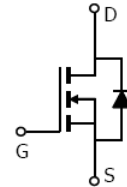


N-Channel Enhancement Mode Field Effect Transistor

Equivalent Circuit

- $V_{DSS} = 20\text{ V}$ $I_D = 5\text{ A}$
- $R_{DS(on)} < 30\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$
- $R_{DS(on)} < 40\text{ m}\Omega @ V_{GS} = 2.5\text{ V}$
- $R_{DS(on)} < 73\text{ m}\Omega @ V_{GS} = 1.8\text{ V}$



DESCRIPTION

The 2312 uses advanced trench technology to provide excellent $R_{DS(on)}$. This device is suitable for use as a uni-directional or bi-directional load switch.

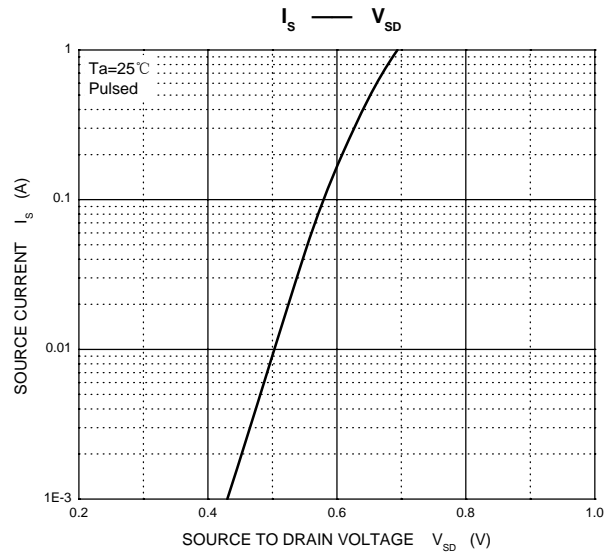
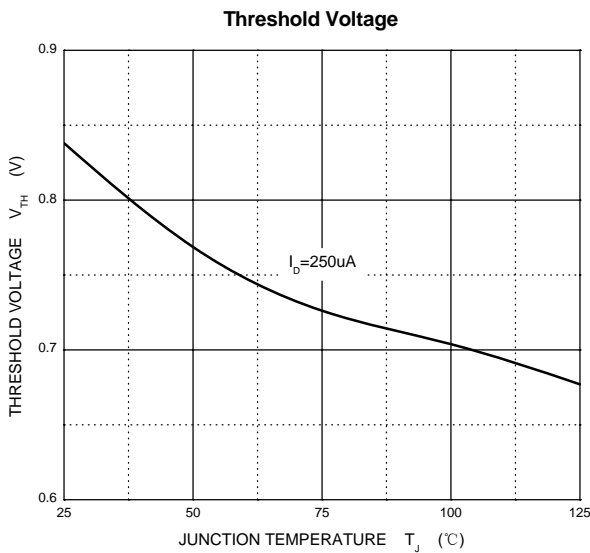
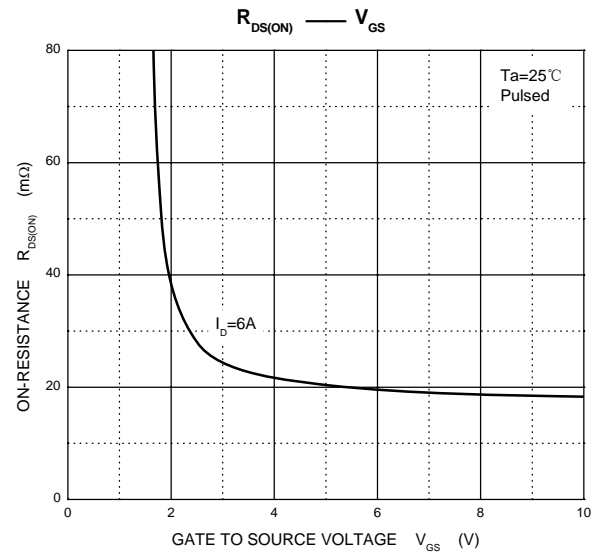
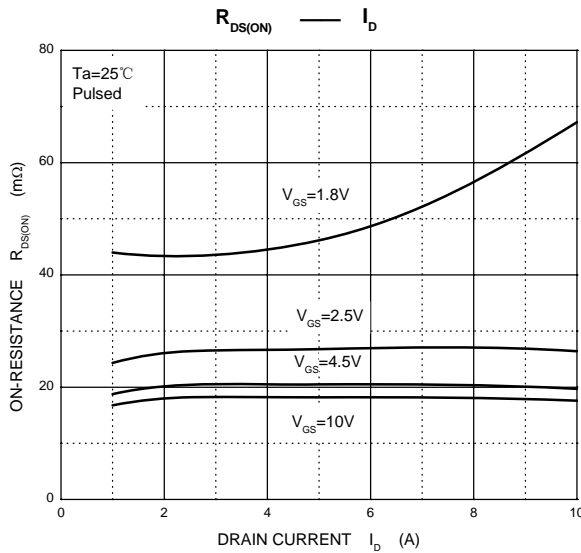
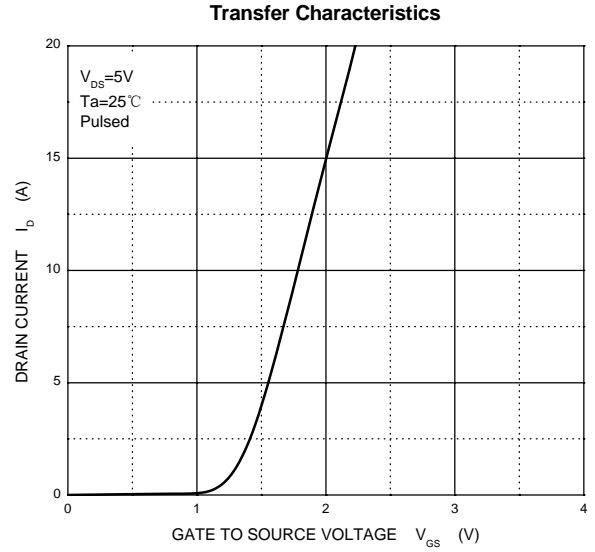
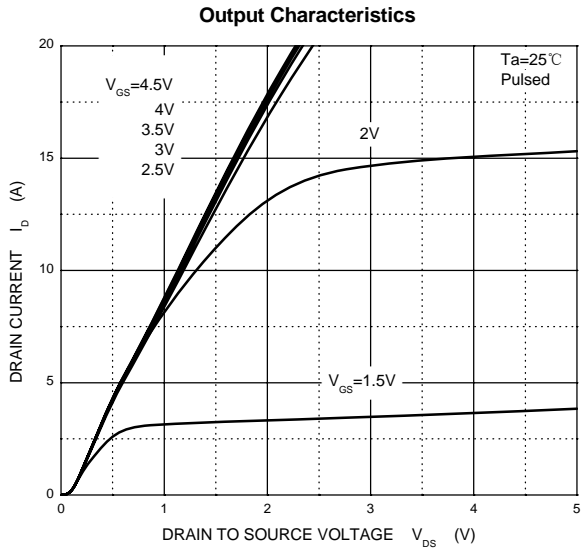
Maximum ratings ($T_a = 25^\circ\text{C}$ unless otherwise noted)

