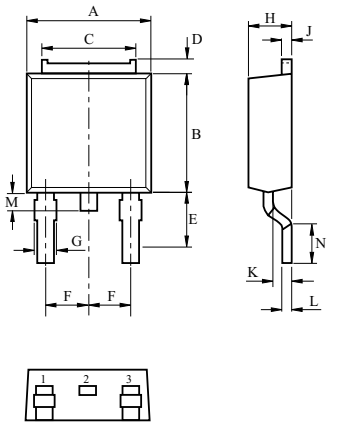
KMB030N30D

N-Ch Trench MOSFET

General Description

Switching regulator and DC-DC Converter applications.
It s mainly suitable for power management in PC,
portable equipment and battery powered systems.



DIM	MILLIMETERS
A	6.6 ± 0.2
B	6.1±0.2
C	5.33 ± 0.1
D	1.08±0.2
E	2.92 ± 0.3
F	2.28±0.1
G	1.1 MAX
H	2.3 ± 0.1
J	0.51± 0.1
K	1.01 ±0.1
L	0.51± 0.1
M	0.8±0.1
N	1.5±0.2

DPAK (2)

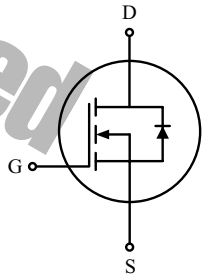
FEATURES

- V_{DSS}=30V, I_D=30A.
- Low Drain-Source ON Resistance.
  : $R_{DS(ON)}$=18mΩ(Max.) @ V_{GS}=10V
  : $R_{DS(ON)}$=36mΩ(Max.) @ V_{GS}=4.5V
- Super High Dense Cell Design.
- High Power and Current Handling Capability.

MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC	I_D *	30	A
	Pulsed (Note 1)	I_{DP} *	75	
Source-Drain Diode Current		I_S	20	A
Drain Power Dissipation (Tc=25℃)		P_D *	50	W
Maximum Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 150	℃
Thermal Resistance, Junction to Case		R_{thJC}	3	℃/W
Thermal Resistance, Junction to Ambient		R_{thJA}*	50	℃/W

* : Surface Mounted on FR4 Board, t≤10sec.



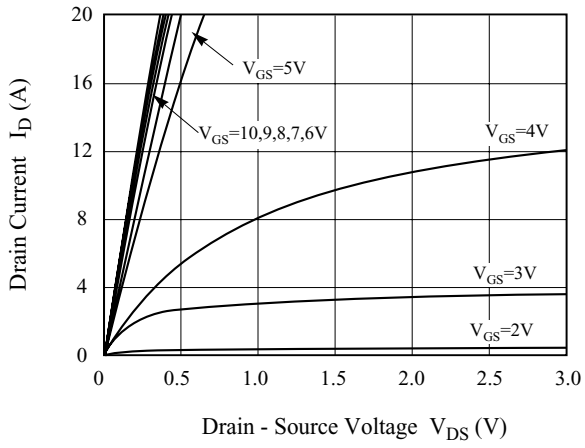
ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250 μA, V_{GS}=0V,	30	-	-	V
Drain Cut-off Current	I_{DSS}	V_{GS}=0V, V_{DS}=24V	-	-	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	1.7	2.5	V
Drain-Source ON Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A (Note 1)	-	13	18	mΩ
		V_{GS}=4.5V, I_D=12A (Note 1)	-	23	36	
ON State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=10V (Note 1)	40	-	-	A
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=20A (Note 1)	-	16	-	S
Source-Drain Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V (Note 1)		0.94	1.3	V
Dynamic (Note 2)						
Total Gate Charge	Q_g	V_{DS}=15V, I_D=20A, V_{GS}=10V (Fig.1)	-	15.3	-	nC
		V_{DS}=15V, I_D=20A, V_{GS}=4.5V (Fig.1)	-	7.5	-	
Gate-Source Charge	Q_{gs}	V_{DS}=15V, I_D=20A, V_{GS}=10V (Fig.1)	-	2.3	-	
Gate-Drain Charge	Q_{gd}		-	4.2	-	
Turn-on Delay time	$t_{d(on)}$	V_{DD}=15V, I_D=1A, V_{GS}=10V, R_G=6Ω (Fig.2)	-	7.6	-	ns
Turn-on Rise time	t_r		-	23.5	-	
Turn-off Delay time	$t_{d(off)}$		-	15.8	-	
Turn-off Fall time	t_f		-	5	-	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1.0MHz	-	872	-	pF
Output Capacitance	C_{oss}		-	196	-	
Reverse transfer Capacitance	C_{rss}		-	105	-	

