

### Features

- TrenchFET Power MOSFET
- Load Switch for Portable Devices
- Epoxy Meets UL 94 V-0 Flammability Rating
- AEC-Q101 Qualified
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

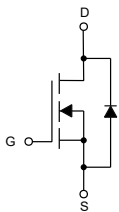
### Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 357°C/W Junction to Ambient

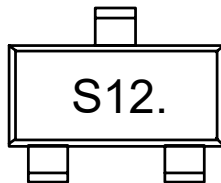
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	±8	V
Drain Current-Continuous	$I_D$	5.0	A
Source-Drain Diode Current-Continuous	$I_S$	1.04	A
Power Dissipation	$P_D$	0.35	W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

### Internal Structure and Marking Code

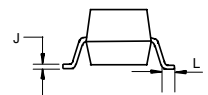
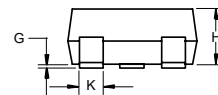
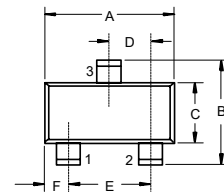


1. GATE
2. SOURCE
3. DRAIN



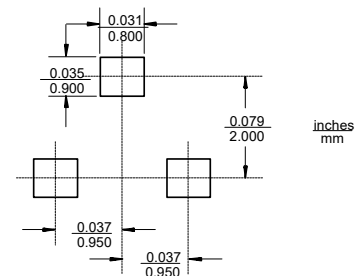
## N-Channel MOSFET

### SOT-23



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

### Suggested Solder Pad Layout



**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45		1.0	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
Drain-Source On-Resistance <sup>(Note 2)</sup>	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=5.0A$			31.8	m $\Omega$
		$V_{GS}=2.5V, I_D=4.7A$			35.6	
		$V_{GS}=1.8V, I_D=4.3A$			41.4	
Forward Transconductance <sup>(Note 2)</sup>	$g_{FS}$	$V_{DS}=10V, I_D=5.0A$	6.0			S
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=4A$		0.75	1.2	V
<b>Dynamic Characteristics<sup>(Note 3)</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	$t_{d(on)}$	$V_{DD}=10V, R_L=2.2\Omega, V_{GEN}=5V, I_D=4A, R_G=1\Omega$			10	ns
Turn-On Rise Time	$t_r$				20	
Turn-Off Delay Time	$t_{d(off)}$				32	
Turn-Off Fall Time	$t_f$				12	

Notes:

