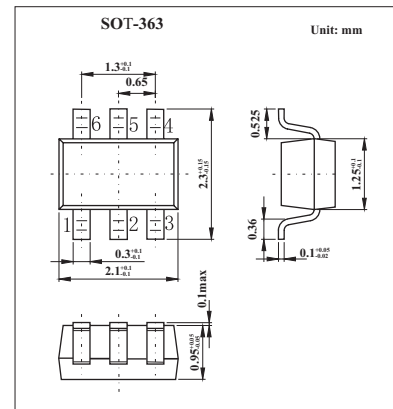
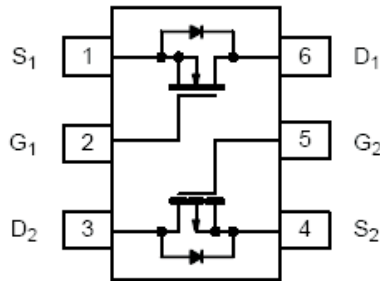


## N- and P-Channel 1.8-V (G-S) MOSFET

## KI1557DH

## ■ Features

- TrenchFET Power MOSFETs
- Fast Switching to Minimize Gate and Switching Losses

■ Absolute Maximum Ratings  $T_A = 25^\circ\text{C}$ 

Parameter	Symbol	N-Channel		P-Channel		Unit	
		5 secs	Steady State	5 secs	Steady State		
Drain-Source Voltage	$V_{DS}$	12		-12		V	
Gate-Source Voltage	$V_{GS}$	$\pm 8$				V	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ )* $T_A = 25^\circ\text{C}$	$I_D$	1.3	1.2	-0.86	-0.77	A	
		$T_A = 85^\circ\text{C}$	0.9	0.8	-0.62	-0.55	A
Pulsed Drain Current	$I_{DM}$	3		-2		A	
Continuous Source Current (Diode Conduction)*	$I_S$	0.5	0.39	-0.5	-0.39	A	
Maximum Power Dissipation*	$P_D$	$T_A = 25^\circ\text{C}$	0.6	0.47	0.6	0.47	W
		$T_A = 85^\circ\text{C}$	0.3	0.25	0.3	0.25	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150				$^\circ\text{C}$	

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

■ Thermal Resistance Ratings  $T_A = 25^\circ\text{C}$ 

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient*	$t \leq 5 \text{ sec}$	170	210	$^\circ\text{C}/\text{W}$
	Steady State	220	265	
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	105	125	

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

## KI1557DH

■ Electrical Characteristics  $T_J = 25^\circ\text{C}$ 

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 100 \mu\text{A}$	N-Ch	0.45		1	V
		$V_{DS} = V_{GS}, I_D = -100 \mu\text{A}$	P-Ch	-0.45		1	
Gate Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{V}, V_{GS} = \pm 8\text{V}$	N-Ch			$\pm 100$	nA
			P-Ch			$\pm 100$	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 9.6\text{V}, V_{GS} = 0\text{V}$	N-Ch			1	nA
		$V_{DS} = -9.6\text{V}, V_{GS} = 0\text{V}$	P-Ch			-1	
		$V_{DS} = 9.6\text{V}, V_{GS} = 0\text{V}, T_J = 85^\circ\text{C}$	N-Ch			5	$\mu\text{A}$
		$V_{DS} = -9.6\text{V}, V_{GS} = 0\text{V}, T_J = 85^\circ\text{C}$	P-Ch			-5	
On State Drain Current*	$I_{D(on)}$	$V_{DS} \geq 5\text{V}, V_{GS} = 4.5\text{V}$	N-Ch	3			A
		$V_{DS} \leq -5\text{V}, V_{GS} = -4.5\text{V}$	P-Ch	2			
Drain Source On State Resistance*	$r_{DS(on)}$	$V_{GS} = 4.5\text{V}, I_D = 1.2\text{A}$	N-Ch		0.195	0.235	$\Omega$
		$V_{GS} = -4.5\text{V}, I_D = -0.77\text{A}$	P-Ch		0.445	0.535	
		$V_{GS} = 2.5\text{V}, I_D = 1.0\text{A}$	N-Ch		0.230	0.280	
		$V_{GS} = -2.5\text{V}, I_D = -0.6\text{A}$	P-Ch		0.735	0.880	
		$V_{GS} = 1.8\text{V}, I_D = 0.2\text{A}$	N-Ch		0.284	0.340	
		$V_{GS} = -1.8\text{V}, I_D = -0.20\text{A}$	P-Ch		1.05	1.26	
Forward Transconductance*	$g_{fs}$	$V_{DS} = 5\text{V}, I_D = 1.2\text{A}$	N-Ch		0.8		mS
		$V_{DS} = -5\text{V}, I_D = -0.77\text{A}$	P-Ch		1.2		
Diode Forward Voltage*	$V_{SD}$	$I_S = 0.39\text{A}, V_{GS} = 0\text{V}$	N-Ch		0.8	1.2	V
		$I_S = -0.93\text{A}, V_{GS} = 0\text{V}$	P-Ch		-0.8	-1.2	
Total Gate Charge	$Q_g$	N-Channel $V_{DS} = 6\text{V}, V_{GS} = 4.5\text{V}, I_D = 1.2\text{A}$	N-Ch		0.8	1.2	pC
Gate Source Charge	$Q_{gs}$		P-Ch		1.1	1.8	
		Gate Drain Charge	$Q_{gd}$	N-Ch		0.15	
P-Ch				0.3			
Turn On Time	$t_{d(on)}$	N Channel $V_{DD} = 6\text{V}, R_L = 12\ \Omega$	N-Ch		15	25	ns
			P-Ch		17	25	
Rise Time	$t_r$	$I_D = 0.5\text{A}, V_{GEN} = 4.5\text{V}, R_g = 6\ \Omega$	N-Ch		25	40	
			P-Ch		30	45	
Turn Off Delay Time	$t_{d(off)}$	P-Channel $V_{DD} = -6\text{V}, R_L = 12\ \Omega$	N-Ch		25	40	
			P-Ch		15	25	
Fall Time	$t_f$	$I_D = -0.5\text{A}, V_{GEN} = -4.5\text{V}, R_g = 6\ \Omega$	N-Ch		10	15	
			P-Ch		10	15	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 0.39\text{A}, di/dt = 100\text{A}/\mu\text{s}$	N-Ch		20	40	
		$I_F = -0.39\text{A}, di/dt = 100\text{A}/\mu\text{s}$	P-Ch		25	40	

\* Pulse test; pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .