

General Description

Switching regulator and DC-DC Converter applications.

It is mainly suitable for power management in PC, portable equipment and battery powered systems.

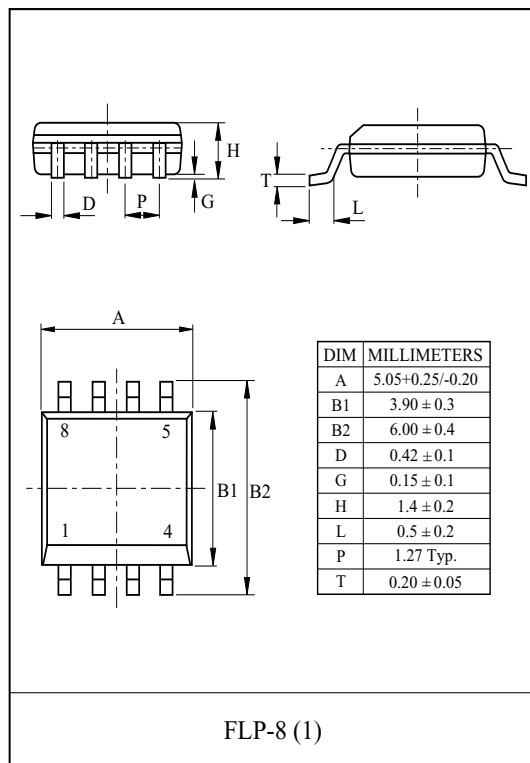
FEATURES

- $V_{DS}=30V$, $I_D=12A$.
- Low Drain-Source ON Resistance.
: $R_{DS(ON)}=7m\ \Omega$ (Max.) @ $V_{GS}=10V$
: $R_{DS(ON)}=11m\ \Omega$ (Max.) @ $V_{GS}=4.5V$
- Super High Dense Cell Design.
- High Power and Current Handling Capability.

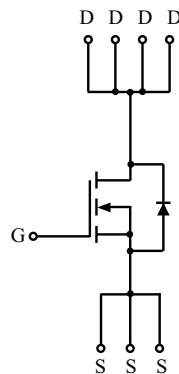
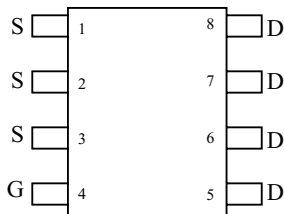
MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D^*	12	A
	Pulsed	I_{DP}^*	44	
Source-Drain Diode Current		I_S	1.7	A
Drain Power Dissipation		P_D^*	2.5	W
Maximum Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-55 ~ 150	°C
Thermal Resistance, Junction to Ambient		R_{thJA}^*	50	°C/W

Note : * Surface Mounted on 1" × 1" FR4 Board, $t \leq 10$ sec.



PIN CONNECTION (TOP VIEW)



KMB012N30Q

ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu A$, $V_{GS}=0V$,	30	-	-	V
Drain Cut-off Current	I_{DSS}	$V_{GS}=0V$, $V_{DS}=24V$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$, $V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}$, $I_D=250\mu A$	1.0	1.6	3.0	V
Drain-Source ON Resistance	$R_{DS(ON)}^*$	$V_{GS}=10V$, $I_D=12A$	-	6	7	m Ω
		$V_{GS}=4.5V$, $I_D=10A$	-	8.5	11	
ON State Drain Current	$I_{D(ON)}^*$	$V_{GS}=10V$, $V_{DS}=10V$	20	-	-	A
Forward Transconductance	g_{fs}^*	$V_{DS}=15V$, $I_D=12A$	-	22	-	S
Source-Drain Diode Forward Voltage	V_{SD}^*	$I_S=1.7A$, $V_{GS}=0V$	-	0.75	1.2	V
Dynamic						
Total Gate Charge	Q_g^*	$V_{DS}=15V$, $I_D=12A$, $V_{GS}=10V$	-	65	-	nC
		$V_{DS}=15V$, $I_D=12A$, $V_{GS}=4.5V$	-	30.5	-	
Gate-Source Charge	Q_{gs}^*	$V_{DS}=15V$, $I_D=12A$, $V_{GS}=10V$	-	11	-	
Gate-Drain Charge	Q_{gd}^*		-	13	-	
Turn-on Delay time	$t_{d(on)}^*$	$V_{DD}=15V$, $I_D=1A$, $V_{GS}=10V$, $R_G=6\Omega$	-	27	-	ns
Turn-on Rise time	t_r^*		-	13	-	
Turn-off Delay time	$t_{d(off)}^*$		-	127.5	-	
Turn-off Fall time	t_f^*		-	55.5	-	
Input Capacitance	C_{iss}	$V_{DS}=15V$, $V_{GS}=0V$, $f=1.0MHz$	-	3150	-	pF
Output Capacitance	C_{oss}		-	680	-	
Reverse transfer Capacitance	C_{rss}		-	510	-	

Note : *Pulse test : Pulse width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

