SI2302

N-Channel MOSFET

»Features

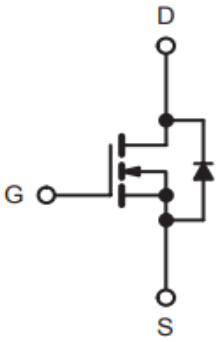
V_{DS} = 20V

I_D = 3A

$R_{DS(ON)}$ @V_{GS} = 4.5V, TYP =30mΩ

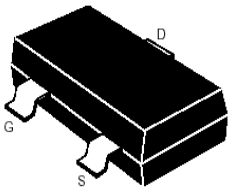
$R_{DS(ON)}$ @V_{GS} = 2.5V, TYP =37mΩ

»Pin Configurations



»General Description

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- SOT-23 for Surface Mount Package.



»Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±10	
Continuous Drain Current		I_D	3	A
Pulsed Drain Current [1]		I_{DM}	12	
Maximum Power Dissipation [2]	TA = 25°	P_D	1.25	W
	TA = 75°C		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Junction-to-Ambient Thermal Resistance (PCB mounted) [2]		R_{thJA}	100	°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) [3]			166	

Notes
1) Pulse width limited by maximum junction temperature.
2) Surface Mounted on FR4 Board, t ≤ 5 sec.

»Electrical Characteristics @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = 250uA	20			V
Drain-Source On-State Resistance[1)]	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3A		30	45	mΩ
		V_{GS} = 2.5V, I_D = 2.5A		37	59	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = 250uA	0.45		1.5	
Zero Gate Voltage Drain Current 0	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V		1		uA
		V_{DS} = 16V, V_{GS} = 0V TJ=55°C			10	
Gate Body Leakage	I_{GSS}	V_{GS} = ± 10V, V_{DS} = 0V			±100	nA
Forward Transconductance[1)]	g_{fs}	V_{DS} = 5V, I_D = 3A		10	—	S
Dynamic						
Total Gate Charge	Q_g	V_{DS} = 10V, I_D = 3A V_{GS} = 4.5V		5.4		nC
Gate-Source Charge	Q_{gs}			0.65		
Gate-Drain Charge	Q_{gd}			1.6		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10V, RL=5.5Ω I_D ≅ 3A,V_{GEN} = 4.5V R_G = 6Ω		12		ns
Turn-On Rise Time	t_r			36		
Turn-Off Delay Time	$t_{d(off)}$			34		
Turn-Off Fall Time	t_f			10		
Input Capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V f = 1.0 MHz		340		pF
Output Capacitance	C_{oss}			115		
Reverse Transfer Capacitance	C_{rss}			33		
Source-Drain Diode						
Max. Diode Forward Current	I_S				1.6	A
Diode Forward Voltage	V_{SD}	I_S = 1.0A, V_{GS} = 0V			1.2	V

1) Pulse test: pulse width <= 300us, duty cycle<= 2%

»Typical Performance Characteristics (TJ = 25 °C, unless otherwise noted)

