

# 2303 P-Channel 30-V(D-S) MOSFET

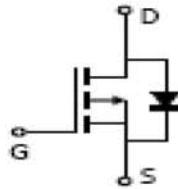
## FEATURE

TrenchFET Power MOSFET

## APPLICATIONS

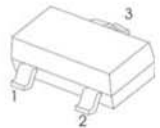
- Load Switch for Portable Devices
- DC/DC Converter

MARKING: S3



## SOT-23

1. GATE
2. SOURCE
3. DRAIN



Maximum ratings ( $T_a=25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current	$I_D$	-1.9	A
Continuous Source-Drain Diode Current	$I_S$	-0.83	
Maximum Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient( $t \leq 5s$ )	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-50 ~ +150	

**Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-1		-3	
Gate-Source Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V			-1	μA
Drain-Source On-State Resistance <sup>a</sup>	R <sub>DSON</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.9A		0.158	0.190	Ω
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.4A		0.275	0.330	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -1.9A	1			S
<b>Dynamic<sup>b</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1MHz		155		pF
Output Capacitance	C <sub>oss</sub>			35		
Reverse Transfer Capacitance	C <sub>rss</sub>			25		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.9A		4	8	nC
				2	4	
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.9A		0.6		
Gate-Drain Charge	Q <sub>gd</sub>			1		
Gate Resistance	R <sub>g</sub>	f = 1MHz	1.7	8.5	17	Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, R <sub>L</sub> = 10Ω, I <sub>D</sub> = -1.5A, V <sub>GEN</sub> = -10V, R <sub>g</sub> = 1Ω		4	8	ns
Rise Time	t <sub>r</sub>			11	18	
Turn-Off Delay Time	t <sub>d(off)</sub>			11	18	
Fall Time	t <sub>f</sub>			8	16	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -15V, R <sub>L</sub> = 10Ω, I <sub>D</sub> = -1.5A, V <sub>GEN</sub> = -4.5V, R <sub>g</sub> = 1Ω		36	44	
Rise Time	t <sub>r</sub>			37	45	
Turn-Off Delay Time	t <sub>d(off)</sub>			12	18	
Fall Time	t <sub>f</sub>			9	14	
<b>Drain-source Body diode characteristics</b>						
Continuous Source-Drain Diode Current	I <sub>S</sub>	T <sub>C</sub> = 25°C			-1.75	A
Pulse Diode Forward Current <sup>a</sup>	I <sub>SM</sub>				-10	
Body Diode Voltage	V <sub>SD</sub>	I <sub>S</sub> = -1.5A		-0.8	-1.2	V

**Notes :**

- a. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.  
b. Guaranteed by design, not subject to production testing.