 2. Pulse Test: Pulse Width $\leq 300\mu A$ , Duty Cycle $\leq 2\%$ .

3. These parameters have no way to verify.

Curve Characteristics

Fig. 1 - Output Characteristics

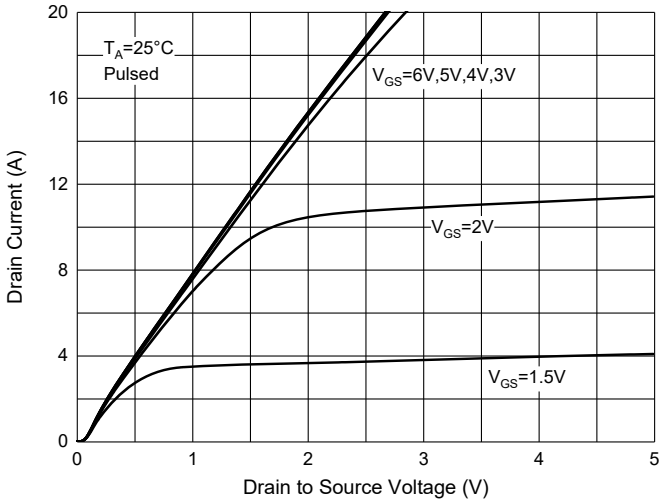


Fig. 2 - Transfer Characteristics

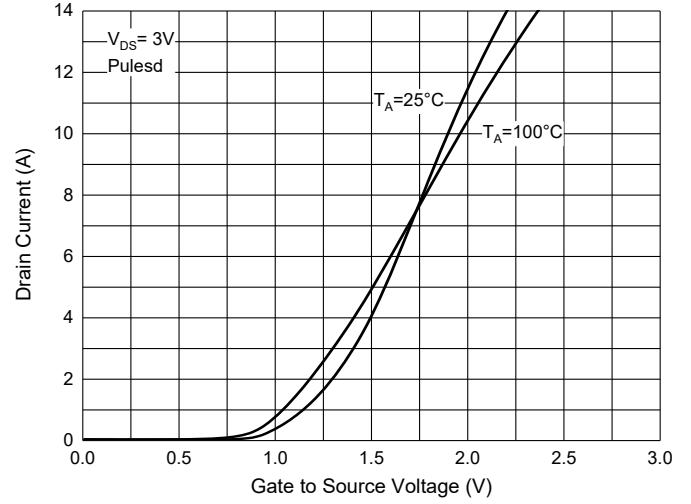


Fig. 3 -  $R_{DS(ON)} - I_D$

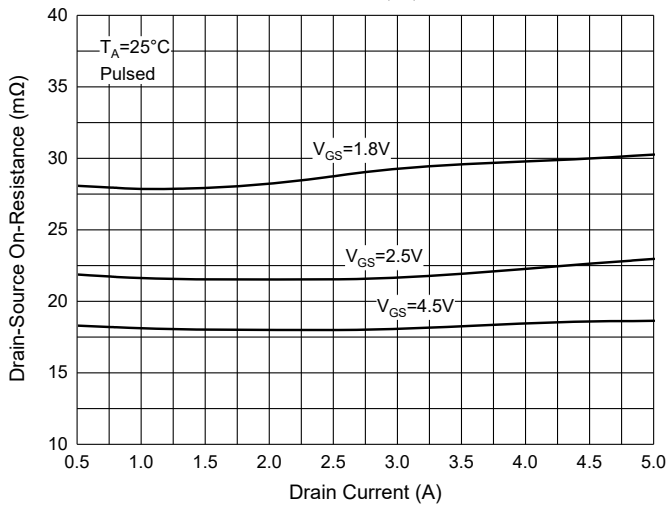


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

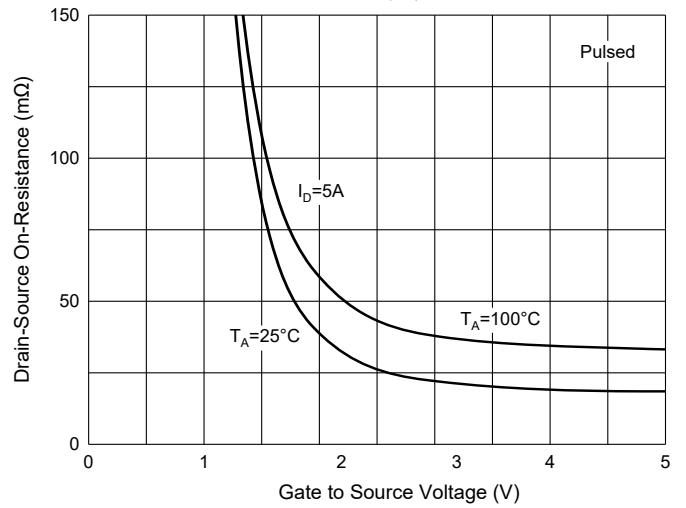


Fig. 5 - Threshold Voltage

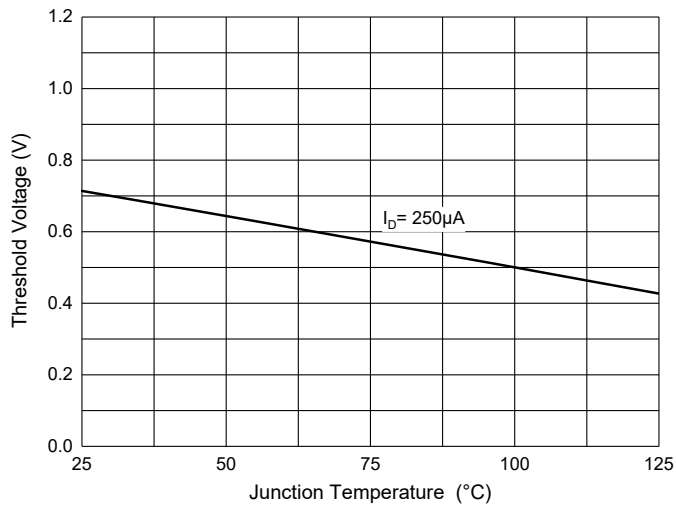
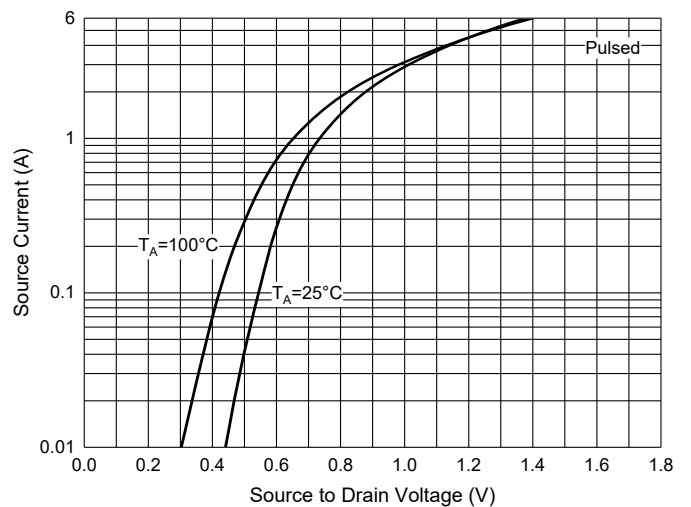


Fig. 6 -  $I_S - V_{SD}$



## Ordering Information

Device	Packing
SI2312HE3-TP	Tape&Reel:3Kpcs/Reel

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