

### General Description

It is mainly suitable for Load Switching Cell Phones, Battery Powered Systems and Level-Shifter.

### FEATURES

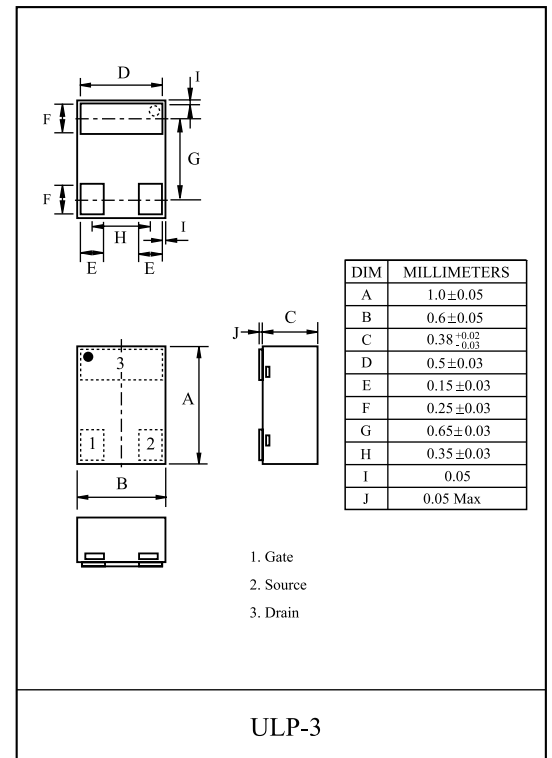
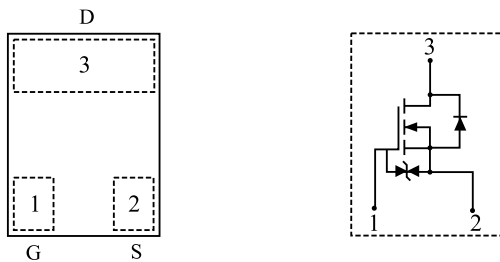
- $V_{DSS}=20V$ ,  $I_D=0.4A$
- Drain-Source ON Resistance
  - :  $R_{DS(ON)}=0.70$  @  $V_{GS}=4.5V$
  - :  $R_{DS(ON)}=0.85$  @  $V_{GS}=2.5V$
  - :  $R_{DS(ON)}=1.25$  @  $V_{GS}=1.8V$
- Super High Dense Cell Design

### MAXIMUM RATING (Ta=25 °C)

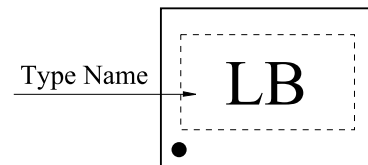
CHARACTERISTIC		SYMBOL	N-Ch	UNIT
Drain-Source Voltage		$V_{DSS}$	20	V
Gate-Source Voltage		$V_{GSS}$	$\pm 6$	V
Drain Current	DC @ $T_A=25$	$I_D^*$	400	mA
	DC @ $T_A=85$		280	
	Pulsed	$I_{DP}^*$	1600	
Drain Power Dissipation		$P_D^*$	284	mW
Maximum Junction Temperature		$T_j$	150	
Storage Temperature Range		$T_{stg}$	-55 150	
Thermal Resistance, Junction to Ambient		$R_{thJA}^*$	440	/W

Note 1) \*Surface Mounted on 1 × 1 FR4 Board. t = 5 sec

### PIN CONNECTION (TOP VIEW)



### Marking



# KML0D4N20UL

## 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	$I_{DSS}$	$V_{GS}=0V, V_{DS}=16V$	-	0.3	100	nA
Gate Leakage Current	$I_{GSS}$	$V_{GS}=\pm 4.5V, V_{DS}=0V$	-	$\pm 0.5$	$\pm 1.0$	$\mu A$
Gate Threshold Voltage	$V_{th}$	$V_{DS}=V_{GS}, I_D=250\ \mu A$	0.45	-	1.0	V
Drain-Source ON Resistance	$R_{DS(ON)}^*$	$V_{GS}=4.5V, I_D=400mA$	-	0.41	0.70	
		$V_{GS}=2.5V, I_D=350mA$	-	0.53	0.85	
		$V_{GS}=1.8V, I_D=300mA$	-	0.70	1.25	
Forward Transconductance	$g_{fs}^*$	$V_{DS}=10V, I_D=400mA$	-	1.0	-	S
Source-Drain Diode Forward Voltage	$V_{SD}^*$	$I_S=150mA, V_{GS}=0V$	-	0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g^*$	$V_{DS}=10V, I_D=250mA, V_{GS}=4.5V$	-	750	-	pC
Gate-Source Charge	$Q_{gs}^*$		-	75	-	
Gate-Drain Charge	$Q_{gd}^*$		-	225	-	
Turn-on Delay time	$t_{d(on)}^*$	$V_{DD}=10V, I_D=200mA, V_{GS}=4.5V, R_G=10$	-	5	-	ns
Turn-off Delay time	$t_{d(off)}^*$		-	25	-	

