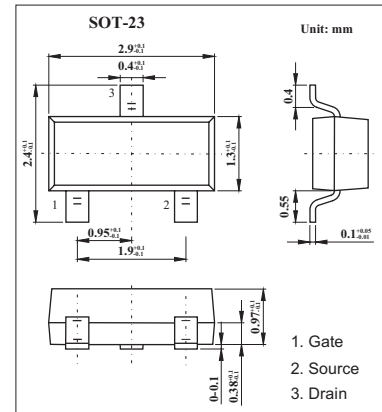
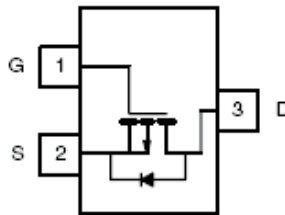


## P-Channel 20-V (D-S) MOSFET

## KI2351DS

## ■ Features

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

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

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

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

\*2  $t = 10$  sec

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

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient * $t \leq 5$ sec	$R_{thJA}$	90	115	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Foot (Drain) Steady State	$R_{thJF}$	60	75	

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

## KI2351DS

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = -250 μA	-20			V
VDS Temperature Coefficient	ΔV <sub>DS</sub> /T <sub>J</sub>	I <sub>D</sub> = -250 μA		-16.7		mV/°C
VGS(th) Temperature Coefficient	ΔV <sub>GS(th)</sub> /T <sub>J</sub>			2.1		
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-0.6		-1.5	V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55 °C			-10	
On-State Drain Current	I <sub>D(on)</sub>	V <sub>DS</sub> ≥ -5V, V <sub>GS</sub> = -4.5V	-10			A
Drain-Source On-State Resistance *	r <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.4A		0.092	0.115	Ω
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1.8 A		0.164	0.205	
Forward Transconductance *	g <sub>fs</sub>	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -2.4A		5.5		S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = 0, f = 1 MHz		250		pF
Output Capacitance	C <sub>oss</sub>			80		
Reverse Transfer Capacitance	C <sub>rss</sub>			55		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -5.0 V, I <sub>D</sub> = -2.4 A		3.4	5.1	nC
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -2.4A		3.2	5	nC
Gate-Source Charge	Q <sub>gs</sub>			0.5		
Gate-Drain Charge	Q <sub>gd</sub>			1.4		
Gate Resistance	R <sub>g</sub>	f = 1 MHz		8.5	13	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, R <sub>L</sub> = 5.26 Ω, I <sub>D</sub> = -1.9A, V <sub>GEN</sub> = -4.5V, R <sub>G</sub> = 1 Ω		9	14	ns
Rise Time	t <sub>r</sub>			30	45	
Turn-Off Delay Time	t <sub>d(off)</sub>			32	48	
Fall Time	t <sub>f</sub>			16	24	
Continuous Source-Drain Diode Current	I <sub>S</sub>	T <sub>C</sub> = 25°C			-2	A
Pulse Diode Forward Current*	I <sub>SM</sub>				-10	
Body Diode Voltage	V <sub>SD</sub>	I <sub>S</sub> = -2.0 A		-0.8	-1.2	V
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = -2.0 A, di/dt = 100 A/μs, T <sub>J</sub> = 25°C		17	26	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			5	8	nC
Reverse Recovery Fall Time	t <sub>a</sub>			14		ns
Reverse Recovery Rise Time	t <sub>b</sub>			3		

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

## ■ Marking

Marking	G1
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