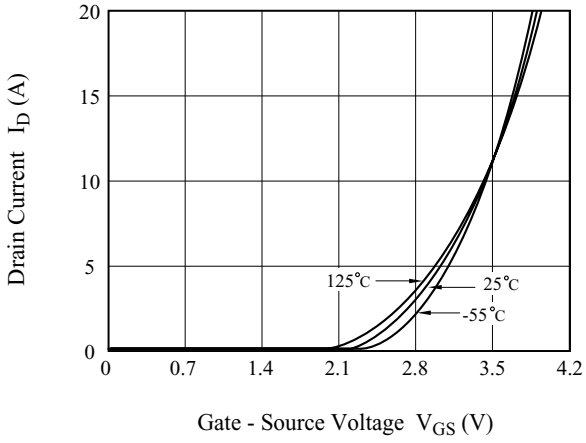
Note 1) Pulse test : Pulse width≤300μs, Duty Cycle≤2%.

Note 2) Guaranteed by design. Not subject to production testing.

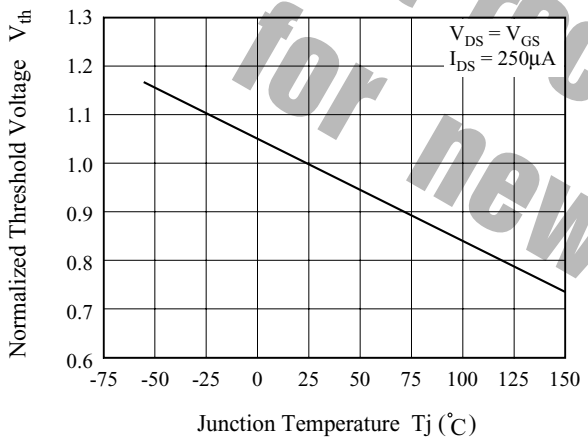
I_D - V_{DS}



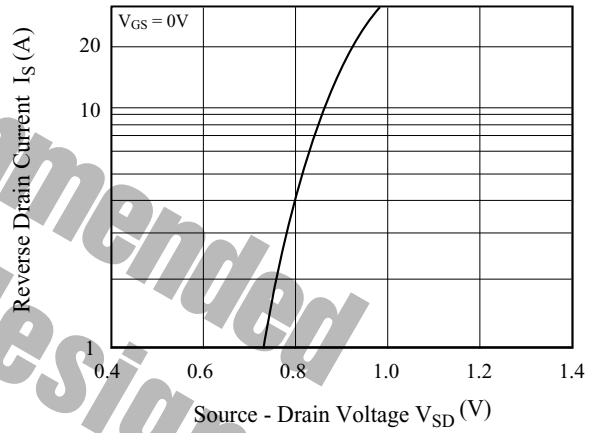
I_D - V_{GS}



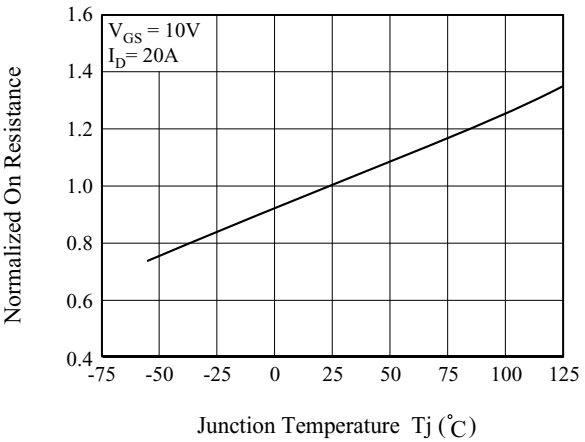