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

Fig 1.  $I_D - V_{DS}$

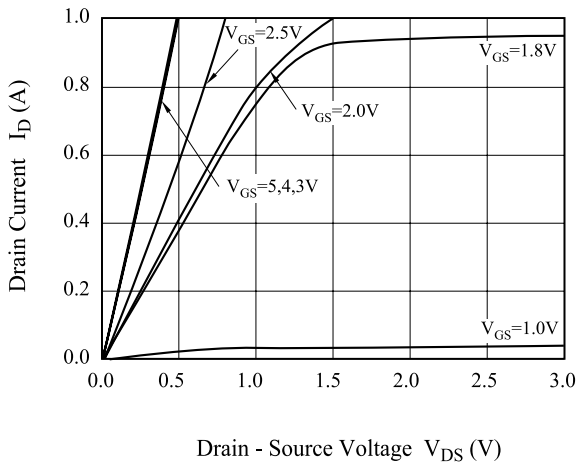


Fig 2.  $R_{DS(on)} - I_D$

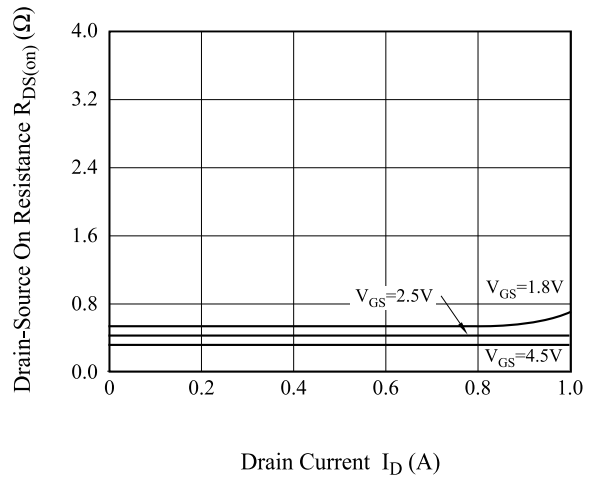


Fig 3.  $I_D - V_{GS}$

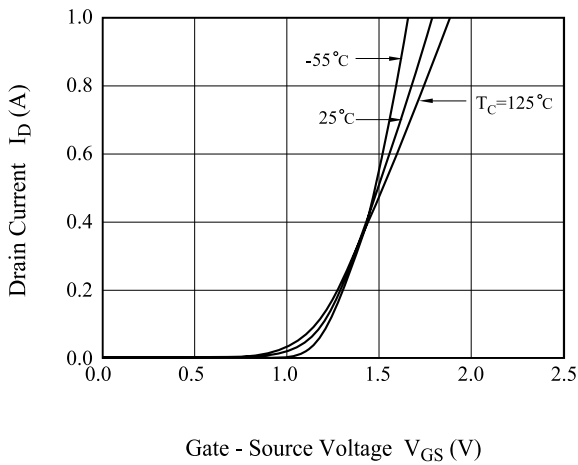


Fig 4.  $R_{DS(ON)} - T_j$

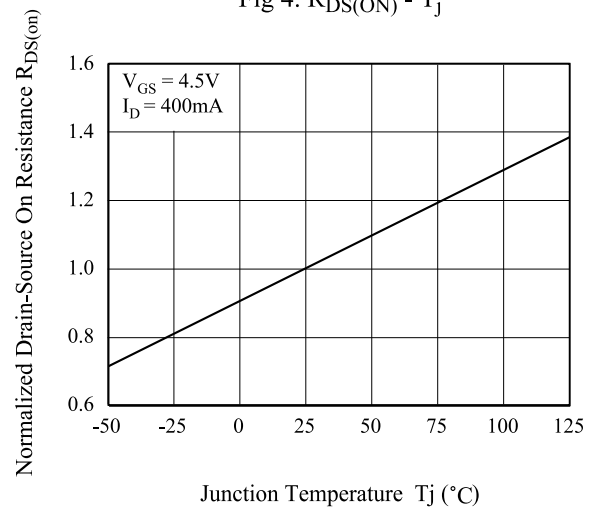


Fig 5.  $V_{th} - T_j$

