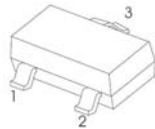# SI2302

SOT-23 Plastic-Encapsulate MOSFETS

FEATURE
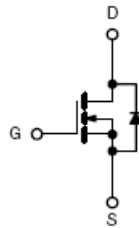
- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

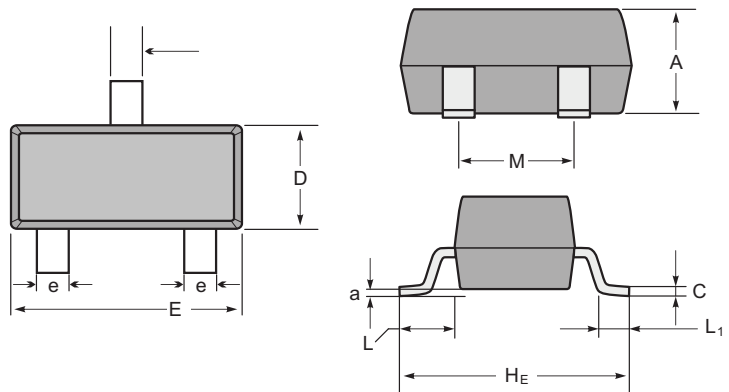**SOT-23**

1. GATE
2. SOURCE
3. DRAIN

Equivalent Circuit

Marking

Type number	Marking code
SI2302	A2SHB

SOT-23 mechanical data

UNIT		A	C	D	E	H_E	e	M	L	L_1	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Maximum ratings (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current	I_D	3	A
Continuous Source-Drain Current(Diode Conduction)	I_S	0.6	
Power Dissipation	P_D	1.2	W
Thermal Resistance from Junction to Ambient (t≤5s)	$R_{\theta JA}$	357	℃/W
Operating Junction	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~+150	

SI2302

Electrical characteristics (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	V$_{(BR)DSS}$	V$_{GS}$ = 0V, I$_D$ =10μA	20			V
Gate-threshold voltage	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ =50μA	0.65	0.95	1.2	
Gate-body leakage	I$_{GSS}$	V$_{DS}$ =0V, V$_{GS}$ =±8V			±100	nA
Zero gate voltage drain current	I$_{DSS}$	V$_{DS}$ =20V, V$_{GS}$ =0V			1	μA
Drain-source on-resistance[a]	r$_{DS(on)}$	V$_{GS}$ =4.5V, I$_D$ =3.6A		0.025	0.040	Ω
		V$_{GS}$ =2.5V, I$_D$ =3.1A		0.050	0.95	
Forward transconductance[a]	g$_{fs}$	V$_{DS}$ =5V, I$_D$ =3.6A		8		S
Diode forward voltage	V$_{SD}$	I$_S$=0.94A,V$_{GS}$=0V		0.76	1.2	V
Dynamic						
Total gate charge	Q$_g$	V$_{DS}$ =10V,V$_{GS}$ =4.5V,I$_D$ =3.6A		4.0	10	nC
Gate-source charge	Q$_{gs}$			0.65		
Gate-drain charge	Q$_{gd}$			1.5		
Input capacitance [b]	C$_{iss}$	V$_{DS}$ =10V,V$_{GS}$ =0V,f=1MHz		300		pF
Output capacitance [b]	C$_{oss}$			120		
Reverse transfer capacitance[b]	C$_{rss}$			80		
Switching[b]						
Turn-on delay time	t$_{d(on)}$	V$_{DD}$=10V, R$_L$=5.5Ω, I$_D$ ≈3.6A, V$_{GEN}$=4.5V,Rg=6Ω		7	15	ns
Rise time	t$_r$			55	80	
Turn-off delay time	t$_{d(off)}$			16	60	
Fall time	t$_f$			10	25	

Notes :