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Fig1. $I_D - V_{DS}$

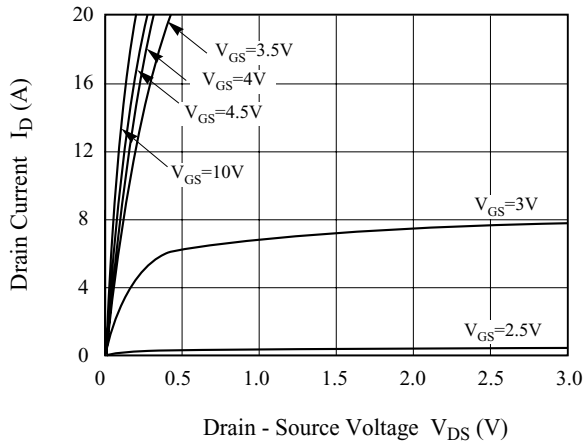


Fig2. $I_D - V_{GS}$

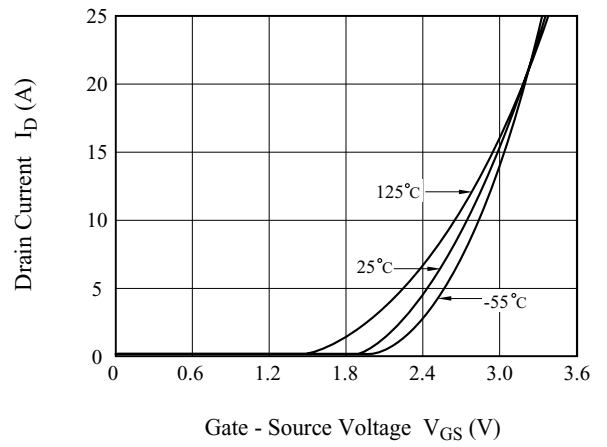


Fig3. $V_{th} - T_j$

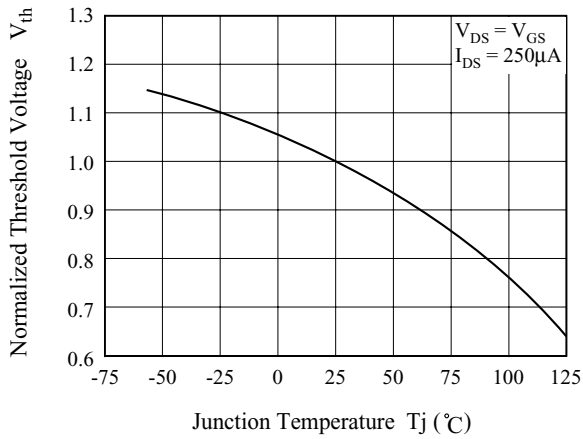


Fig4. $I_S - V_{SD}$

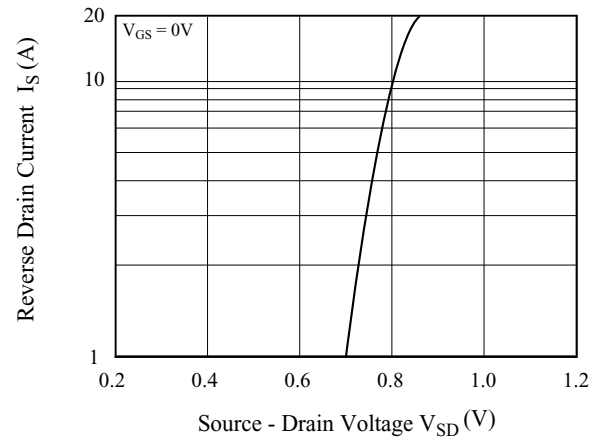


Fig5. $R_{DS(ON)} - T_j$

