

# SI2304

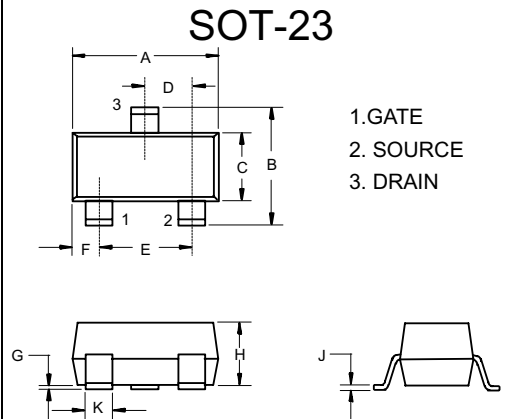
## Features

- 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
- 30V,2.5A,  $R_{DS(ON)}=65m\Omega @V_{GS}=10V$   
 30V,2.0A,  $R_{DS(ON)}=90m\Omega @V_{GS}=4.5V$
- High dense cell design for extremely low  $R_{DS(ON)}$
- Rugged and reliable
- Lead free product is acquired
- SOT-23 Package
- Marking Code: S4

## N-Channel Enhancement Mode Field Effect Transistor

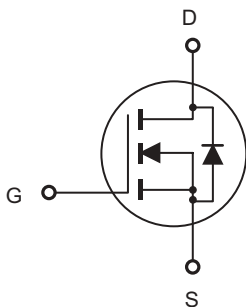
### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	30	V
$I_D$	Drain Current-Continuous	2.5	A
$I_{DM}$	Drain Current-Pulsed	10	A
$V_{GS}$	Gate-source Voltage	$\pm 20$	V
$P_D$	Total Power Dissipation	0.25	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	500	$^{\circ}C/W$
$T_J$	Operating Junction Temperature	-55 to +150	$^{\circ}C$
$T_{STG}$	Storage Temperature	-55 to +150	$^{\circ}C$

