

### General Description

It is Mainly Suitable for Load Switching Mobile Phones, Battery Powered Systems and Level-Shifter.

### FEATURES

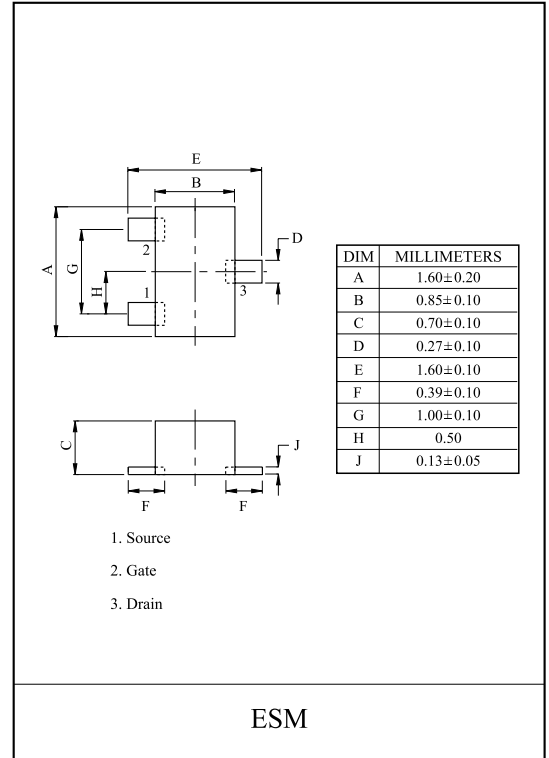
- $V_{DSS} = -20V$ ,  $I_D = -0.35A$
- Drain-Source ON Resistance
  - :  $R_{DS(ON)} = 1.2$  @  $V_{GS} = -4.5V$
  - :  $R_{DS(ON)} = 1.6$  @  $V_{GS} = -2.5V$
  - :  $R_{DS(ON)} = 2.7$  @  $V_{GS} = -1.8V$
- ESD Protection diode.

### MAXIMUM RATING (Ta=25 °C)

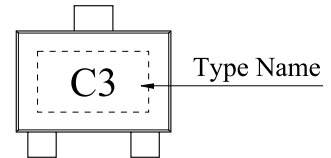
CHARACTERISTIC		SYMBOL	P-Ch	UNIT
Drain-Source Voltage		$V_{DSS}$	-20	V
Gate-Source Voltage		$V_{GSS}$	$\pm 6$	V
Drain Current	DC @ $T_A = 25$ (Note 1)	$I_D$	-350	mA
	DC @ $T_A = 85$ (Note 1)		-255	
	Pulsed (Note 1)	$I_{DP}$	-1400	
Drain Power Dissipation (Note 2)		$P_D$	210	mW
Maximum Junction Temperature		$T_j$	150	
Storage Temperature Range		$T_{stg}$	-55 150	
Thermal Resistance, Junction to Ambient (Note 2)		$R_{thJA}$	600	/W

Note 1) Drain current limited by maximum junction temperature

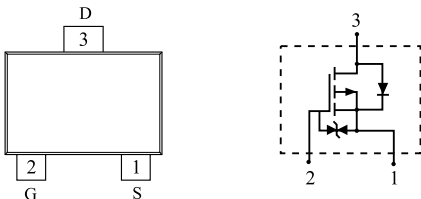
Note 2) Surface Mounted on 1" x 1" FR4 Board



### Marking



### PIN CONNECTION (TOP VIEW)



# KML0D4P20E

## 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	$I_{DSS}$	$V_{GS} = 0V, V_{DS} = -16V$	-	-	-100	nA
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 4.5V, V_{DS} = 0V$	-	-	$\pm 10$	$\mu A$
Gate Threshold Voltage	$V_{th}$	$V_{DS} = V_{GS}, I_D = -250 \mu A$	-0.45	-	-1.0	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = -4.5V, I_D = -350mA$ (Note 3)	-	0.8	1.20	
		$V_{GS} = -2.5V, I_D = -300mA$ (Note 3)	-	1.2	1.60	
		$V_{GS} = -1.8V, I_D = -150mA$ (Note 3)	-	1.8	2.70	
Forward Transconductance	$g_{fs}$	$V_{DS} = -5V, I_D = -350mA$ (Note 3)	-	1.0	-	S
Source-Drain Diode Forward Voltage	$V_{SD}$	$I_S = -150mA, V_{GS} = 0V$ (Note 3)	-	-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = -10V, I_D = -350mA, V_{GS} = -4.5V$ (Note 3)	-	1500	-	pC
Gate-Source Charge	$Q_{gS}$		-	150	-	
Gate-Drain Charge	$Q_{gd}$		-	450	-	
Turn-on Delay time	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -4.5V$ $I_D = -350mA, R_G = 10$ (Note 3)	-	5	-	ns
Turn-on Rise time	$t_r$		-	3	-	
Turn-off Delay time	$t_{d(off)}$		-	14	-	
Turn-off Fall time	$t_f$		-	5	-	
Input Capacitance	$C_{iss}$	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1.0MHz$	-	55	-	pF
Output Capacitance	$C_{oss}$		-	16	-	
Reverse Transfer Capacitance	$C_{rss}$		-	6	-	

