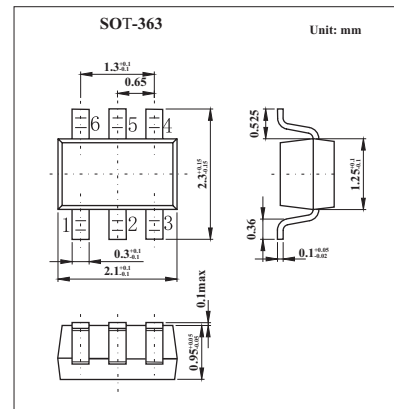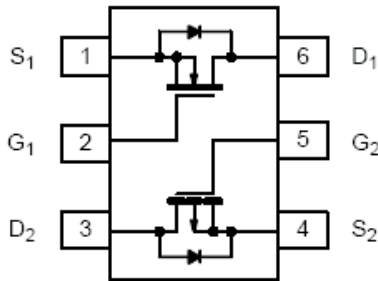**TY Semicondutor®** TY

KI1557DH

SOT-363   Unit: mm

■ Features

● TrenchFET Power MOSFETs

● Fast Switching to Minimize Gate and

   Switching Losses

■ Absolute Maximum Ratings T_A = 25℃

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}	± 8				V
Continuous Drain Current (T_J = 150℃)* T_A = 25℃	I_D	1.3	1.2	-0.86	-0.77	A
T_A = 85℃		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* T_A = 25℃	P_D	0.6	0.47	0.6	0.47	W
T_A = 85℃		0.3	0.25	0.3	0.25	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 T_A = 25℃

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient*	t ≤5 sec	R_{thJA}	170	210	℃/W
	Steady State		220	265	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	105	125	

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

KI1557DH

■ Electrical Characteristics T$_J$ = 25℃

Parameter	Symbol	Testconditons		Min	Typ	Max	Unit
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$ = V$_{GS}$, I$_D$ = 100 μA	N-Ch	0.45		1	V
		V$_{DS}$ = V$_{GS}$, I$_D$ = -100 μA	P-Ch	-0.45		1	
Gate Body Leakage	I$_{GSS}$	V$_{DS}$ = 0 V V$_{GS}$ = ±8V	N-Ch			±100	nA
			P-Ch			±100	
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$ = 9.6V, V$_{GS}$ = 0 V	N-Ch			1	
		V$_{DS}$ = -9.6V, V$_{GS}$ = 0 V	P-Ch			-1	
		V$_{DS}$ = 9.6 V, V$_{GS}$ = 0 V, T$_J$ = 85℃	N-Ch			5	μA
		V$_{DS}$ = -9.6V, V$_{GS}$ = 0 V, T$_J$ = 85℃	P-Ch			-5	
On State Drain Current*	I$_{D(on)}$	V$_{DS}$ ⩾5 V, V$_{GS}$ = 4.5 V	N-Ch	3			A
		V$_{DS}$ ⩽-5 V, V$_{GS}$ = -4.5 V	P-Ch	2			
Drain Source On State Resistance*	r$_{DS(on)}$	V$_{GS}$ = 4.5 V, I$_D$ = 1.2A	N-Ch		0.195	0.235	Ω
		V$_{GS}$ = -4.5 V, I$_D$ = -0.77A	P-Ch		0.445	0.535	
		V$_{GS}$ = 2.5 V, I$_D$ = 1.0A	N-Ch		0.230	0.280	
		V$_{GS}$ = -2.5 V, I$_D$ = -0.6A	P-Ch		0.735	0.880	
		V$_{GS}$ = 1.8 V, I$_D$ = 0.2A	N-Ch		0.284	0.340	
		V$_{GS}$ = -1.8 V, I$_D$ = -0.20A	P-Ch		1.05	1.26	
Forward Transconductance*	g$_{fs}$	V$_{DS}$ = 5 V, I$_D$ = 1.2A	N-Ch		0.8		mS
		V$_{DS}$ = -5 V, I$_D$ = -0.77A	P-Ch		1.2		
Diode Forward Voltage*	V$_{SD}$	I$_S$ = 0.39A, V$_{GS}$ = 0 V	N-Ch		0.8	1.2	V
		I$_S$ = -0.93A, V$_{GS}$ = 0 V	P-Ch		-0.8	-1.2	
Total Gate Charge	Q$_g$	N-Channel	N-Ch		0.8	1.2	pC
		V$_{DS}$ = 6 V, V$_{GS}$ = 4.5V, I$_D$ = 1.2A	P-Ch		1.1	1.8	
Gate Source Charge	Q$_{gs}$	P-Channel	N-Ch		0.15		
			P-Ch		0.3		
Gate Drain Charge	Q$_{gd}$	V$_{DS}$ = -6 V, V$_{GS}$ = -4.5 V, I$_D$ = -0.1A	N-Ch		0.20		
			P-Ch		0.25		
Turn On Time	t$_{d(on)}$	N Channel	N-Ch		15	25	ns
		V$_{DD}$ = 6 V, R$_L$ = 12Ω	P-Ch		17	25	
Rise Time	t$_r$	I$_D$= 0.5 A, V$_{GEN}$ = 4.5V, R$_g$ = 6 Ω	N-Ch		25	40	
			P-Ch		30	45	
Turn Off Delay Time	t$_{d(off)}$	P-Channel	N-Ch		25	40	
		V$_{DD}$ = -6 V, R$_L$ = 12Ω	P-Ch		15	25	
Fall Time	t$_f$	I$_D$= -0.5 A, V$_{GEN}$ = -4.5 V, R$_g$ = 6 Ω	N-Ch		10	15	
			P-Ch		10	15	
Source-Drain Reverse Recovery Time	t$_{rr}$	I$_F$ = 0.39 A, di/dt = 100 A/μs	N-Ch		20	40	
		I$_F$ = -0.39 A, di/dt = 100 A/μs	P-Ch		25	40	

* Pulse test; pulse width ⩽300 μs, duty cycle⩽2%.