Micro Commercial Components

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SI2305

P-Channel Enhancement Mode Field Effect Transistor

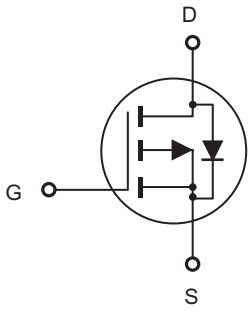
Features

- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- TrenchFET Power MOSFET
- Load Switch for Portable Devices
- DC/DC Converter
- SOT-23 Package
- Marking Code: S5

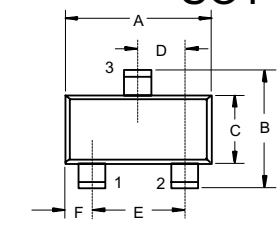
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	-8	V
I_D	Continuous Drain Current	-4.1	A
I_S	Continuous Source-Drain Diode Current	-0.8	A
V_{GS}	Gate-source Voltage	±8	V
P_D	Total Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient[b]	357	℃/W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature	-55 to +150	℃

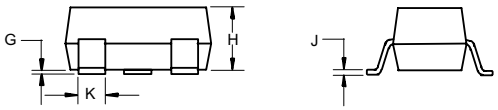
Internal Block Diagram



SOT-23

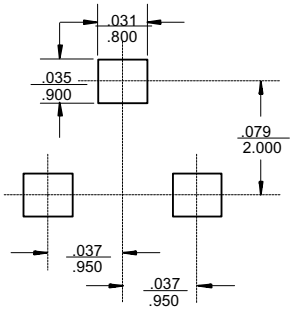


1.GATE
2. SOURCE
3. DRAIN



DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
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



Electrical characteristics (T_a=25°C unless otherwise noted)

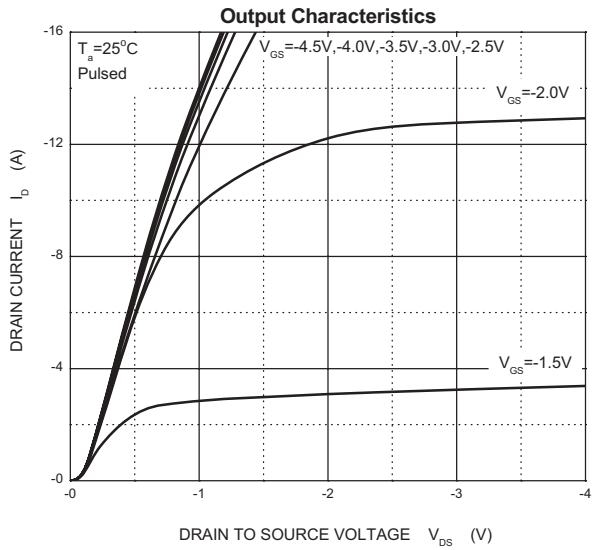
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-8			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.55		-0.9	
Gate-source leakage	I_{GSS}	V_{DS} =0V, V_{GS} =±8V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} =-8V, V_{GS} =0V			-1	μA
Drain-source on-state resistance[a]	$R_{DS(on)}$	V_{GS} =-4.5V, I_D =-3.5A			0.045	Ω
		V_{GS} =-2.5V, I_D =-3A			0.060	
		V_{GS} =-1.8V,I_D=-2.0A			0.090	
Forward transconductance[a]	g_{fs}	V_{DS} =-5V, I_D =-4.1A	6			S
Dynamic						
Input capacitance[b,c]	C_{iss}	V_{DS} =-4V,V_{GS} =0V,f =1MHz		740		pF
Output capacitance[b,c]	C_{oss}			290		
Reverse transfer capacitance[b,c]	C_{rss}			190		
Total gate charge[b]	Q_g	V_{DS} =-4V,V_{GS} =-4.5V, I_D =-4.1A		7.8	15	nC
		V_{DS} =-4V,V_{GS} =-2.5V, I_D =-4.1A		4.5	9	
Gate-source charge[b]	Q_{gs}			1.2		
Gate-drain charge[b]	Q_{gd}			1.6		
Gate resistance[b,c]	R_g	f =1MHz	1.4	7	14	Ω
Turn-on delay time[b,c]	$t_{d(on)}$	V_{DD}=-4V, R_L=1.2Ω ,I_D=-3.3A, V_{GEN}=-4.5V,Rg=1Ω		13	20	ns
Rise time[b,c]	t_r			35	53	
Turn-off Delay time[b,c]	$t_{d(off)}$			32	48	
Fall time[b,c]	t_f			10	20	
Turn-on delay time[b,c]	$t_{d(on)}$	V_{DD}=-4V, R_L=1.2Ω ,I_D =-3.3A, V_{GEN}=-8V,Rg=1Ω		5	10	
Rise time[b,c]	t_r			11	17	
Turn-off delay time[b,c]	$t_{d(off)}$			22	33	
Fall time[b,c]	t_f			16	24	
Drain-source body diode characteristics						
Continuous source-drain diode current	I_S	T_C=25°C			-1.4	A
Pulse diode forward current[a]	I_{SM}				-10	
Body ciode voltage	V_{SD}	I_F=-3.3A		-0.8	-1.2	V