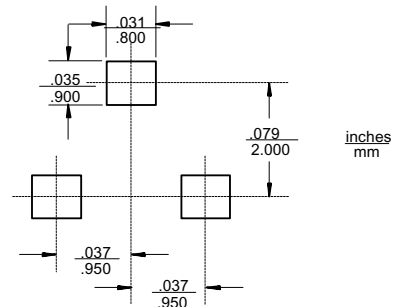


DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Internal Block Diagram



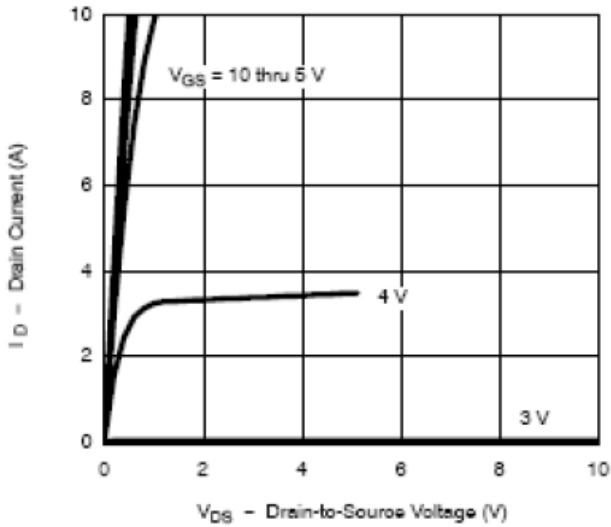
### Suggested Solder Pad Layout



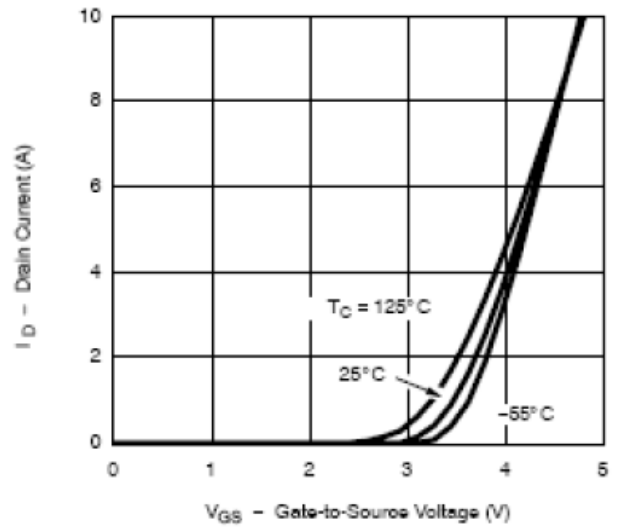
## Electrical Characteristics T<sub>A</sub> = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 1V			1	μA
Gate Body Leakage Current, Forward	I <sub>GSSF</sub>	V <sub>GS</sub> = 20V, V <sub>DS</sub> = 0V			100	nA
Gate Body Leakage Current, Reverse	I <sub>GSSR</sub>	V <sub>GS</sub> = -20V, V <sub>DS</sub> = 0V			-100	nA
<b>On Characteristics</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250μA	1		3	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 2.5A			65	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2A			90	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 4.5V, I <sub>D</sub> = 2.5A		4.6		S
<b>Dynamic Characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0 MHz		240		pF
Output Capacitance	C <sub>oss</sub>			110		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			17		pF
<b>Switching Characteristics</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 15V, I <sub>D</sub> = 1A, V <sub>GEN</sub> = 10V, R <sub>G</sub> = 6Ω, R <sub>L</sub> = 15Ω		8	20	ns
Turn-On Rise Time	t <sub>r</sub>			12	30	ns
Turn-Off Delay Time	t <sub>d(off)</sub>			17	35	ns
Turn-Off Fall Time	t <sub>f</sub>			8	20	ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15V, I <sub>D</sub> = 2.5A, V <sub>GS</sub> = 10V		4.5	10	nC
Gate-Source Charge	Q <sub>gs</sub>			0.8		nC
Gate-Drain Charge	Q <sub>gd</sub>			1.0		nC
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1.25A			1.2	V