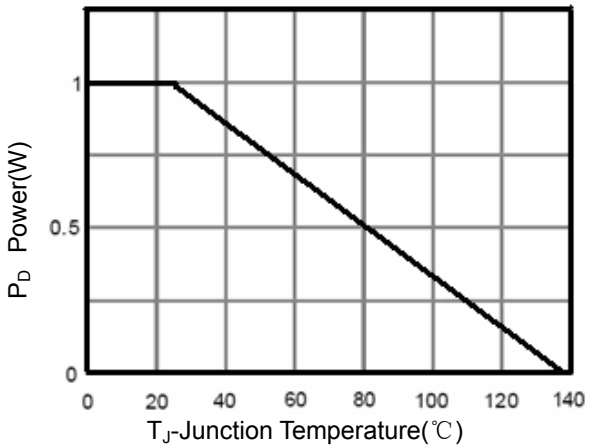


Figure 1 Power Dissipation

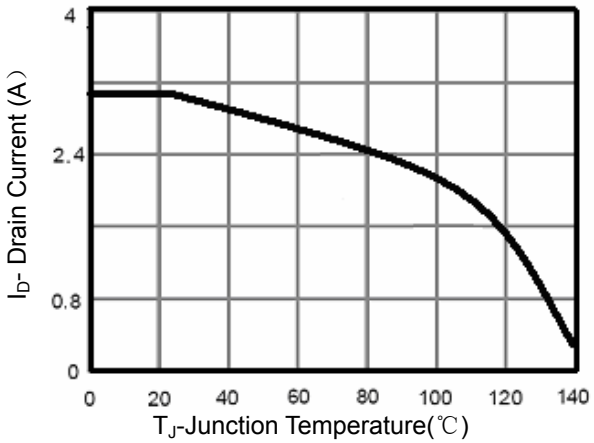


Figure 2 Drain Current

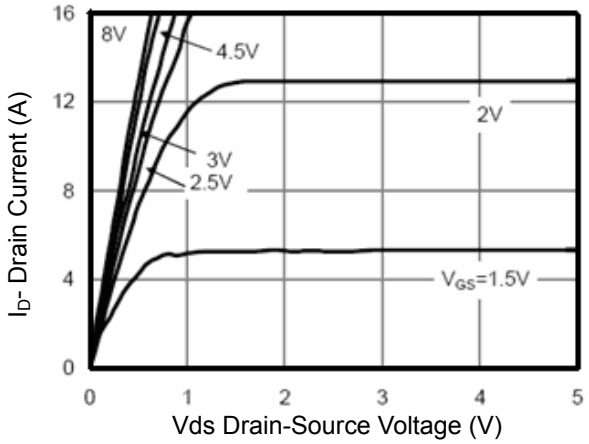


Figure 3 Output Characteristics

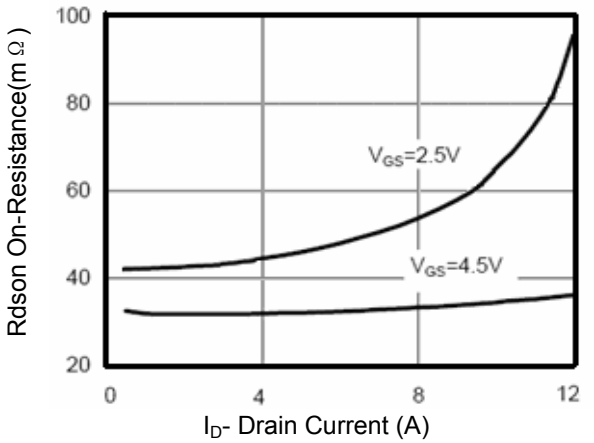


Figure 4 Drain-Source On-Resistance

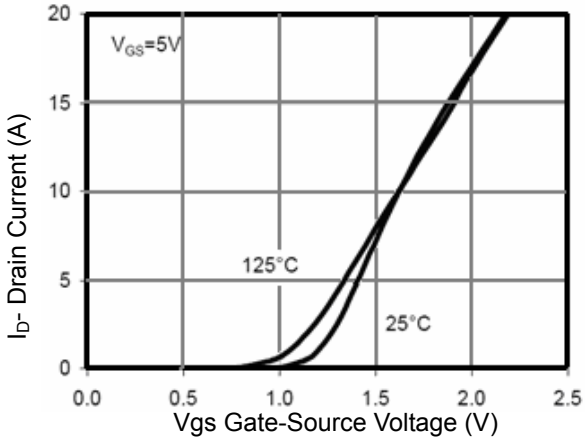


Figure 5 Transfer Characteristics

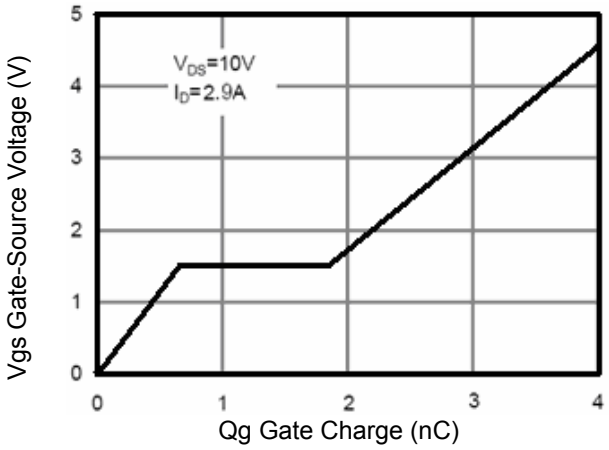


Figure 6 Gate Charge

