

**General Description**

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

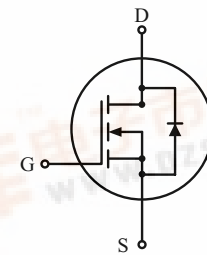
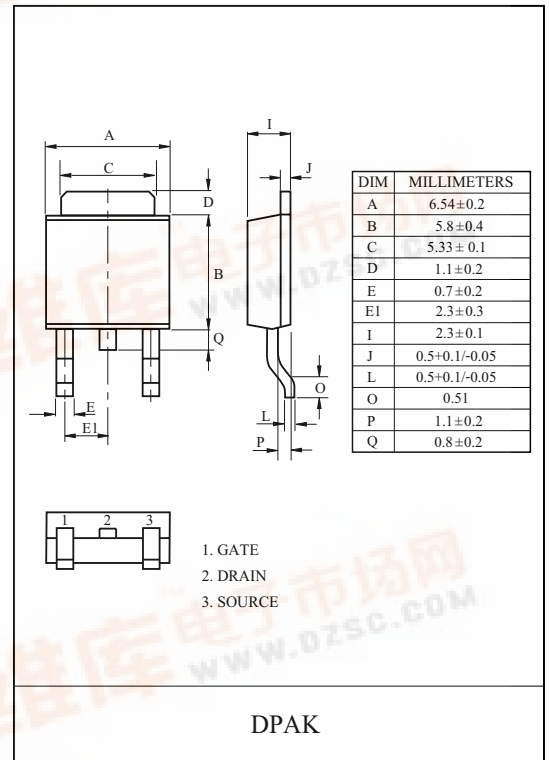
**FEATURES**

- $V_{DSS}=20V$ ,  $I_D=10A$ .
- Drain-Source ON Resistance.
  - :  $R_{DS(ON)}=35m\ \Omega$  (Typ.) @  $V_{GS}=10V$ .
  - $R_{DS(ON)}=45m\ \Omega$  (Typ.) @  $V_{GS}=4.5V$ .
  - $R_{DS(ON)}=110m\ \Omega$  (Typ.) @  $V_{GS}=2.5V$ .
- Super high dense dell design.
- High power and current handing capability.

**MAXIMUM RATING (Ta=25 °C)**

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	20	V
Gate-Source Voltage		$V_{GSS}$	±16	V
Drain Current	DC	$I_D^*$	10	A
	Pulsed	$I_{DP}$	25	
Drain Power Dissipation	Ta=25 °C	$P_D^*$	7.2	W
	Ta=100 °C		2.87	
Maximum Junction Temperature		$T_j$	150	°C
Storage Temperature Range		$T_{stg}$	-55 ~ 150	°C
Thermal Resistance, Junction to Ambient		$R_{thJA}^*$	17.4	°C/W