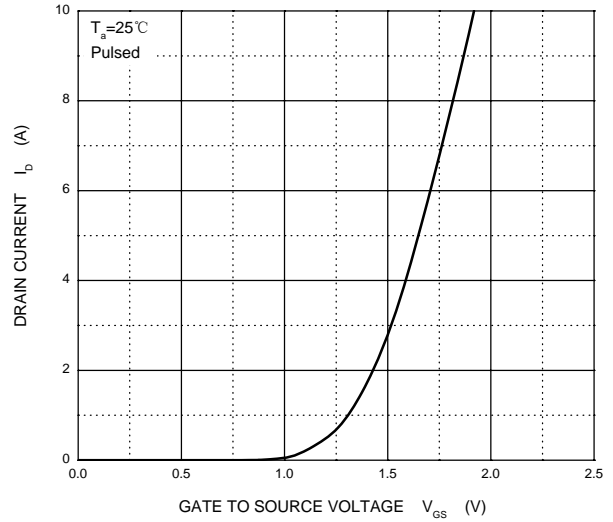a.   Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

b.   These parameters have no way to verify.
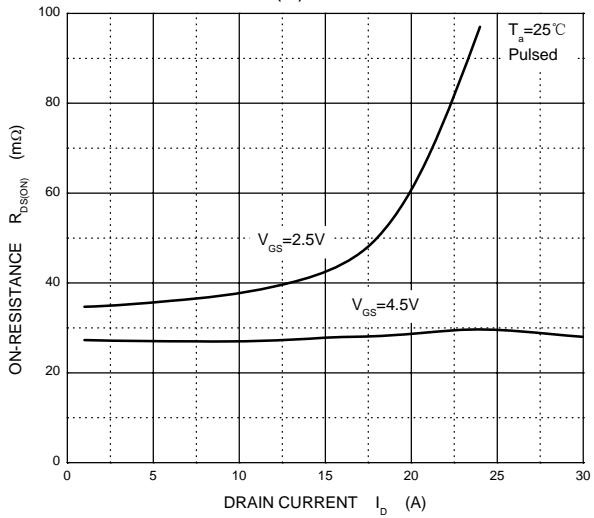
RATING AND CHARACTERISTIC CURVES (SI2302)

Output Characteristics

V_{GS}=3.5V,3.0V,2.5V

V_{GS}=2.0V

T_a=25℃
Pulsed

V_{GS}=1.5V

DRAIN CURRENT I_D (A)

DRAIN TO SOURCE VOLTAGE V_{DS} (V)
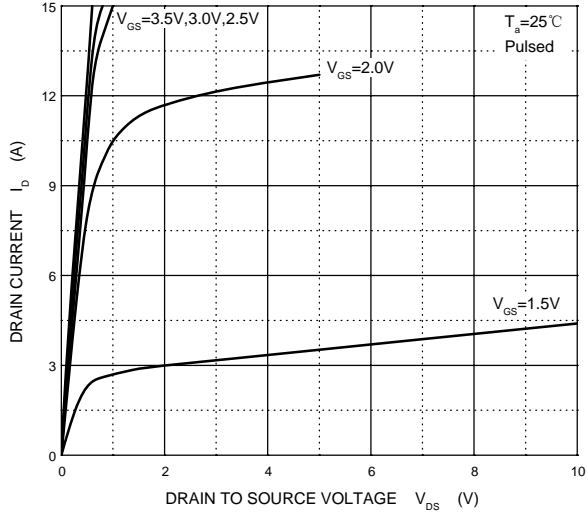
Transfer Characteristics

T_a=25℃
Pulsed

DRAIN CURRENT I_D (A)

GATE TO SOURCE VOLTAGE V_{GS} (V)

$R_{DS(ON)}$ —— I_D

T_a=25℃
Pulsed

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℃
Pulsed

I_D=4.5A

ON-RESISTANCE $R_{DS(ON)}$ (Ω)

GATE TO SOURCE VOLTAGE V_{GS} (V)