KML0D4P20E

P-Ch Trench MOSFET

General Description

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

FEATURES

· V_{DSS}= -20V, I_D= -0.35A

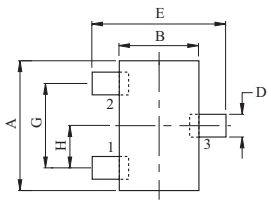
· Drain-Soure ON Resistance

: $R_{DS(ON)}$=1.2Ω @ V_{GS}= -4.5V

: $R_{DS(ON)}$=1.6Ω @ V_{GS}= -2.5V

: $R_{DS(ON)}$=2.7Ω @ V_{GS}= -1.8V

· ESD Protection diode.



DIM	MILLIMETERS
A	1.60±0.20
B	0.85±0.10
C	0.70±0.10
D	0.27±0.10
E	1.60±0.10
F	0.39±0.10
G	1.00±0.10
H	0.50
J	0.13±0.05

1. Source
2. Gate
3. Drain

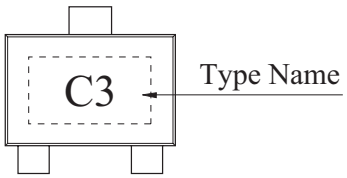
ESM

MAXIMUM RATING (Ta=25℃)

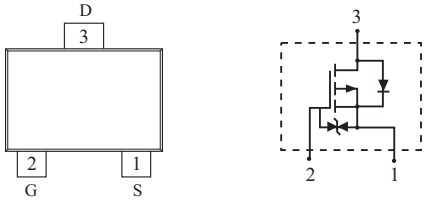
CHARACTERISTIC			SYMBOL	P-Ch	UNIT
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	±6	V
Drain Current	DC @T_A=25℃	(Note 1)	I_D	-350	mA
	DC @T_A=85℃	(Note 1)		-255	
	Pulsed	(Note 1)	I_{DP}	-1400	
Drain Power Dissipation		(Note 2)	P_D	210	mW
Maximum Junction Temperature			T_j	150	℃
Storage 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 ″ ×1 ″ FR4 Board

Marking



PIN CONNECTION (TOP VIEW)



ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D= -250 μA, 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}=±4.5V, V_{DS}=0V	-	-	±10	μA
Gate Threshold Voltage	V_{th}	V_{DS}=V_{GS}, I_D= -250 μA	-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	Ω
		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
Dynamic						
Total Gate Charge	Q_g	V_{DS}= -10V, I_D= -350mA, V_{GS}= -4.5V (Note 3)	-	530	-	pC
Gate-Source Charge	Q_{gs}		-	50	-	
Gate-Drain Charge	Q_{gd}		-	140	-	
Turn-on Delay time	$t_{d(on)}$	V_{DD}= -10V, V_{GS}= -4.5V I_D= -350mA, R_G=10Ω (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	Ciss	V_{DS}=-10V, V_{GS}=0V, f=1.0MHZ	-	55	-	pF
Output Capacitance	Coss		-	16	-	
Reverse Transfer Capacitance	Crss		-	6	-	

Note 3) Pulse test : Pulse width ≤300 μs, Duty Cycle ≤2%.

