



Micro Commercial Components



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SI2312

N-Channel Enhancement Mode Field Effect Transistor

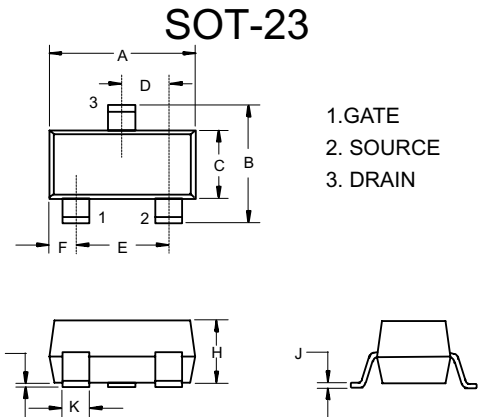
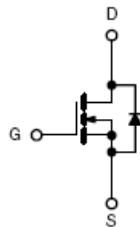
Features

- 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
- Marking Code: S12

Maximum Ratings @ 25°C Unless Otherwise Specified

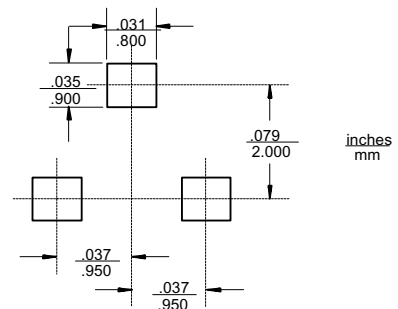
Symbol	Parameter	Rating	Unit
V _{DS}	Drain-source Voltage	20	V
I _D	Continuous Drain Current	5.0	A
I _S	Continuous Source-Drain Diode Current	1.04	A
V _{GS}	Gate-source Voltage	±8	V
P _D	Total Power Dissipation	0.35	W
R _{θJA}	Thermal Resistance Junction to Ambient	357	°C/W
T _J	Operating Junction Temperature	-55 to +150	°C
T _{STG}	Storage Temperature	-55 to +150	°C

Internal Block Diagram



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



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$T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

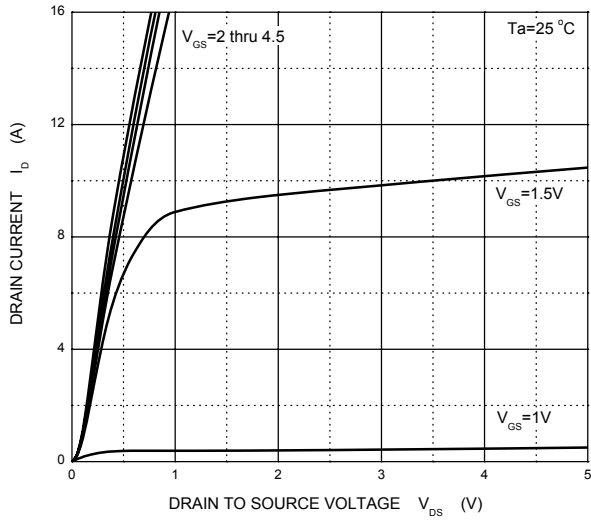
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1.0	μA
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.45		1.0	V
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$			0.0318	Ω
		$V_{GS} = 2.5V, I_D = 4.7A$			0.0356	
		$V_{GS} = 1.8V, I_D = 4.3A$			0.0414	
Forward transconductance ^a	g_{fs}	$V_{DS} = 10V, I_D = 5.0A$	6			S
Dynamic^b						
Input capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		865		pF
Output capacitance	C_{oss}			105		
Reverse transfer capacitance	C_{rss}			55		
Gate resistance	R_g	$f = 1MHz$	0.5		4.8	Ω
Turn-on delay Time	$t_{d(on)}$	$V_{GEN} = 5V, V_{DD} = 10V,$ $I_D = 4A, R_G = 1\Omega, R_L = 2.2\Omega$			10	ns
Rise time	t_r				20	
Turn-off Delay time	$t_{d(off)}$				32	
Fall time	t_f				12	
Drain-source body diode characteristics						
Forward diode voltage	V_{SD}	$V_{GS} = 0V, I_S = 4A$		0.75	1.2	V

Notes :