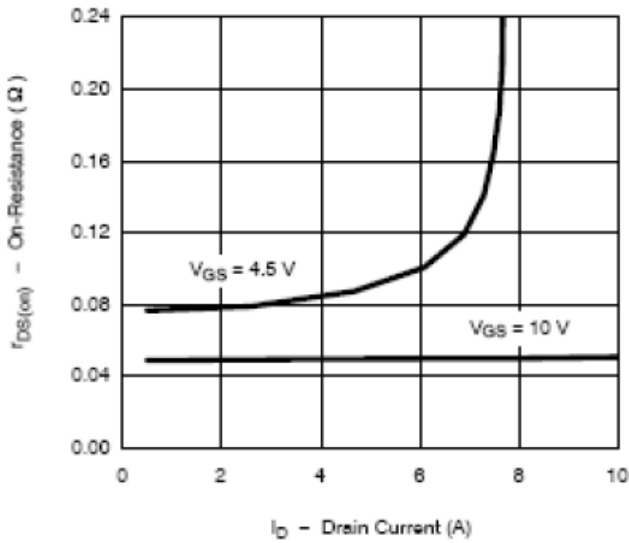
Output Characteristics



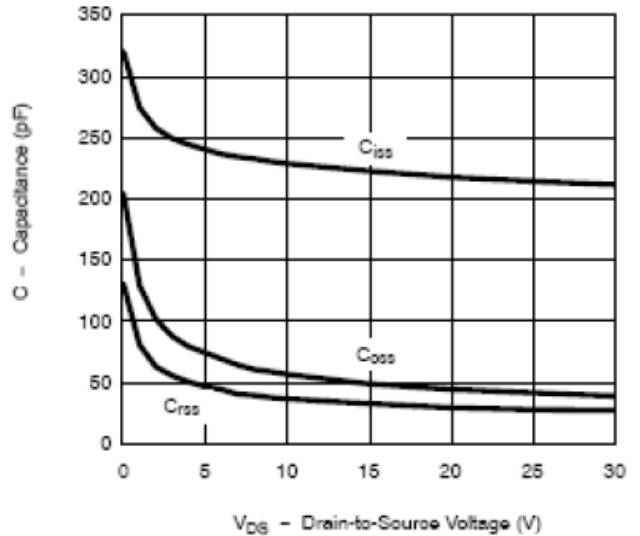
Transfer Characteristics



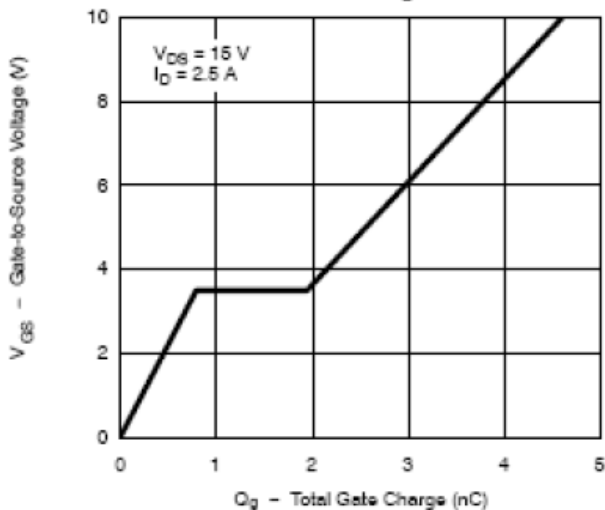
On-Resistance vs. Drain Current



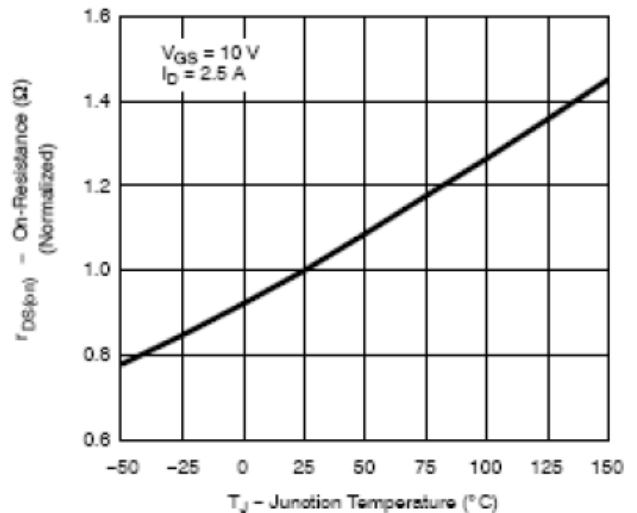
Capacitance

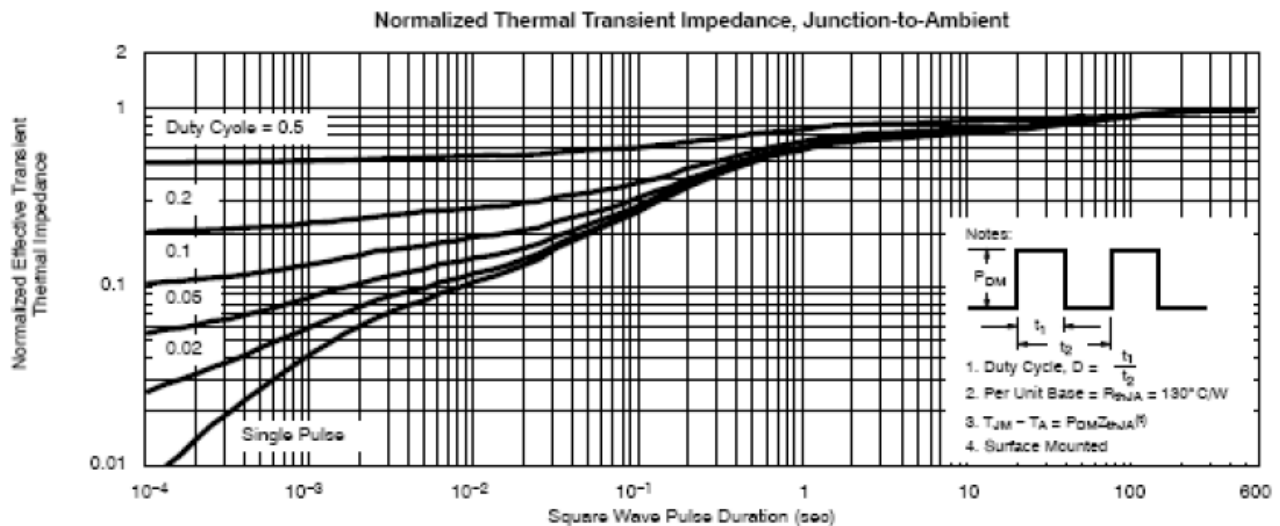
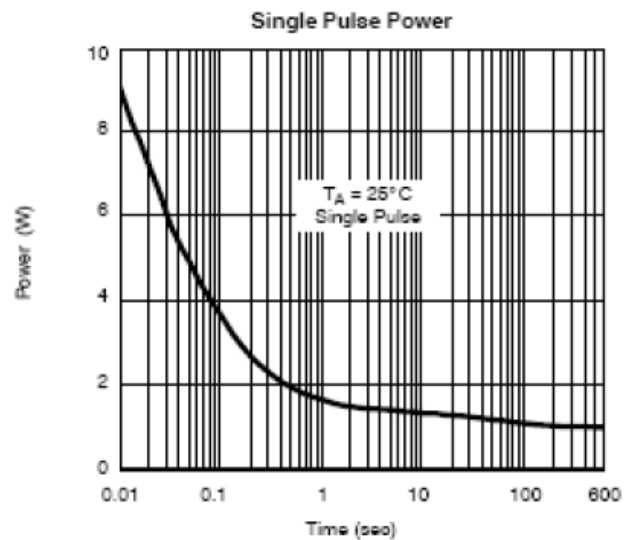
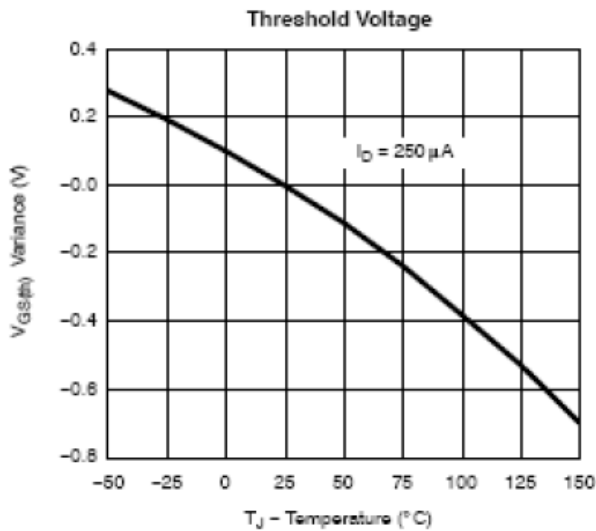
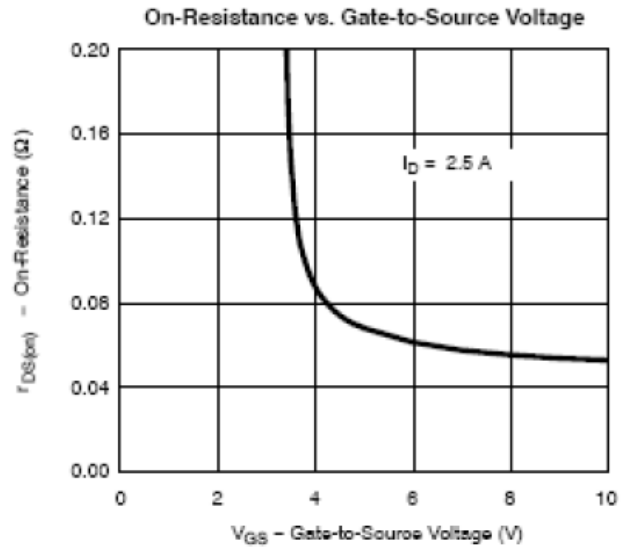
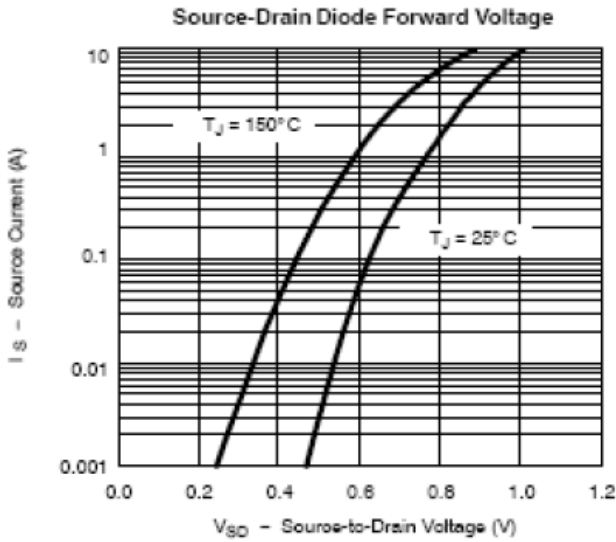


Gate Charge



On-Resistance vs. Junction Temperature







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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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- Техническая поддержка проекта;
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#### Как с нами связаться

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