Note 3) Pulse test : Pulse width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2\%$ .

# KML0D4P20E

Fig 1.  $I_D - V_{DS}$

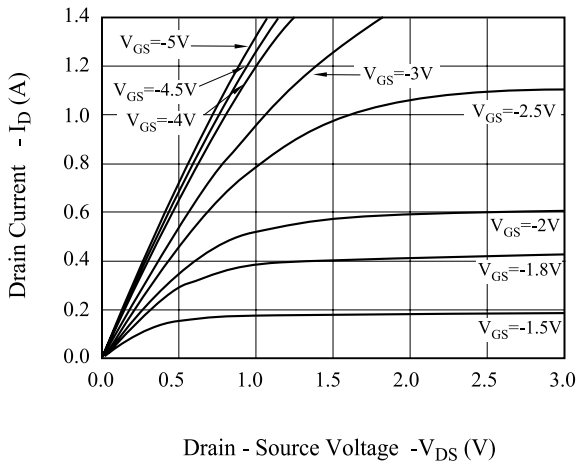


Fig 2.  $R_{DS(on)} - I_D$

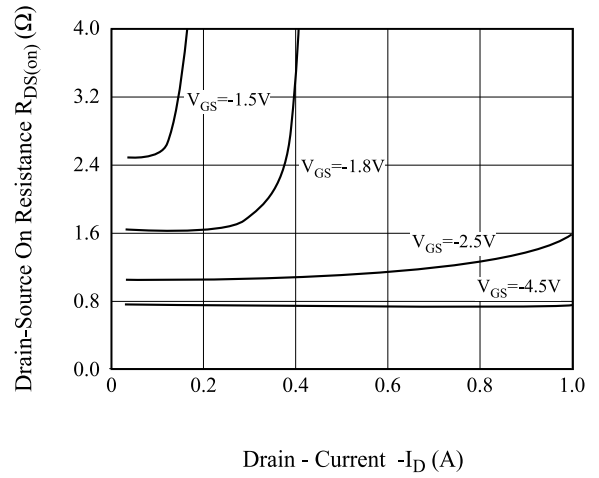


Fig 3.  $I_D - V_{GS}$

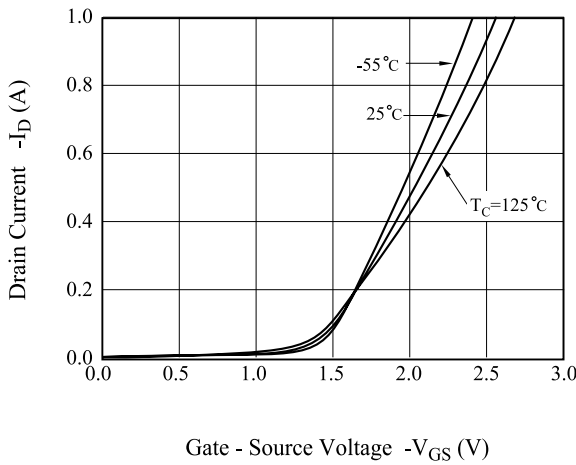


Fig 4.  $R_{DS(ON)} - T_j$