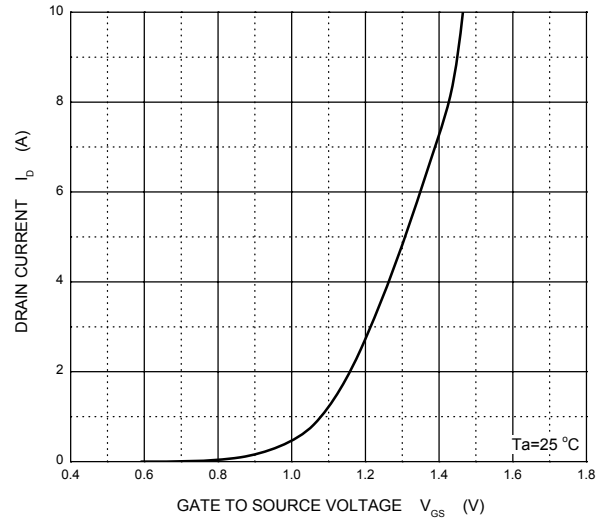
- Pulse Test : pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- These parameters have no way to verify.

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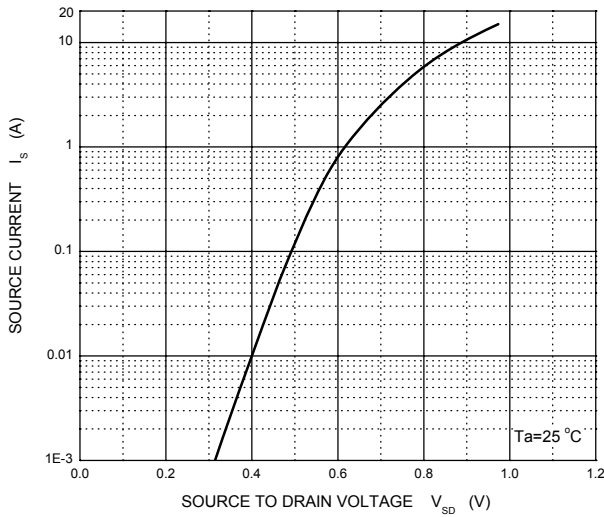
Output Characteristics



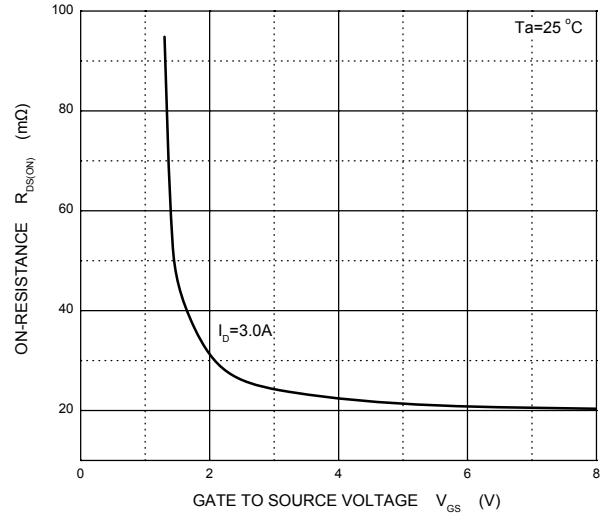
Transfer Characteristics



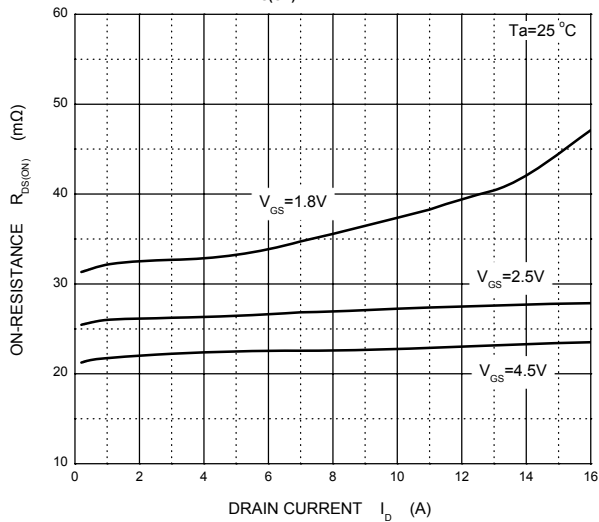
I_S — V_{SD}



$R_{DS(ON)}$ — V_{GS}



$R_{DS(ON)}$ — I_D





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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