Fig 1. I_D - V_{DS}

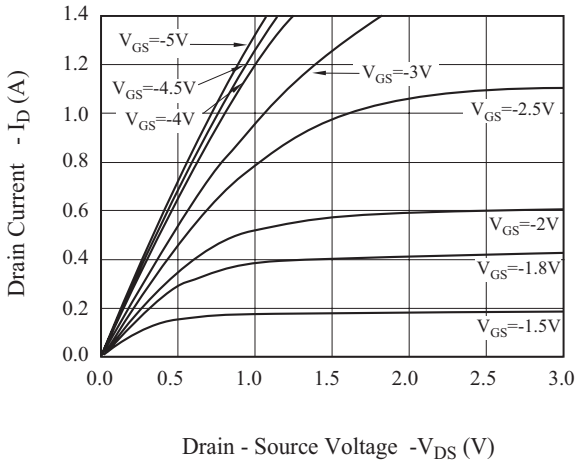


Fig 2. $R_{DS(on)}$ - I_D

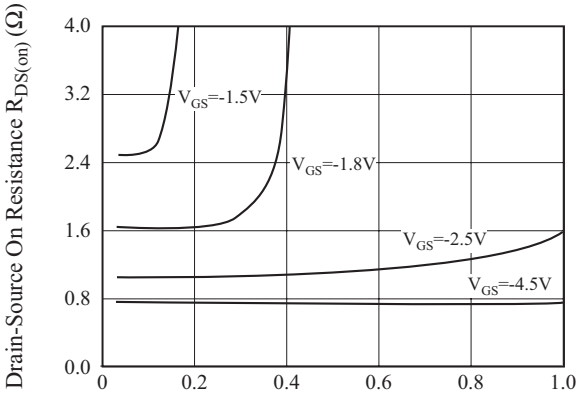


Fig 3. I_D - V_{GS}

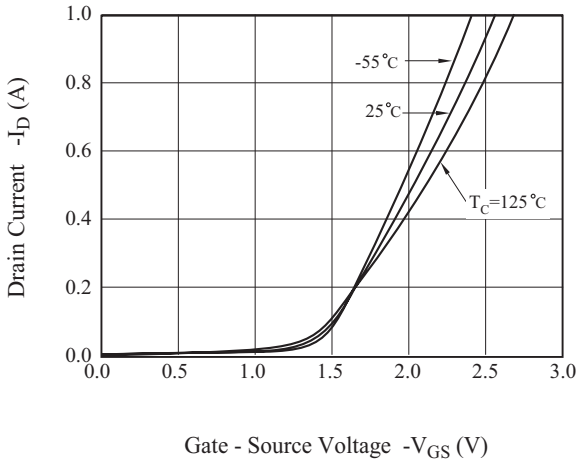


Fig 4. $R_{DS(ON)}$ - T_j

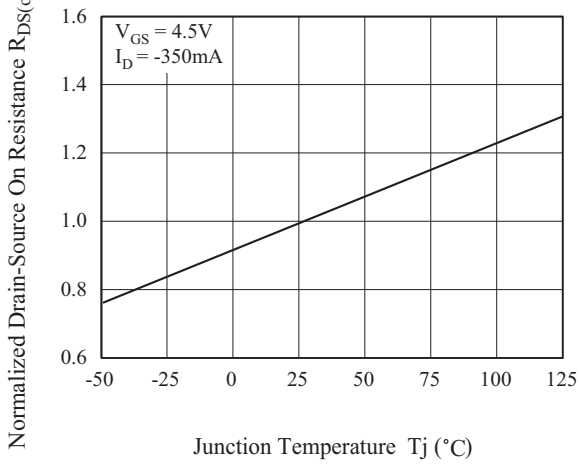


Fig 5. V_{th} - T_j

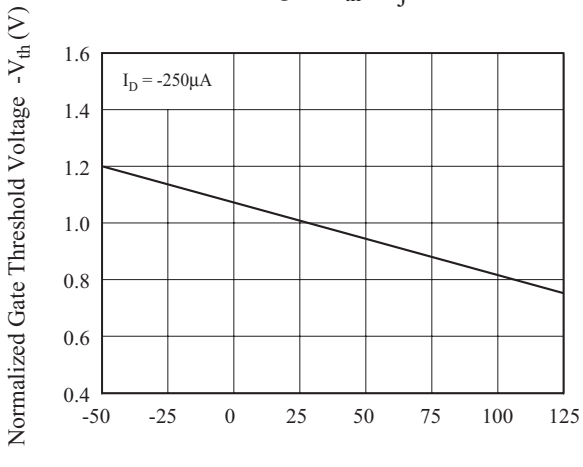


Fig 6. I_{DR} - V_{SDF}

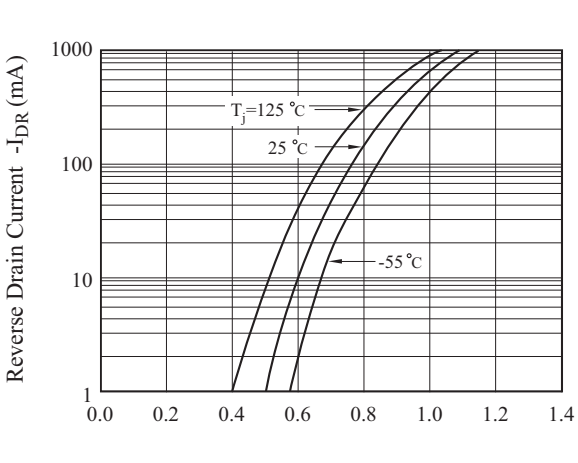


Fig 7. V_{GS} - Q_g

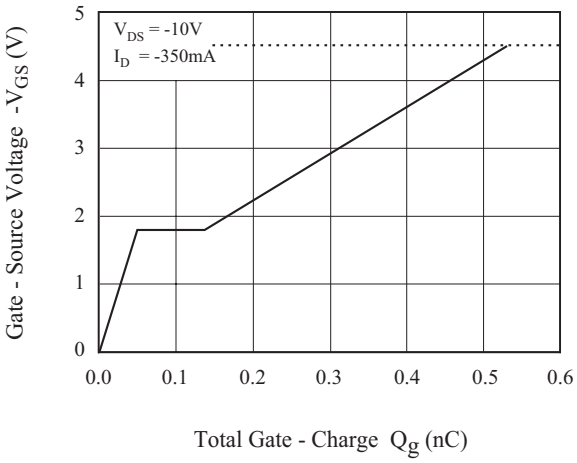


Fig 8. C - V_{DS}

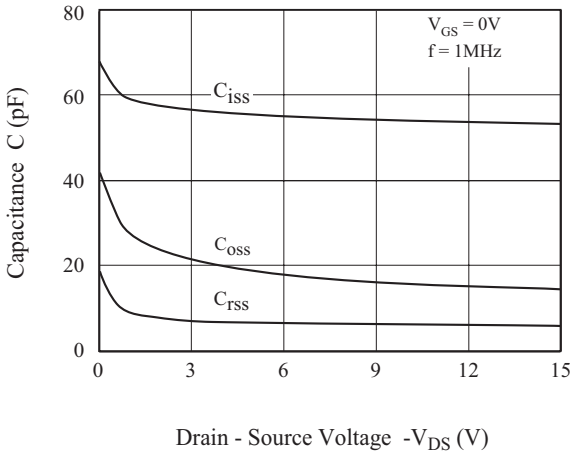


Fig 9. Transient Thermal Response Curve