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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





# SI2306

## N-Channel Enhancement Mode Field Effect Transistor

### Features

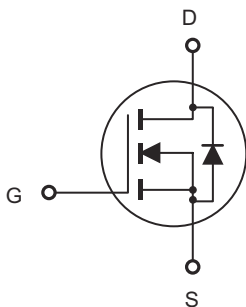
- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- High dense cell design for extremely low  $R_{DS(ON)}$
- Rugged and reliable
- Lead free product is acquired
- SOT-23 Package
- Marking Code: S6

### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	30	V
$I_D$	Drain Current-Continuous <sup>9</sup> (Note:1,2)	3.16	A
$I_{DM}$	Drain Current-Pulsed	20	A
$V_{GS}$	Gate-source Voltage	$\pm 20$	V
$I_S$	Source Current-Continuous(Note:1,2)	0.62	A
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	100	$^{\circ}C/W$
$P_D$	Total Power Dissipation	0.75	W
$T_J$	Operating Junction Temperature	-55 to +150	$^{\circ}C$
$T_{STG}$	Storage Temperature	-55 to +150	$^{\circ}C$

Note1: Surface Mounted on 1"x1" FR4 board,  $t < 5s$   
 Note2: Pulse width limited by maximum junction temperature.

### Internal Block Diagram



### SOT-23

1. GATE  
 2. SOURCE  
 3. DRAIN

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Suggested Solder Pad Layout

# SI2306

## Electrical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			0.5	$\mu A$
Drain-Source On-Resistance <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3.5A$		0.038	0.047	$\Omega$
		$V_{GS} = 4.5V, I_D = 2.8A$		0.052	0.065	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 4.5V, I_D = 2.5A$		7.0		S
Diode Forward Voltage	$V_{SD}$	$I_S = 1.25A, V_{GS} = 0V$		0.8	1.2	V
<b>Dynamic</b>						
Gate Charge	$Q_g$	$V_{DS} = 15V, V_{GS} = 5V, I_D = 2.5A$		3.0	4.5	nC
Total Gate Charge	$Q_{gt}$	$V_{DS} = 15V, V_{GS} = 10V, I_D = 2.5A$		6	9	
Gate-Source Charge	$Q_{gs}$			1.6		
Gate-Drain Charge	$Q_{gd}$			0.6		
Gate Resistance	$R_g$	$f = 1.0\text{MHz}$	2.5	5	7.5	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V, f = 1\text{MHz}$		305		pF
Output Capacitance	$C_{oss}$			65		
Reverse Transfer Capacitance	$C_{rss}$			29		
<b>Switching</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15V,$ $R_L = 15\Omega, I_D \approx 1A,$ $V_{GEN} = 10V, R_g = 6\Omega$		7	11	ns
Rise Time	$t_r$			12	18	
Turn-Off Delay Time	$t_{d(off)}$			14	25	
Fall Time	$t_f$			6	10	

### Notes :

a. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .



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### Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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