

### General Description

Switching regulator and DC-DC Converter applications.  
It s mainly suitable for Li-ion battery pack.

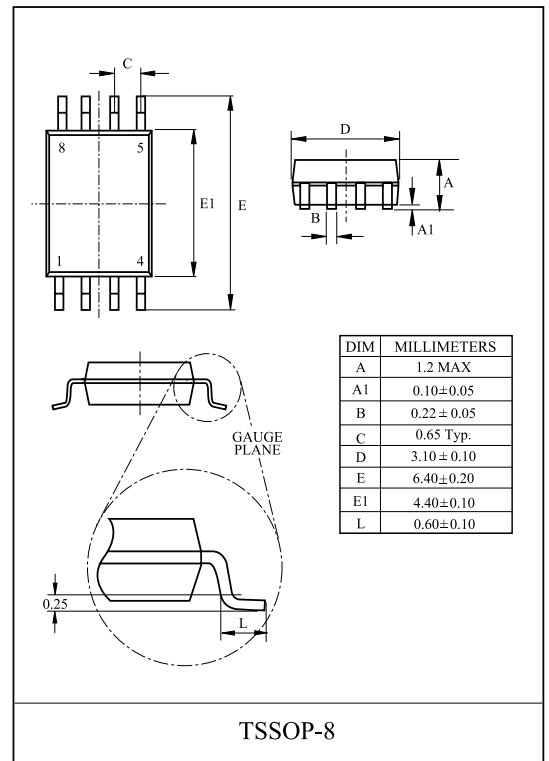
### FEATURES

- $V_{DSS}=20V$ ,  $I_D=7A$ .
- Low Drain-Source On Resistance.
  - :  $R_{DS(ON)}=20.5m\ \Omega$  (Max.) @  $V_{GS}=4.5V$
  - :  $R_{DS(ON)}=21.0m\ \Omega$  (Max.) @  $V_{GS}=4.0V$
  - :  $R_{DS(ON)}=22.5m\ \Omega$  (Max.) @  $V_{GS}=3.1V$
  - :  $R_{DS(ON)}=26.0m\ \Omega$  (Max.) @  $V_{GS}=2.5V$
- ESD Protection.
- Super High Dense Cell Design.

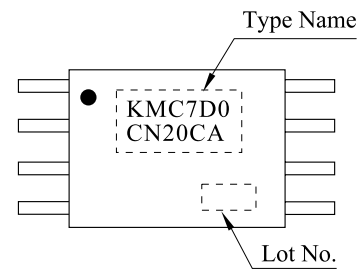
### MAXIMUM RATING (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	V
Drain Current	DC	$I_D^*$	A
	Pulsed	$I_{DP}^*$	
Source-Drain Diode Current	$I_S^*$	1.7	A
Drain Power Dissipation	$P_D^*$	1.5	W
Maximum Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C
Thermal Resistance, Junction to Ambient	$R_{thJA}^*$	83.3	°C/W

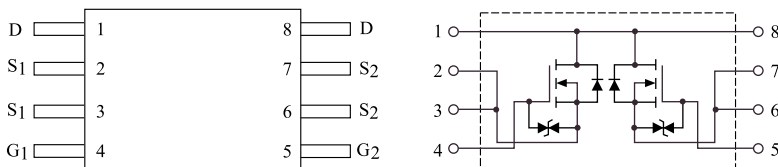
Note) \* : Surface Mounted on 1 × 1 FR4 Board,  $t \leq 10sec$



### Marking



### PIN CONNECTION (TOP VIEW)



# KMC7D0CN20CA

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Drain Cut-off Current	$I_{DSS}$	$V_{DS}=16V, V_{GS}=0V$	-	-	1	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.7	1.5	V
Drain-Source ON Resistance	$R_{DS(ON)}^*$	$V_{GS}=4.5V, I_D=4.0A$	-	16.5	20.5	m $\Omega$
		$V_{GS}=4.0V, I_D=4.0A$	-	17.0	21.0	
		$V_{GS}=3.1V, I_D=4.0A$	-	18.5	22.5	
		$V_{GS}=2.5V, I_D=4.0A$	-	20.5	26.0	
Forward Transconductance	$g_{fs}^*$	$V_{DS}=5V, I_D=5A$	-	12	-	S
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, f=1.0MHz$	-	150	-	pF
Output Capacitance	$C_{oss}$		-	135	-	
Reverse transfer Capacitance	$C_{rss}$		-	120	-	
Total Gate Charge	$Q_g^*$	$V_{DS}=10V, I_D=7A$ $V_{GS}=4.0V$	-	7.5	-	nC
Gate-Source Charge	$Q_{gs}^*$		-	1.4	-	
Gate-Drain Charge	$Q_{gd}^*$		-	3.6	-	
Turn-on Delay time	$t_{d(on)}^*$	$V_{DS}=10V, I_D=4.0A, V_{GS}=4.0V,$ $R_G=6\Omega$	-	40	-	ns
Turn-on Rise time	$t_r^*$		-	160	-	
Turn-off Delay time	$t_{d(off)}^*$		-	190	-	
Turn-off Fall time	$t_f^*$		-	200	-	
<b>Source-Drain Diode Ratings</b>						
Source-Drain Diode Forward Voltage	$V_{SD}^*$	$V_{GS}=0V, I_S=1.7A$	-	0.8	1.2	V

