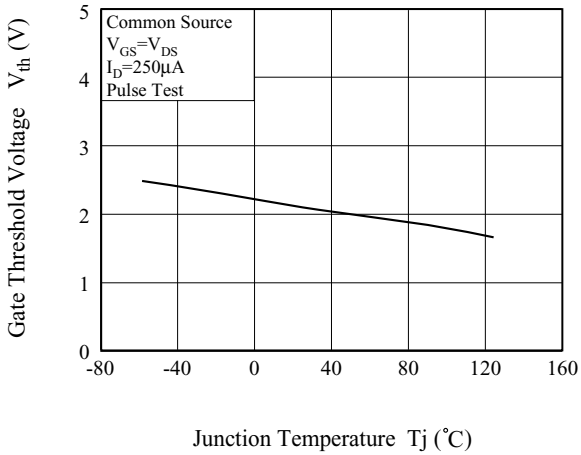


Fig6. I_{DR} - V_{SDF}

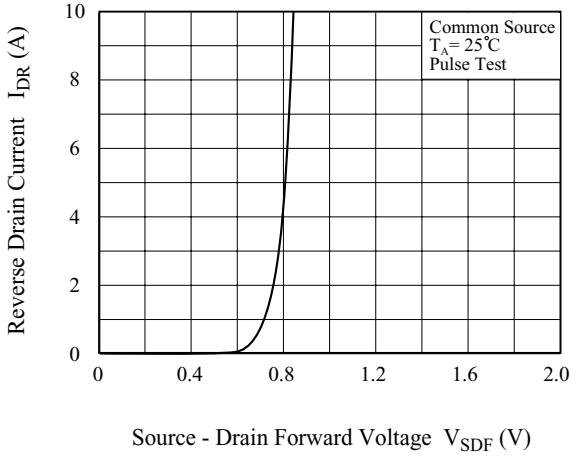
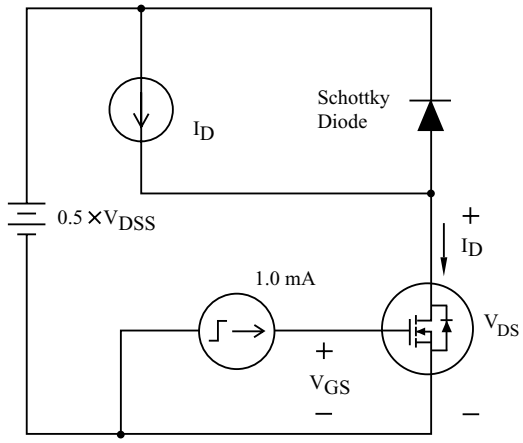


Fig.7 Gate Charge Circuit and Wave Form



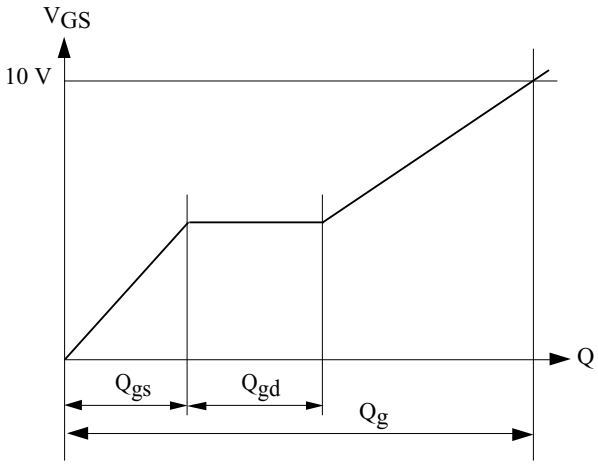


Fig.8 Resistive Load Switching