V_{th} - T_j



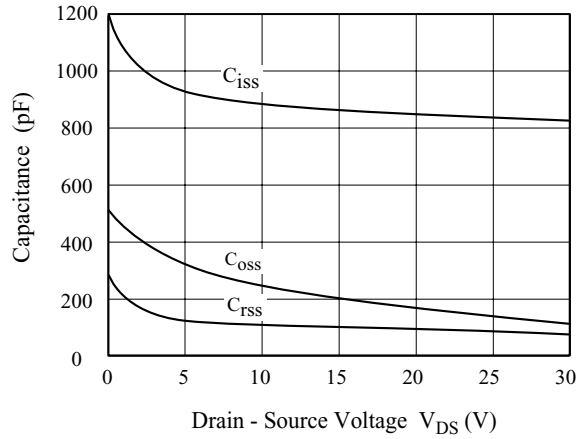
I_S - V_{SD}



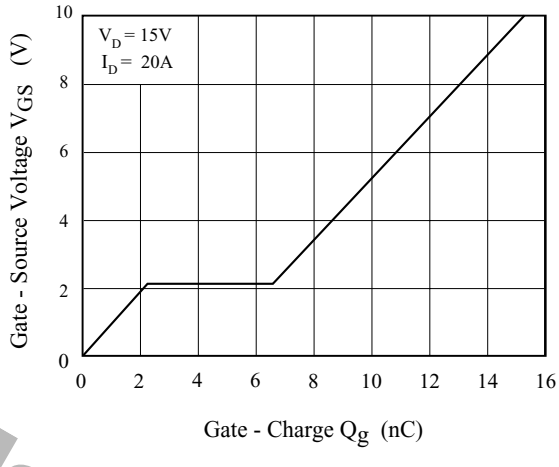
$R_{DS(ON)}$ - T_j



C - V_{DS}



Q_g - V_{GS}



R_{th}

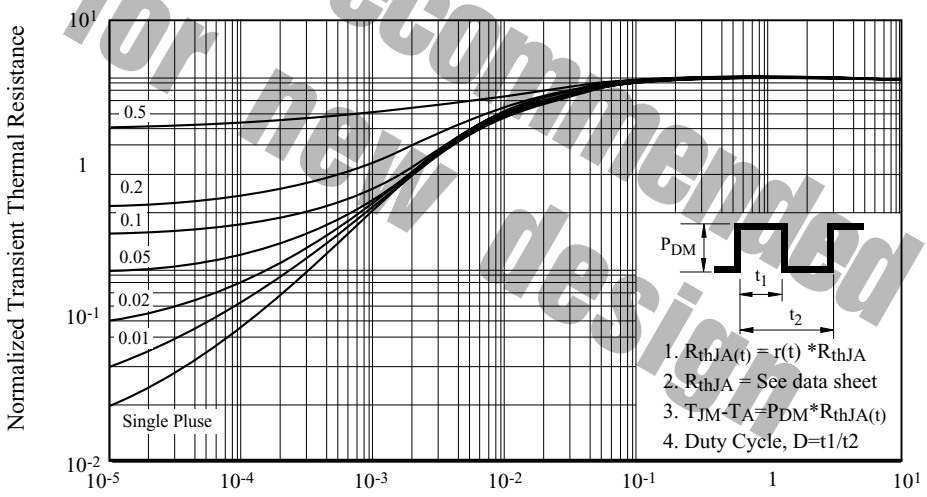


Fig. 1 Gate Charge

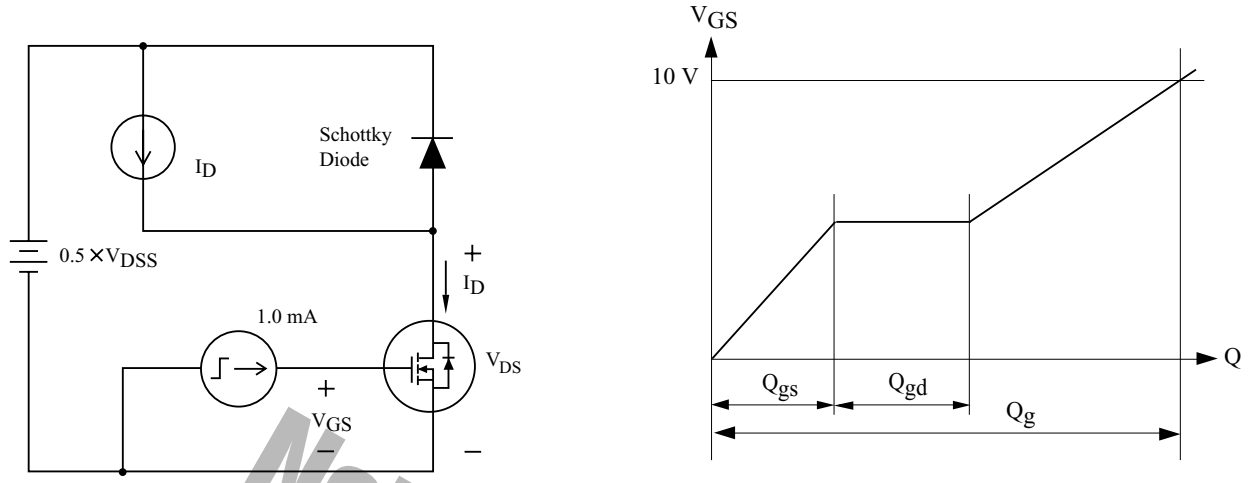


Fig. 2 Resistive Load Switching