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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Micro Commercial Components



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# SI2312

## N-Channel Enhancement Mode Field Effect Transistor

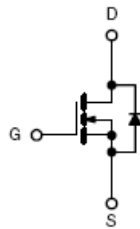
### Features

- 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 <sub>DS</sub>	Drain-source Voltage	20	V
I <sub>D</sub>	Continuous Drain Current	5.0	A
I <sub>S</sub>	Continuous Source-Drain Diode Current	1.04	A
V <sub>GS</sub>	Gate-source Voltage	±8	V
P <sub>D</sub>	Total Power Dissipation	0.35	W
R <sub>θJA</sub>	Thermal Resistance Junction to Ambient	357	°C/W
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature	-55 to +150	°C

### Internal Block Diagram



### SOT-23

1. GATE  
2. SOURCE  
3. DRAIN

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

inches  
mm

# SI2312

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

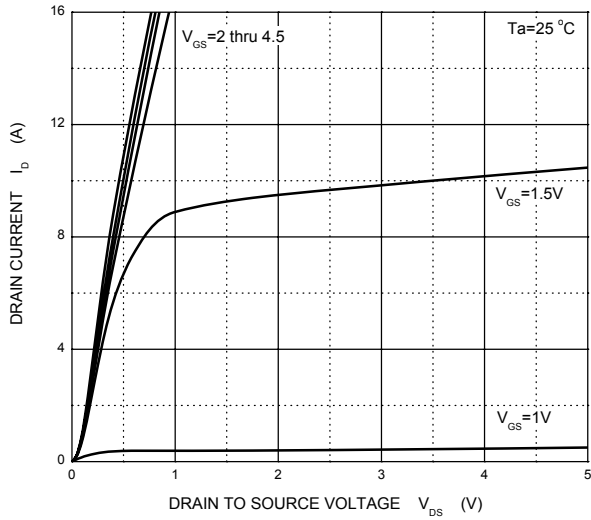
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 8V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$			1.0	$\mu A$
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 <sup>a</sup>	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$			0.0318	$\Omega$
		$V_{GS} = 2.5V, I_D = 4.7A$			0.0356	
		$V_{GS} = 1.8V, I_D = 4.3A$			0.0414	
Forward transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 10V, I_D = 5.0A$	6			S
<b>Dynamic<sup>b</sup></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	$\Omega$
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	
<b>Drain-source body diode characteristics</b>						
Forward diode voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 4A$		0.75	1.2	V

**Notes :**

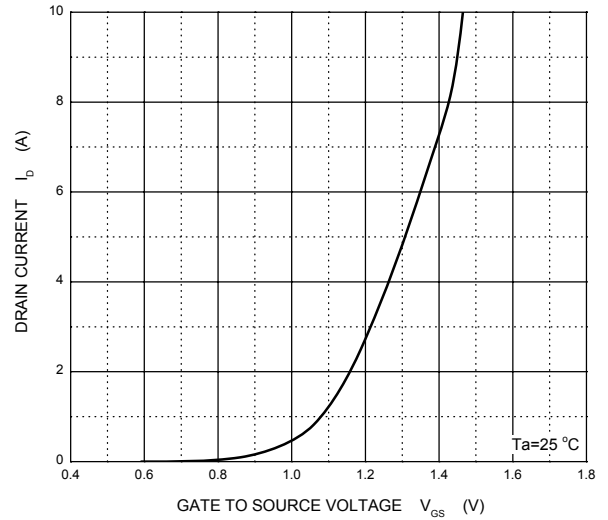
- Pulse Test : pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- These parameters have no way to verify.

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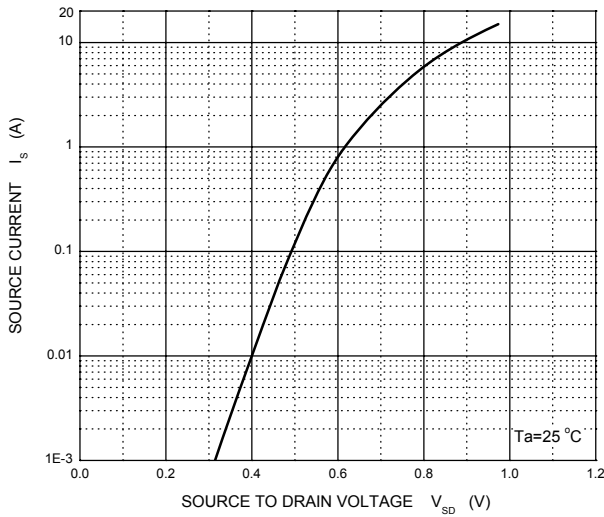
Output Characteristics



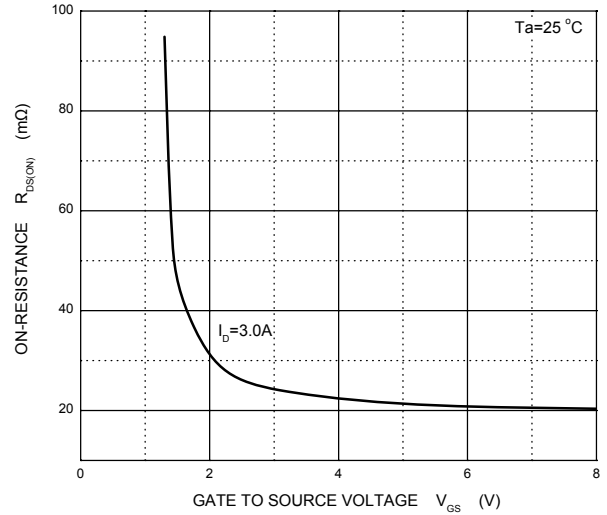
Transfer Characteristics



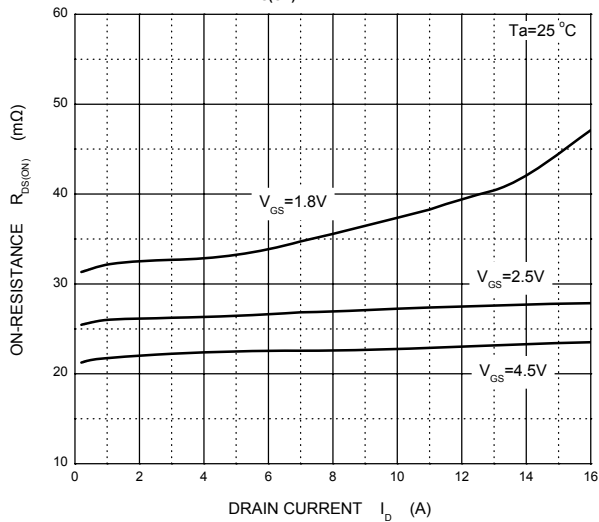
$I_S$  —  $V_{SD}$



$R_{DS(ON)}$  —  $V_{GS}$



$R_{DS(ON)}$  —  $I_D$





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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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