

## SOT-23 Plastic-Encapsulate MOSFETS

**SI2306** N-Channel 30-V(D-S) MOSFET

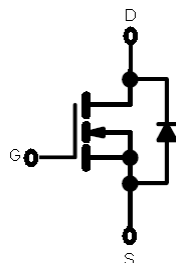
### FEATURE

TrenchFET Power MOSFET

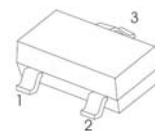
### APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING: \*6\*\*



### SOT-23



1. GATE
2. SOURCE
3. DRAIN

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

Parameter	Symbol	Value	Unit
Drain-Source voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current ( $T_J=150^{\circ}\text{C}$ ) <sup>a,b</sup>	$I_D$	3.16	A
Pulsed Drain Current	$I_{DM}$	20	
Continuous Source Current(Diode Conduction) <sup>a,b</sup>	$I_S$	0.62	
Maximum Power Dissipation <sup>a,b</sup>	$P_D$	0.75	W
Thermal Resistance from Junction to Ambient ( $t \leq 5\text{s}$ )	$R_{\theta JA}$	100	$^{\circ}\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^{\circ}\text{C}$

### Notes :

- Surface Mounted on 1" × 1" FR4 board,  $t \leq 5\text{s}$ .
- Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.0		3.0	
Gate-Body 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			0.5	μA
Drain-Source On-Resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.5A		0.038	0.047	Ω
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.8A		0.052	0.065	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 4.5V, I <sub>D</sub> = 2.5A		7.0		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = 1.25A, V <sub>GS</sub> = 0V		0.8	1.2	V
<b>Dynamic</b>						
Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 5V, I <sub>D</sub> = 2.5A		3.0	4.5	nC
Total Gate Charge	Q <sub>gt</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 2.5A		6	9	
Gate-Source Charge	Q <sub>gs</sub>			1.6		
Gate-Drain Charge	Q <sub>gd</sub>			0.6		
Gate Resistance	R <sub>g</sub>	f = 1.0MHz	2.5	5	7.5	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz		305		pF
Output Capacitance	C <sub>oss</sub>			65		
Reverse Transfer Capacitance	C <sub>rss</sub>			29		
<b>Switching</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15V, R <sub>L</sub> = 15Ω, I <sub>D</sub> ≈ 1A, V <sub>GEN</sub> = 10V, R <sub>g</sub> = 6Ω		7	11	ns
Rise Time	t <sub>r</sub>			12	18	
Turn-Off Delay Time	t <sub>d(off)</sub>			14	25	
Fall Time	t <sub>f</sub>			6	10	

**Notes :**

a. Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.