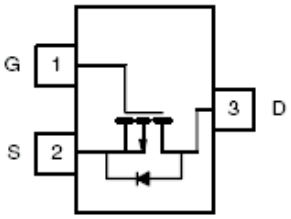
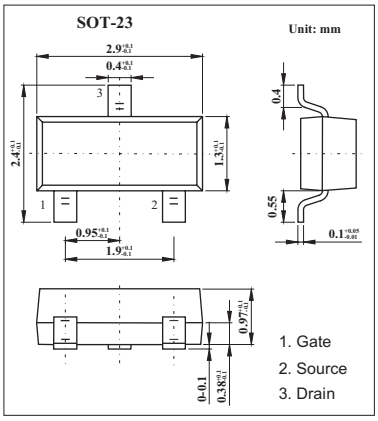
P-Channel 20-V (D-S) MOSFET

KI2351DS

■ Features

- ●TrenchFET Power MOSFET
- ● PWM Optimized
- ● 100 % Rg tested





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	5 sec	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current(T_J=150℃) T_C=25℃ T_C=70℃	I_D	-2.8 -2.4	A
Continuous Drain Current(T_J=150℃) *1,2 T_A=25℃ T_A=70℃	I_D	-2.2 -1.8	A
Pulsed Drain Current	I_{DM}	-10	A
Continuous Source Drain Diode Current T_C=25℃	I_S	-2	
Continuous Source Drain Diode Current *1,2 T_A=25℃		-0.91	
Power Dissipation T_c=25℃ T_c=70℃	P_D	2.1 1.5	W
Power Dissipation *1,2 T_A=25℃ T_A=70℃	P_D	1.0 0.7	W
Jumction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55 to +150	℃

*1Surface mounted on 1" x 1" FR4 Board.

*2 t = 10 sec

■ Thermal Resistance Ratings Ta = 25℃

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient * t ≤5 sec	R_{thJA}	90	115	℃/W
Maximum Junction-to-Foot (Drain) Steady State	R_{thJF}	60	75	

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

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D =-250 μA	-20			V
VDS Temperature Coefficient	$\triangle V_{DS}/T_J$	I_D = -250 μA		-16.7		mV/℃
VGS(th) Temperature Coefficient	$\triangle V_{GS(th)}/T_J$			2.1		
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 μA	-0.6		-1.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-20V, V_{GS} = 0 V			-1	μA
		V_{DS} = -20 V, V_{GS} = 0 V, T_J = 55 ℃			-10	
On-State Drain Current	$I_{D(on)}$	V_{DS} ⩾ -5V, V_{GS} = -4.5V	-10			A
Drain-Source On-State Resistance *	$r_{DS(on)}$	V_{GS} =-4.5V, I_D = -2.4A		0.092	0.115	Ω
		V_{GS} = -2.5V, I_D = -1.8 A		0.164	0.205	
Forward Transconductance *	g_{fs}	V_{DS} =-10 V, I_D =-2.4A		5.5		S
Input Capacitance	C_{iss}	V_{DS} = -10 V, V_{GS} = 0, f = 1 MHz		250		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge	Q_g	V_{DS} = -10 V, V_{GS} = -5.0 V, I_D = -2.4 A		3.4	5.1	nC
Total Gate Charge	Q_g	V_{DS} = -10V ,V_{GS} = -4.5 V , I_D= -2.4A		3.2	5	nC
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			1.4		
Gate Resistance	R_g	f = 1 MHz		8.5	13	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10V , R_L =5.26Ω , I_D = -1.9A , V_{GEN} =-4.5V , R_G = 1Ω		9	14	ns
Rise Time	t_r			30	45	
Turn-Off Delay Time	$t_{d(off)}$			32	48	
Fall Time	t_f			16	24	
Continuous Source-Drain Diode Current	I_S	T_C = 25℃			-2	A
Pulse Diode Forward Current*	I_{SM}				-10	
Body Diode Voltage	V_{SD}	I_S = -2.0 A		-0.8	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = -2.0 A, di/dt = 100 A/μs, T_J = 25℃		17	26	ns
Body Diode Reverse Recovery Charge	Q_{rr}			5	8	nC
Reverse Recovery Fall Time	t_a			14		ns
Reverse Recovery Rise Time	t_b			3		

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

■ Marking

Marking	G1