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



# KMA010N20D

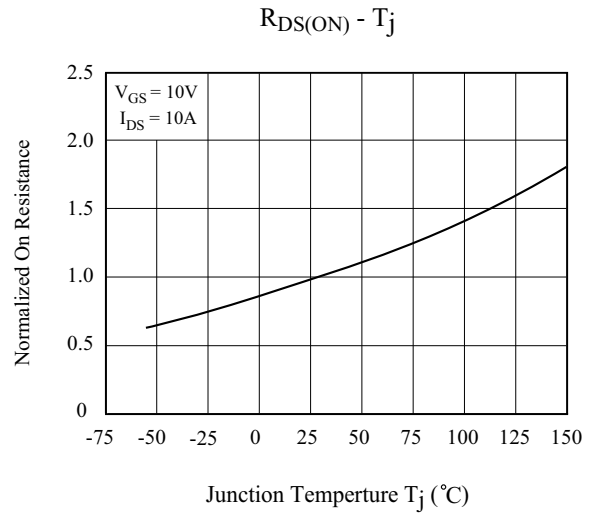
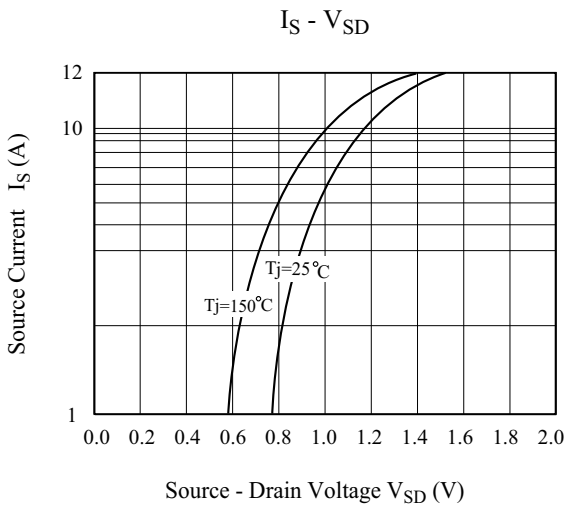
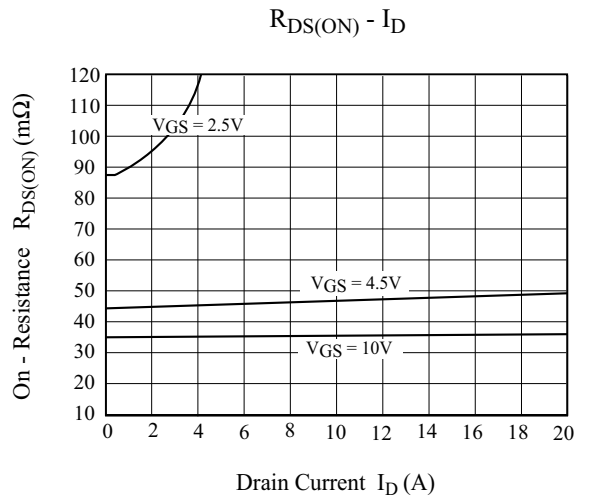
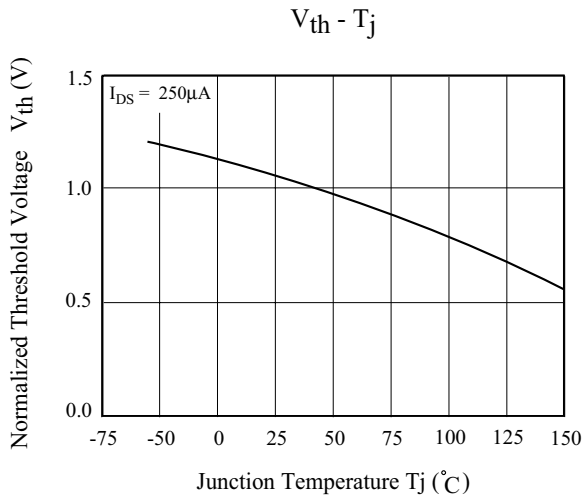
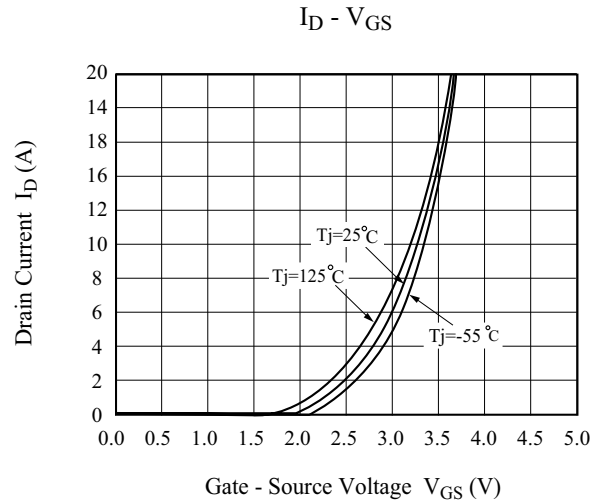
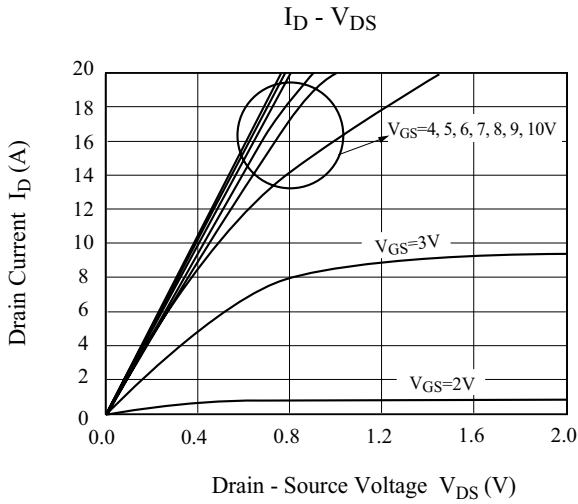
## ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V,$	20	-	-	V
Drain Cut-off Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V,$	-	-	1	$\mu A$
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	0.9	1.5	V
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0V$	-	-	$\pm 100$	nA
Drain-Source ON Resistance	$R_{DS(ON)}$ <sup>(Note 1)</sup>	$V_{GS}=10V, I_D=10A$	-	35	40	m $\Omega$
		$V_{GS}=4.5V, I_D=6A$	-	45	54	
		$V_{GS}=2.5V, I_D=2A$	-	110	130	
Source-Drain Diode Forward Voltage	$V_{SD}$ <sup>(Note 1)</sup>	$I_{DR}=6V, V_{GS}=0V$	-	0.7	1.3	V
<b>Dynamic</b> <sup>(Note 2)</sup>						
Total Gate Charge	$Q_g$	$V_{DS}=10V, I_D=10A$ $V_{GS}=4.5V$ (Fig.1)	-	6.0	8.4	nC
Gate-Source Charge	$Q_{gs}$		-	1.9	-	
Gate-Drain Charge	$Q_{gd}$		-	1.3	-	
Turn-on Delay time	$t_{d(on)}$	$V_{DD}=10V$ $R_L=1.0 \Omega$ $R_G=6 \Omega$ (Fig.2)	-	10	15	ns
Turn-on Rise time	$t_r$		-	50	75	
Turn-off Delay time	$t_{d(off)}$		-	20	30	
Turn-off Fall time	$t_f$		-	50	75	
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1.0MHz$	-	530	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	95	-	
Output Capacitance	$C_{oss}$		-	160	-	