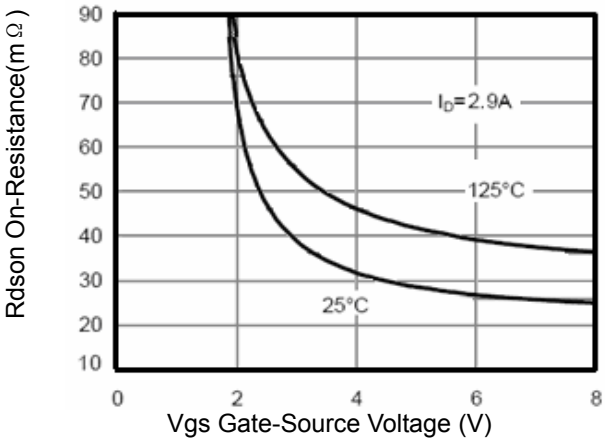


Figure 7 Rdson vs Vgs

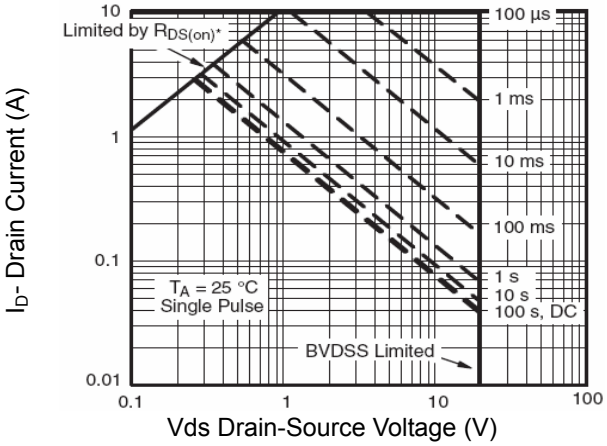
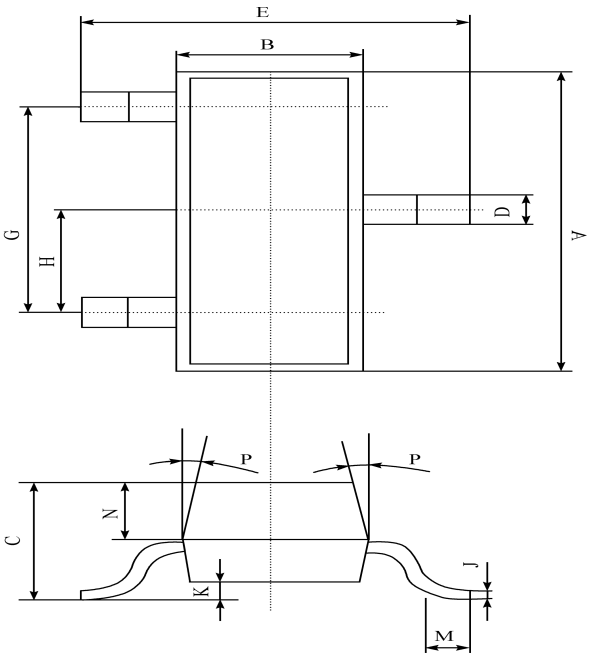


Figure 8 Safe Operation Area

»Package Information

SOT-23



A	2.90±0.10
B	1.30±0.10
C	1.00±0.10
D	0.40±0.10
E	2.40±0.20
G	1.90±0.10
H	0.95±0.05
J	0.13±0.05
K	0.00-0.10
M	≥0.2
N	0.60±0.10
P	7±2°

»Ordering information

Order code	Package	Marking	Base qty	Delivery mode
SI2302	SOT-23	A2sHB	3K	Tape and reel