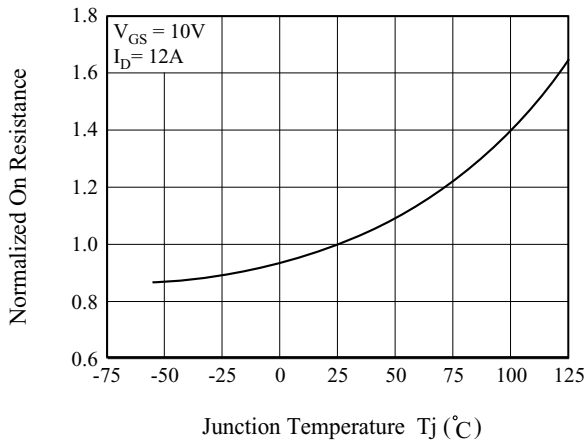


Fig6. $C - V_{DS}$

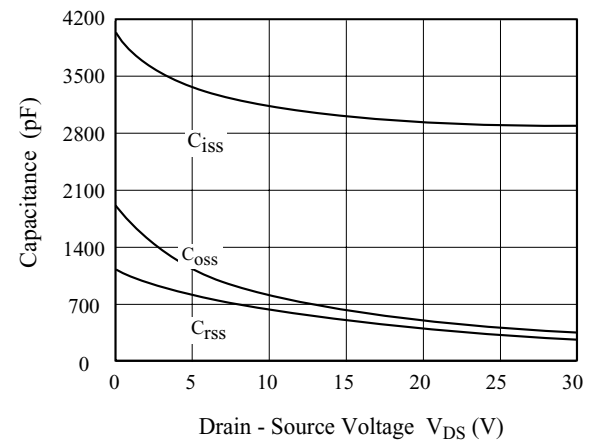


Fig7. $Q_g - V_{GS}$

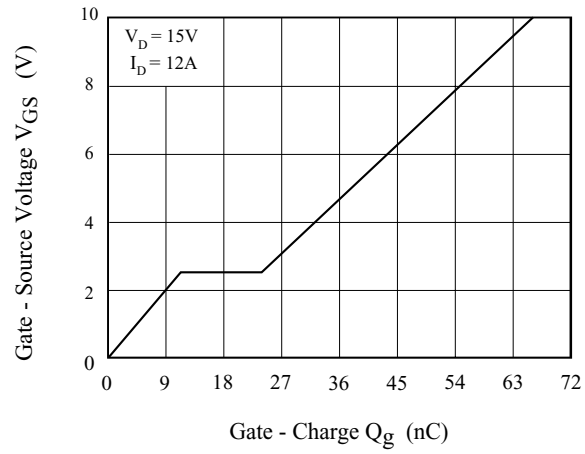


Fig8. Transient Thermal Response Curve

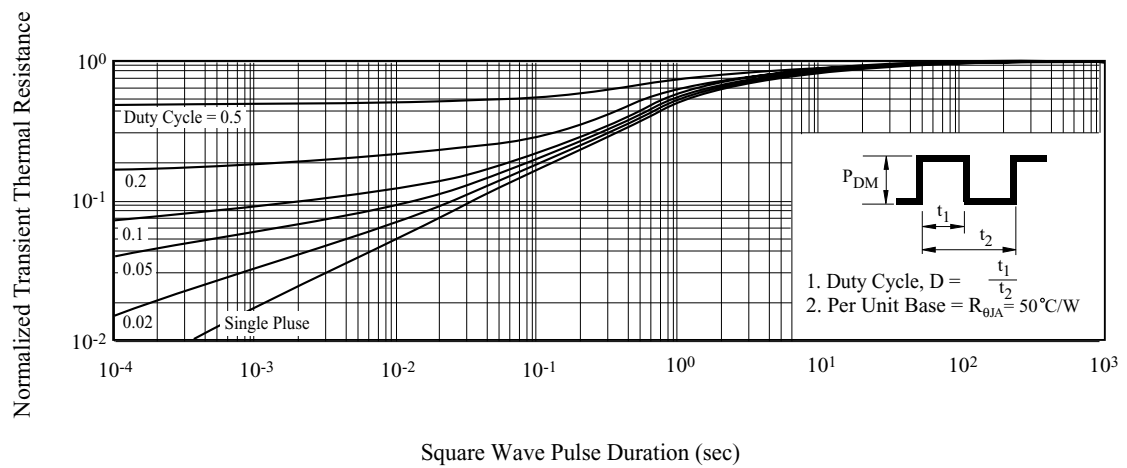


Fig1. Gate Charge

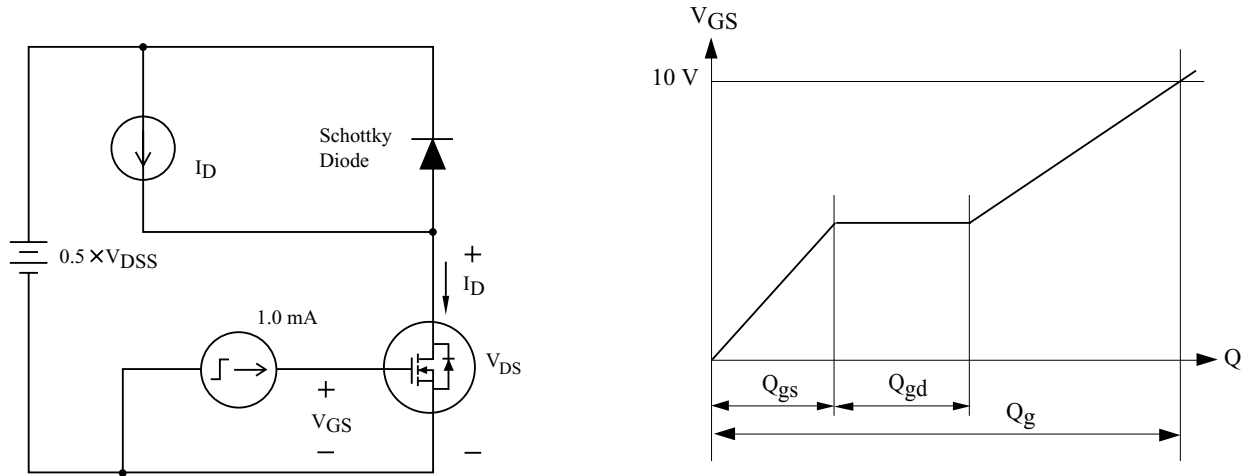


Fig2. Resistive Load Switching