Note 1) Pulse test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

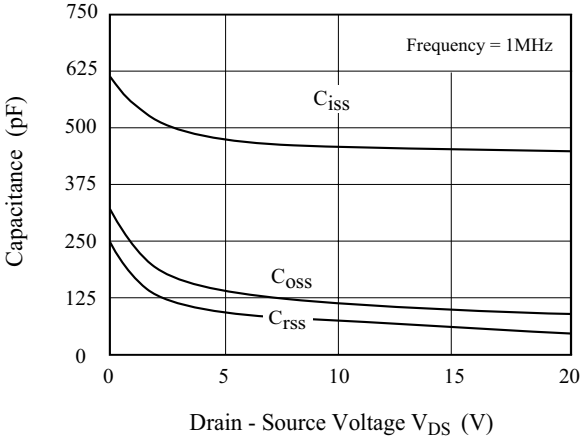
Note 2) Guaranteed by design, not subject to production testing.

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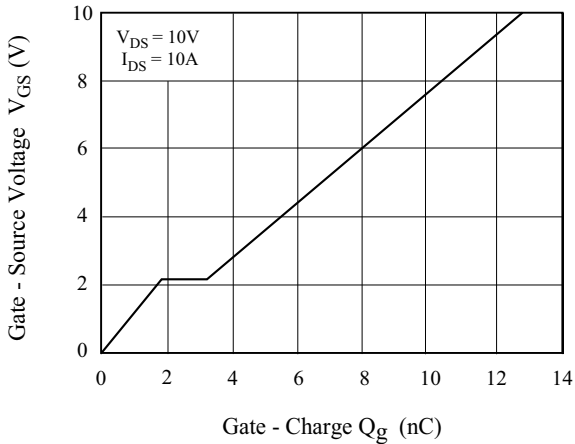


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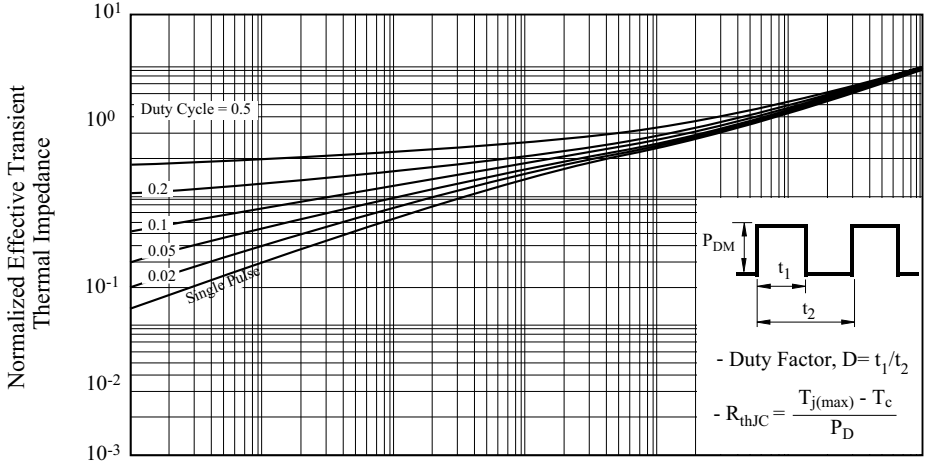
C - V<sub>DS</sub>



Q<sub>g</sub>- V<sub>GS</sub>



R<sub>th</sub>



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Fig. 1 Gate Charge

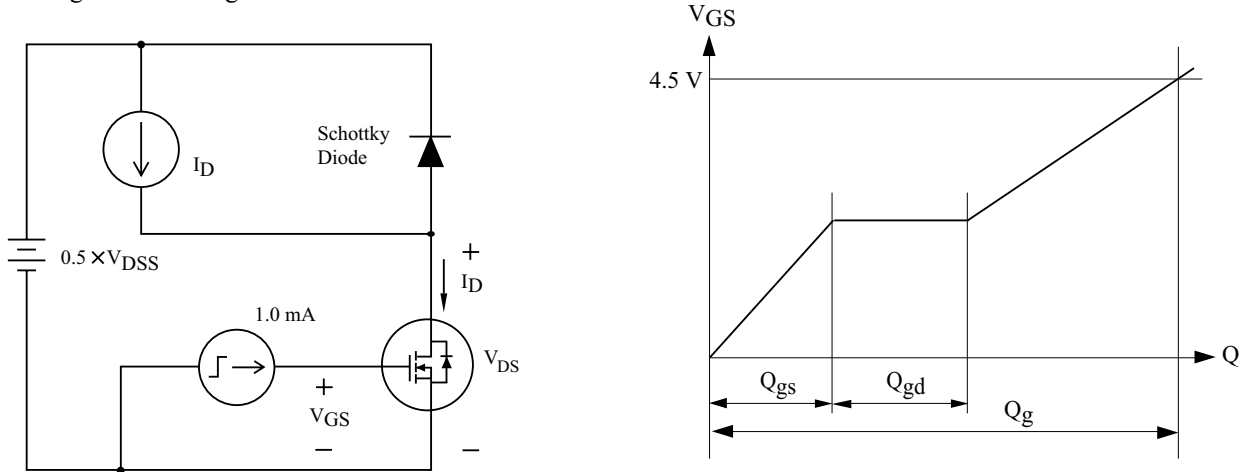


Fig. 2 Resistive Load Switching

