P-Channel 1.8-V (G-S) MOSFET

KI1407DL

■ Features

● TrenchFET Power MOSFETs

● 1.8 V Rated

SOT-363   Unit: mm
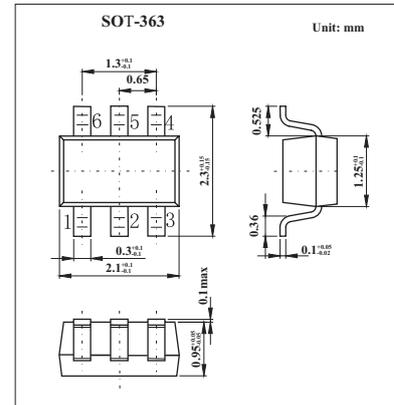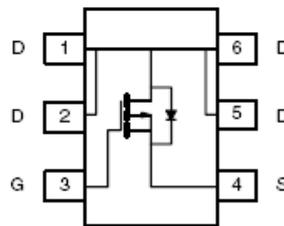
■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	5 secs	Steady State	Unit
Drain-source voltage	V_{DS}	-12		V
Gate-source voltage	V_{GS}	± 8		V
Continuous drain current (T_J = 150℃)* T_A=25℃ T_A=85℃	I_D	- 1.8 - 1.4	- 1.6 - 1.2	A
Pulsed drain current	I_{DM}	-5		A
Continuous source current (diode conduction) *	I_S	-0.8	-0.8	A
Power dissipation * T_A=25℃ T_A=85℃	P_D	0.625 0.400	0.568 0.295	W
Operating junction and storage temperature range	T_j, T_{stg}	-55 to +150		℃

* Surface Mounted on 1" X 1" FR4 Board.

■ Thermal Resistance Ratings Ta = 25℃

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient*	t≤5 sec	R_{thJA}	165	200	℃/W
	Steady State		180	220	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	105	130	

* Surface Mounted on 1" X 1" FR4 Board.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250 \mu A$	-0.45		-1	V
Gate-body leakage	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = \pm 8$ V			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -12$ V, $V_{GS} = 0$ V			-1	μA
		$V_{DS} = -20$ V, $V_{GS} = 0$ V, $T_J = 85$ ℃			-5	
On-state drain current	$I_{D(on)}$	$V_{DS} = -5$ V, $V_{GS} = -4.5$ V	-2			A
Drain-source on-state resistance	$r_{DS(on)}$	$V_{GS} = -4.5$ V, $I_D = -1.8$ A		0.105	0.130	Ω
		$V_{GS} = -2.5$V, $I_D = -1.5$ A		0.140	0.170	
		$V_{GS} = -1.8$V, $I_D = -0.8$A		0.185	0.225	
Forward transconductance	g_{fs}	$V_{DS} = -10$ V, $I_D = -1.8$ A		4.3		S
Diode forward voltage	V_{SD}	$I_S = -0.8$ A, $V_{GS} = 0$ V		-0.77	-1.1	V
Total gate charge *	Q_g	$V_{DS} = -6$V ,$V_{GS} = -4.5$ V , $I_D = -1.8$A		5.5	7.0	nC
Gate-source charge *	Q_{gs}			0.95		
Gate-drain charge *	Q_{gd}			1.10		
Turn-on time	$t_{d(on)}$	$V_{DD} = -6$V , $R_L = 10$Ω , $I_D = -1$A , $V_{GEN} = -4.5$V , $R_G = 6$Ω		8	12	ns
	t_r			33	50	
Turn-off time	$t_{d(off)}$			32	50	
	t_f			29	45	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -0.8$ A, $d_i/d_t = 100$ A/μ s		20	40	

* Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.

■ Marking

Marking	OC