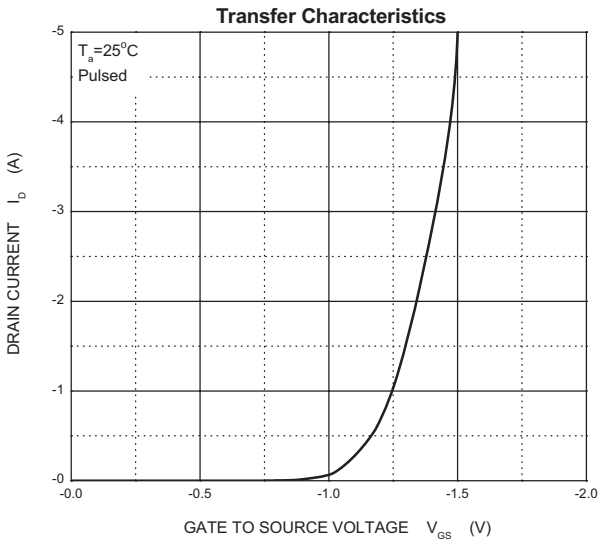
Note :

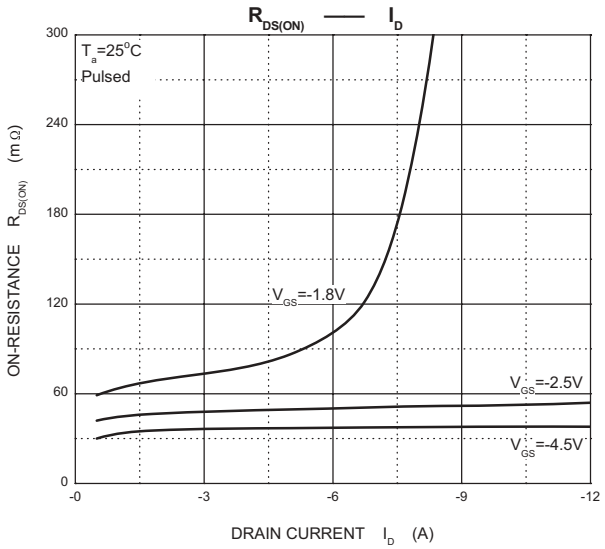
a. Pulse Test ; Pulse Width≤ 300μs, Duty Cycle ≤ 2%.

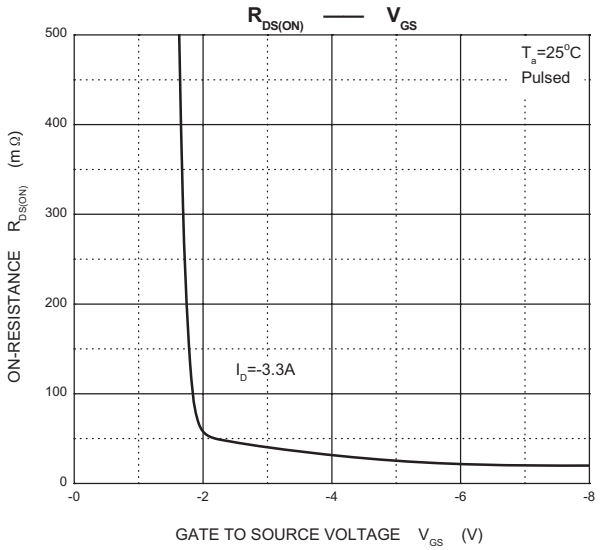
b. Guaranteed by design, not subject to production testing.

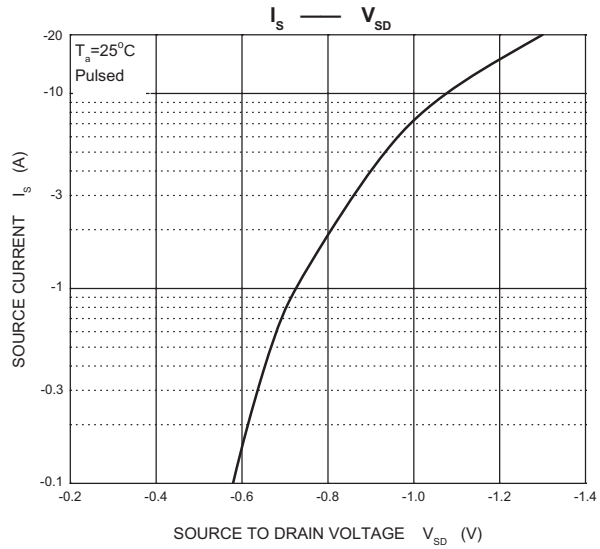
c. These parameters have no way to verify.


Output Characteristics
T_a=25°C
Pulsed
V_GS=-4.5V,-4.0V,-3.5V,-3.0V,-2.5V
V_GS=-2.0V
V_GS=-1.5V
DRAIN CURRENT I_D (A)
DRAIN TO SOURCE VOLTAGE V_DS (V)


Transfer Characteristics
T_a=25°C
Pulsed
DRAIN CURRENT I_D (A)
GATE TO SOURCE VOLTAGE V_GS (V)


R_DS(ON) — I_D
T_a=25°C
Pulsed
V_GS=-1.8V
V_GS=-2.5V
V_GS=-4.5V
ON-RESISTANCE R_DS(ON) (mΩ)
DRAIN CURRENT I_D (A)


R_DS(ON) — V_GS
T_a=25°C
Pulsed
I_D=-3.3A
ON-RESISTANCE R_DS(ON) (mΩ)
GATE TO SOURCE VOLTAGE V_GS (V)


I_S — V_SD
T_a=25°C
Pulsed
SOURCE CURRENT I_S (A)
SOURCE TO DRAIN VOLTAGE V_SD (V)

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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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