



Micro Commercial Components



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# SI2305B

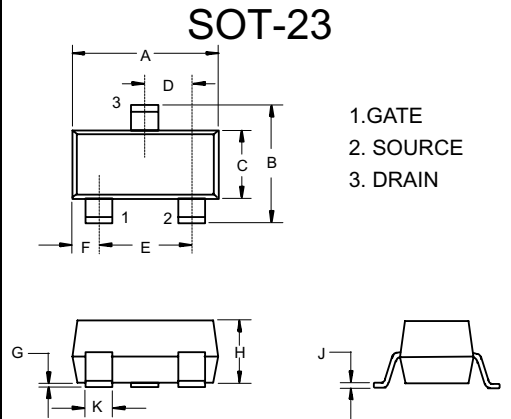
## Features

- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- TrenchFET MOSFET
- Low R<sub>DS(on)</sub>

## P-Channel Enhancement Mode Field Effect Transistor

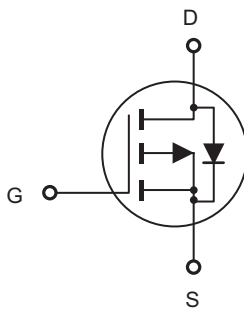
### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V <sub>DS</sub>	Drain-source Voltage	-20	V
I <sub>D</sub>	Continuous Drain Current	-4.2	A
V <sub>GS</sub>	Gate-source Voltage	±8	V
P <sub>D</sub>	Total Power Dissipation	1.4	W
R <sub>θJA</sub>	Thermal Resistance Junction to Ambient <sup>b</sup>	90	°C/W
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature	-55 to +150	°C

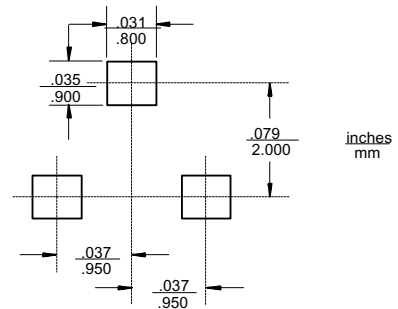


DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

## Internal Block Diagram



### Suggested Solder Pad Layout

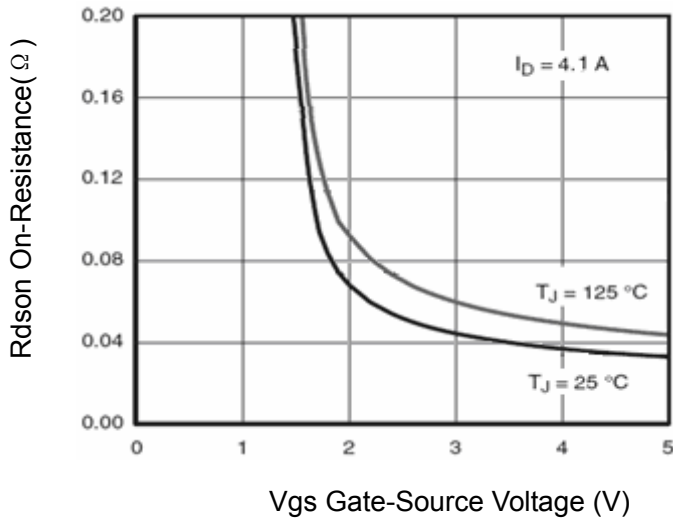


## Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)