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

Fig 1.  $I_D - V_{DS}$

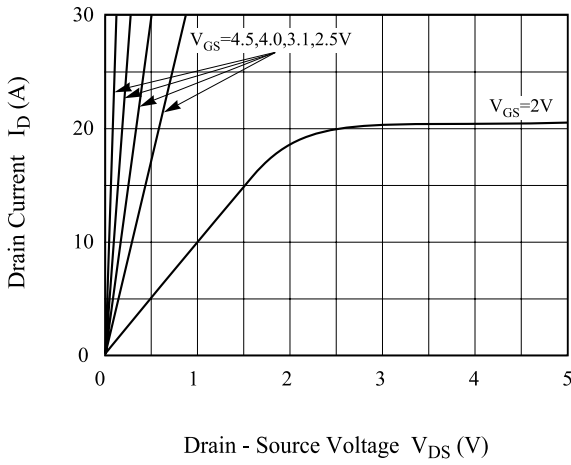


Fig 2.  $R_{DS(ON)} - I_D$

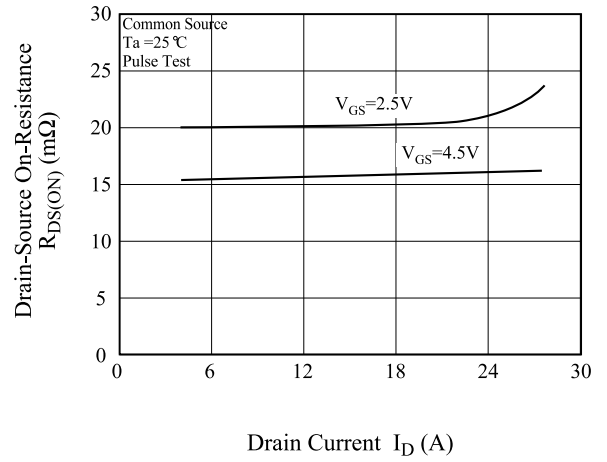


Fig 3.  $I_D - V_{GS}$

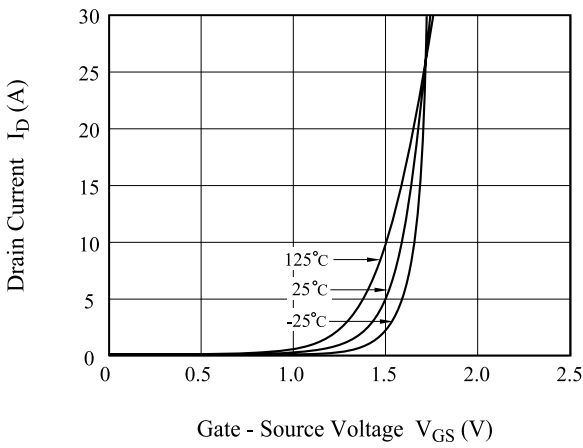


Fig 4.  $R_{DS(ON)} - T_j$

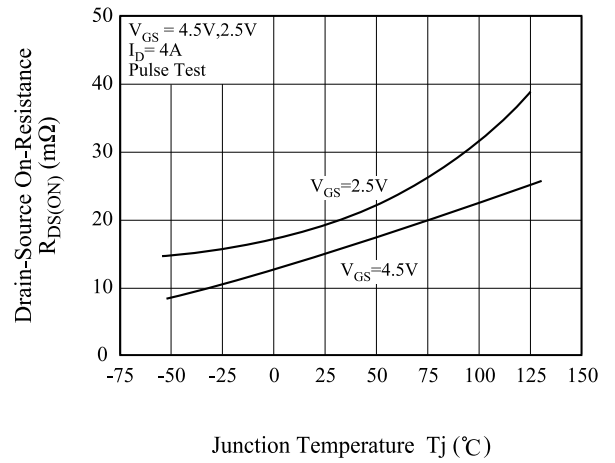


Fig 5.  $V_{th} - T_j$

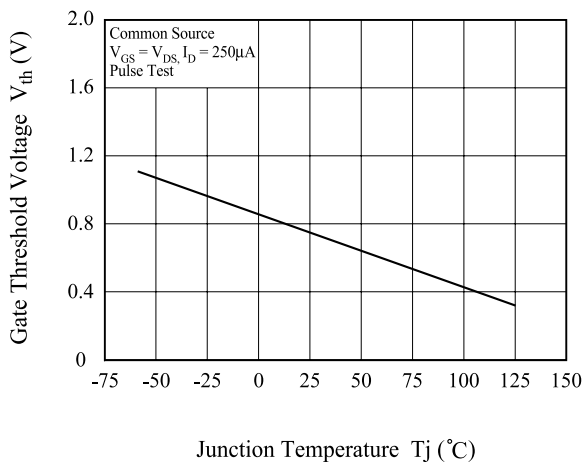
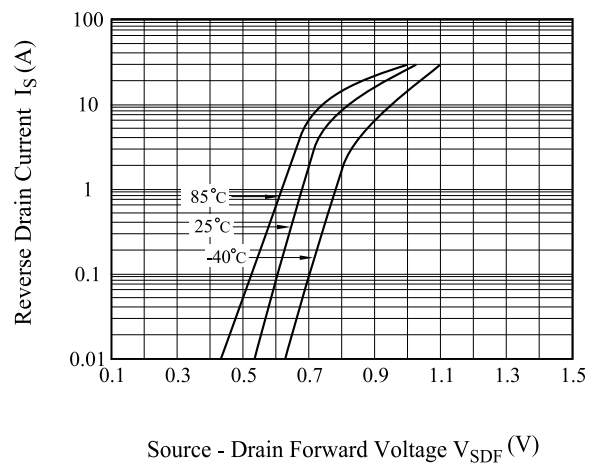