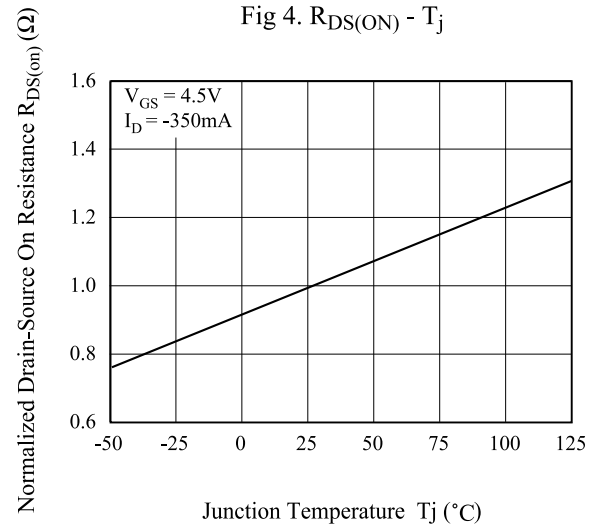


Fig 5.  $V_{th} - T_j$

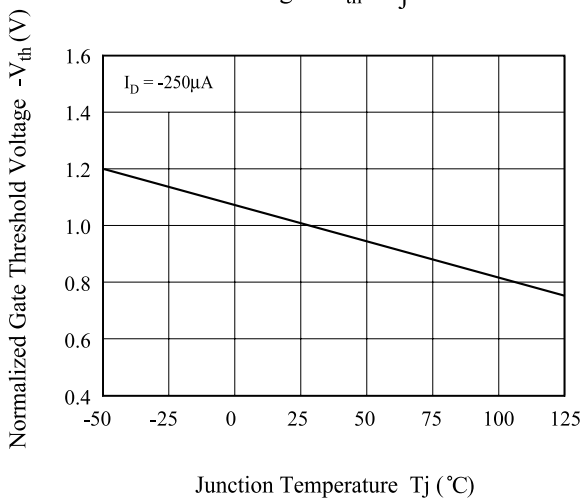
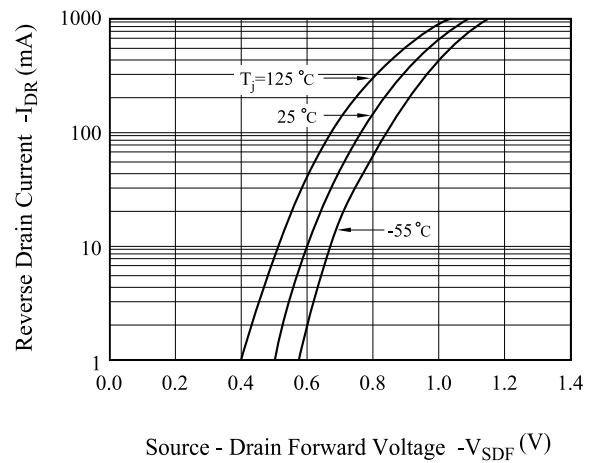


Fig 6.  $I_{DR} - V_{SDF}$



# KML0D4P20E

Fig 7.  $V_{GS} - Q_g$

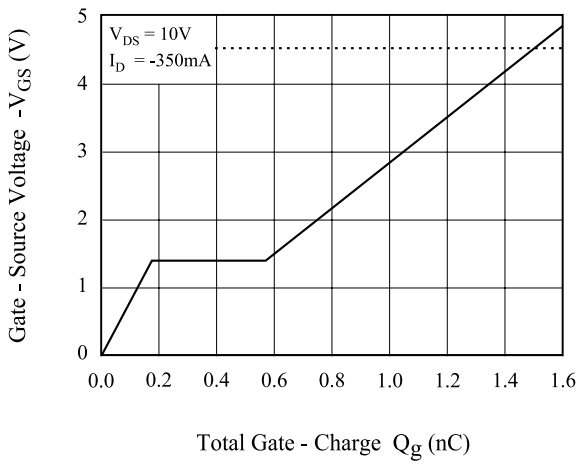


Fig 8.  $C - V_{DS}$

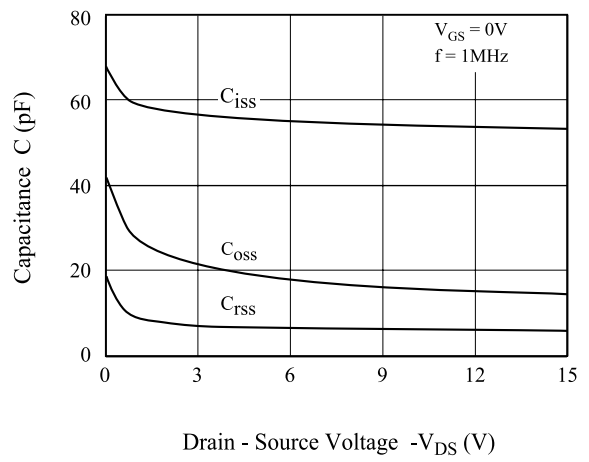


Fig 9. Transient Thermal Response Curve