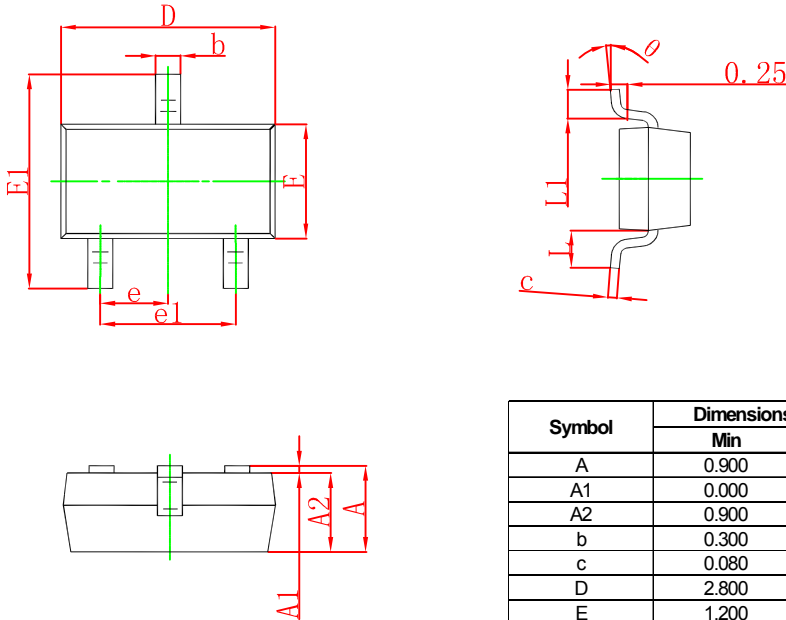
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current	I_D	5	A
Pulsed Drain Current	I_{DM}	25	
Maximum Body-Diode Continuous Current	I_S	2	
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 ~ +150	

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

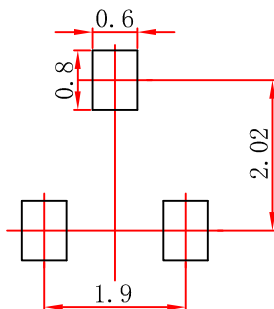
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V$			1.0	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	1.0	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$		24	30	m Ω
		$V_{GS} = 2.5V, I_D = 4.0A$		30	40	
		$V_{GS} = 1.8V, I_D = 2.0A$			73	
Diode forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A$		0.75	1	V
Forward transconductance	g_{fs}	$V_{DS} = 5V, I_D = 3.8A$	4			S
DYNAMIC PARAMETERS*						
Input capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		630		pF
Output capacitance	C_{oss}			164		
Reverse transfer capacitance	C_{rss}			137		
Gate resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.5		Ω
SWITCHING PARAMETERS*						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 5V, V_{DS} = 10V,$ $R_L = 1.7\Omega, R_{GEN} = 6\Omega$		5.5		ns
Rise time	t_r			14		
Turn-off delay time	$t_{d(off)}$			29		
Fall time	t_f			10.2		

*These parameters have no way to verify.

Typical Characteristics


SOT-23 Package Outline Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout


- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.