Fig 6.  $I_S - V_{SD}$



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Fig 7. C - V<sub>DS</sub>

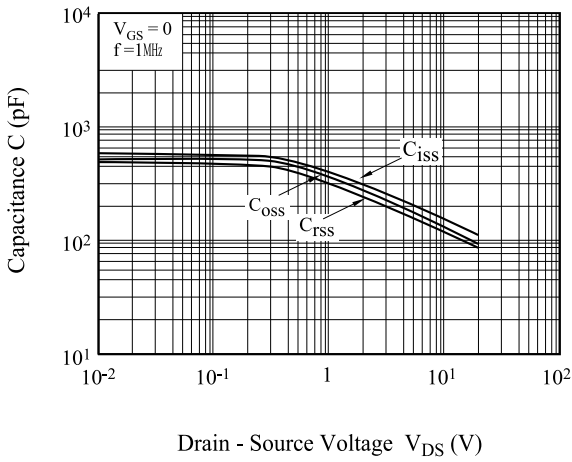


Fig 8. V<sub>GS</sub> - Q<sub>g</sub>

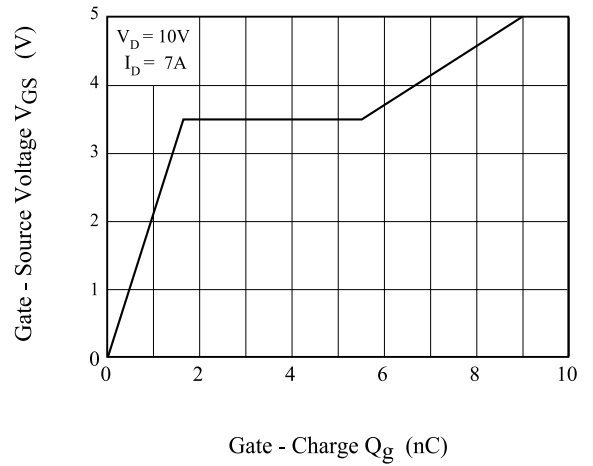