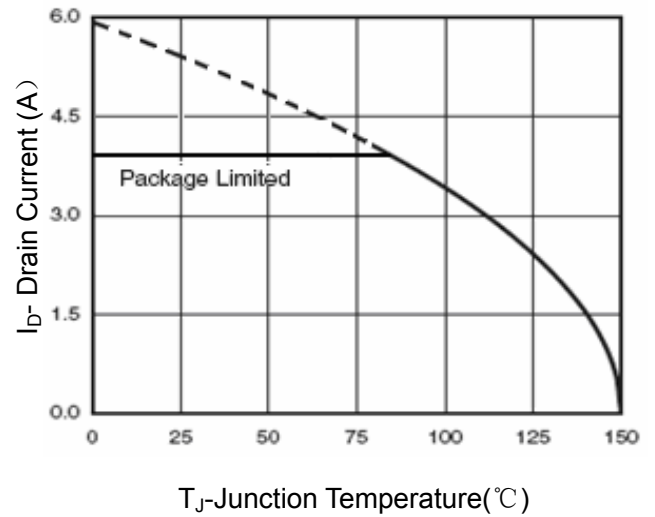
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Gate-source threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.5		-0.9	
Gate-source leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V			±100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -20V, V <sub>GS</sub> = 0V			-1	μA
Drain-source on-state resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.7A		0.035	0.060	Ω
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2.7A		0.046	0.080	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -2.7A		0.090		
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -4.1A	6			S
<b>Dynamic</b>						
Input capacitance <sup>b,c</sup>	C <sub>iSS</sub>	V <sub>DS</sub> = -4V, V <sub>GS</sub> = 0V, f = 1MHz		740		pF
Output capacitance <sup>b,c</sup>	C <sub>oSS</sub>			290		
Reverse transfer capacitance <sup>b,c</sup>	C <sub>rSS</sub>			190		
Total gate charge <sup>b</sup>	Q <sub>g</sub>	V <sub>DS</sub> = -4V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4.1A		7.8	15	nC
		V <sub>DS</sub> = -4V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -4.1A		4.5	9	
Gate-source charge <sup>b</sup>	Q <sub>gs</sub>			1.2		
Gate-drain charge <sup>b</sup>	Q <sub>gd</sub>			1.6		
Gate resistance <sup>b,c</sup>	R <sub>g</sub>	f = 1MHz	1.4	7	14	Ω
Turn-on delay time <sup>b,c</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> = -4V, R <sub>L</sub> = 1.2Ω, I <sub>D</sub> = -3.3A, V <sub>GEN</sub> = -4.5V, R <sub>g</sub> = 1Ω		13	20	ns
Rise time <sup>b,c</sup>	t <sub>r</sub>			35	53	
Turn-off Delay time <sup>b,c</sup>	t <sub>d(off)</sub>			32	48	
Fall time <sup>b,c</sup>	t <sub>f</sub>			10	20	
Turn-on delay time <sup>b,c</sup>	t <sub>d(on)</sub>			5	10	
Rise time <sup>b,c</sup>	t <sub>r</sub>			11	17	
Turn-off delay time <sup>b,c</sup>	t <sub>d(off)</sub>			22	33	
Fall time <sup>b,c</sup>	t <sub>f</sub>			16	24	
<b>Drain-source body diode characteristics</b>						
Continuous source-drain diode current	I <sub>S</sub>	T <sub>C</sub> = 25°C			-4.2	A
Pulse diode forward current <sup>a</sup>	I <sub>SM</sub>				-10	
Body diode voltage	V <sub>SD</sub>	I <sub>F</sub> = -3.3A		-0.8	-1.2	V

**Note :**

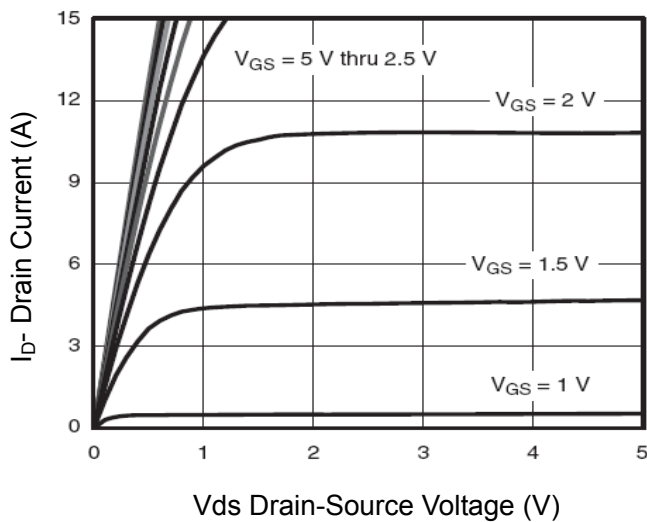
- a. Pulse Test ; Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.
- c. These parameters have no way to verify.



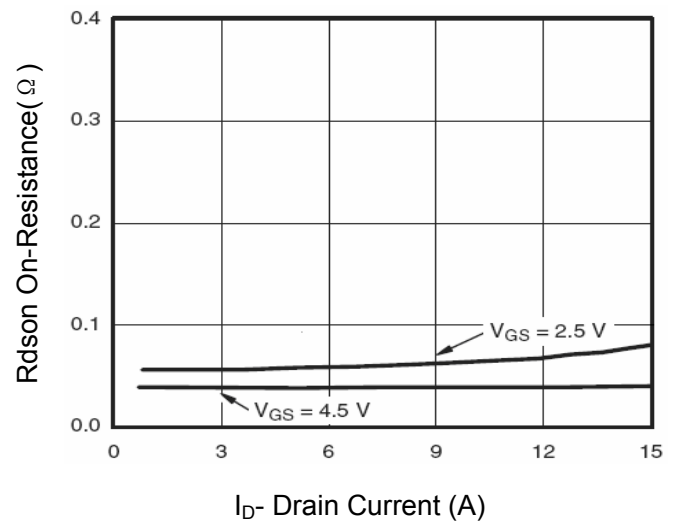
**Figure 1 Rdson vs Vgs**



**Figure 2 Drain Current**



**Figure 3 Output Characteristics**



**Figure 4 Drain-Source On-Resistance**



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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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