



Micro Commercial Components

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20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

SI2306

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

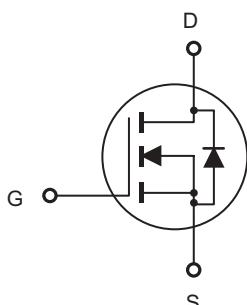
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	30	V
I_D	Drain Current-Continuous9(Note:1,2)	3.16	A
I_{DM}	Drain Current-Pulsed	20	A
V_{GS}	Gate-source Voltage	± 20	V
I_S	Source Current-Continuoud(Note:1,2)	0.62	A
R_{JA}	Thermal Resistance Junction to Ambient	100	$^{\circ}\text{C}/\text{W}$
P_D	Total Power Dissipation	0.75	W
T_J	Operating Junction Temperature	-55 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}\text{C}$

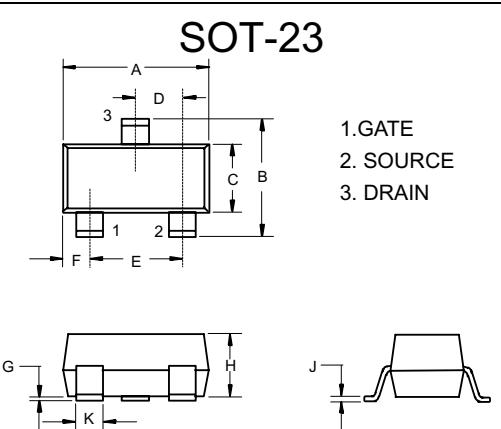
Note1: Surface Mounted on 1"x1" FR4 board, t<5s

Note2: Pulse width limited by maximum junction temperature.

Internal Block Diagram

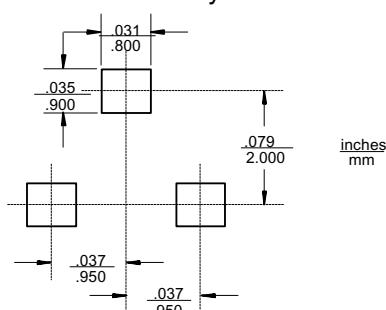


N-Channel Enhancement Mode Field Effect Transistor



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

Notes :

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

TM

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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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