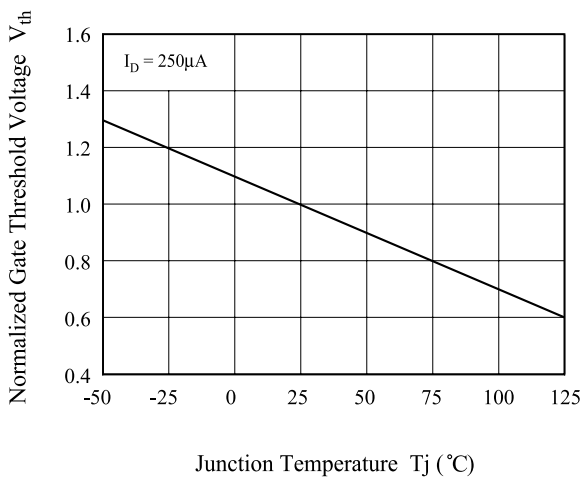
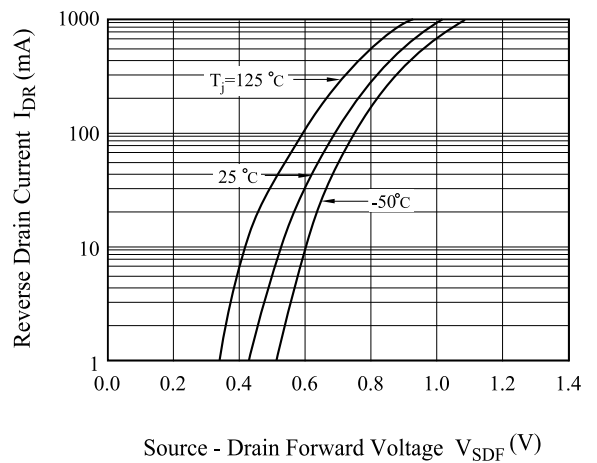


Fig 6.  $I_{DR} - V_{SDF}$



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Fig 7.  $V_{GS} - Q_g$

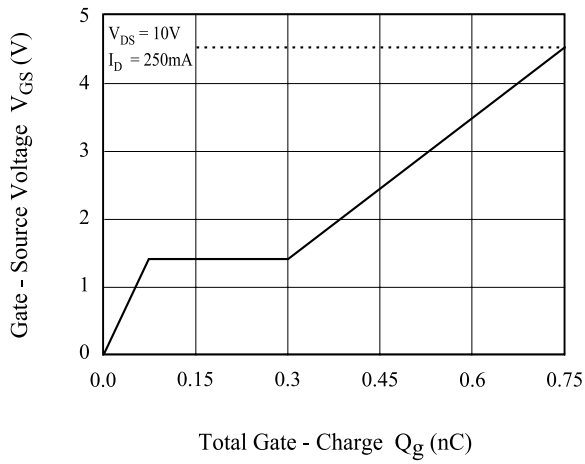


Fig 8.  $C - V_{DS}$

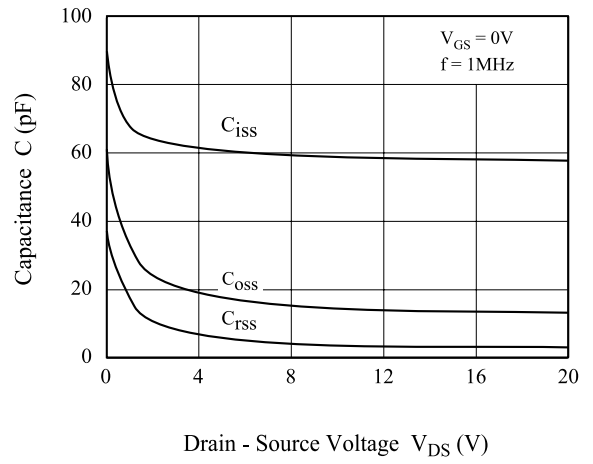


Fig 9. Transient Thermal Response Curve