Fig 9. Safe Operating Area

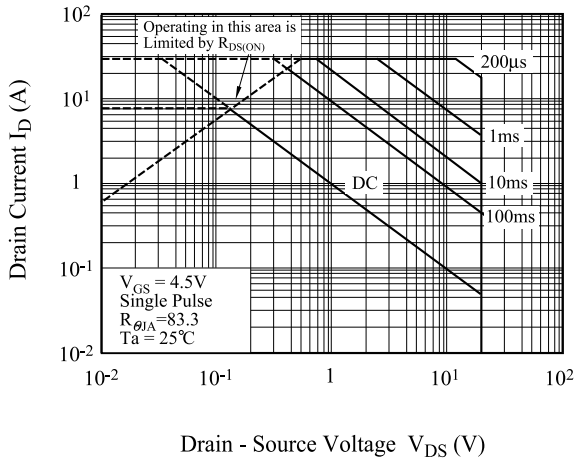


Fig 10. Transient Thermal Response Curve

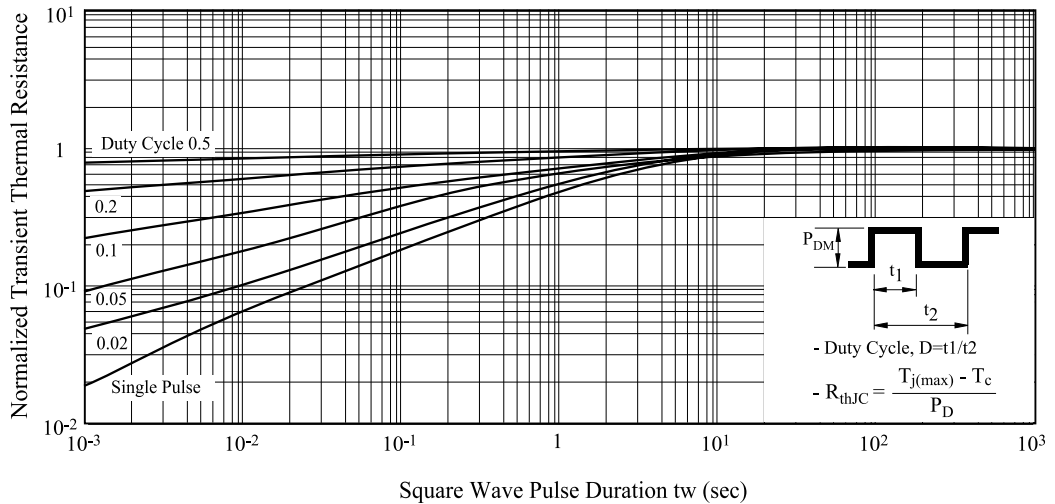


Fig. 1 Gate Charge

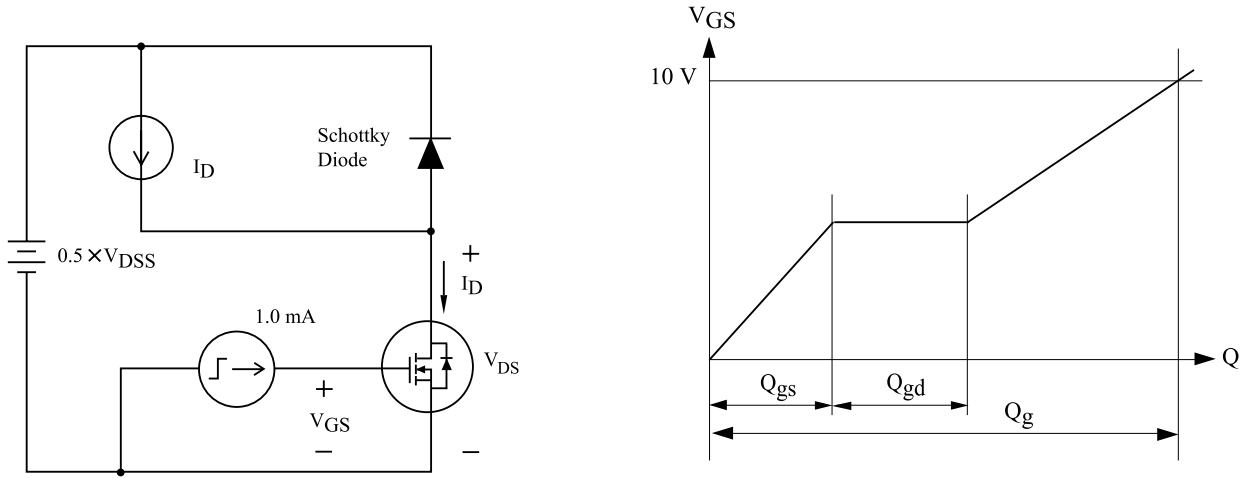


Fig. 2 Resistive Load Switching

