



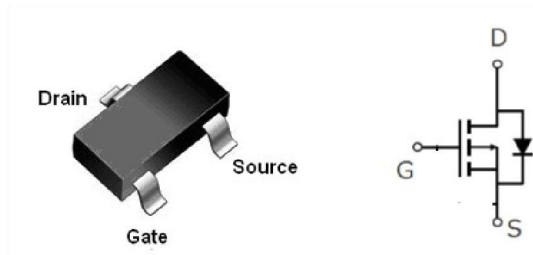
Features

- Low $R_{DS(on)}$ @ $V_{GS} = -5V$
- 5V Logic Level Control
- P Channel SOT23 Package
- Pb-Free, RoHS Compliant

Applications

- DC Fan
- Charger, Fast switch
- Optimized for Power Management Applications for Portable Products, such as H-bridge, Inverters
- Car Charger and Others

Key Items	PMOS	Unit
BVDSS	-20	V
ID	-4.2	A
$R_{DS(on)}$ @-4.5V	38	mΩ
$R_{DS(on)}$ @-2.5V	55	mΩ



Order Information

Product	Package	Marking	Packing	Min Unit Quantity
SI2305	SOT23	S5	3000PCS/Reel	45000PCS

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{GS}	Gate-Source Voltage	±10	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	-20	V
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested®	$T_C = 25^\circ C$	-16	A
I_D	Continuous Drain Current($V_{GS} = -10V$)	$T_C = 25^\circ C$	-4.2	A
		$T_C = 70^\circ C$	-2.8	
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	1.5	W

		$T_c = 70^\circ\text{C}$	1.0	
R_{JA}	Thermal Resistance Junction-Ambient		125	$^\circ\text{C/W}$

Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V Id=-250μA	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current(Tc=25°C)	V _{DS} =-20V, V _{GS} =0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(Tc=125°C)	V _{DS} =-16V, V _{GS} =0V	--	--	-100	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±10V, V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , Id=-250μA	-0.45	-0.8	-1.0	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-5V, Id=-4A	--	38	48	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-3.3V, Id=-2A	--	55	68	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	--	1160	--	pF
C _{oss}	Output Capacitance		--	155	--	pF
C _{rss}	Reverse Transfer Capacitance		--	110	--	pF
Q _g	Total Gate Charge	V _{DS} =-10V Id=-2A, V _{GS} =-5V	--	16	--	nC
Q _{gs}	Gate Source Charge		--	2.0	--	nC
Q _{gd}	Gate Drain Charge		--	3.8	--	nC
Switching Characteristics						
t _{d(on)}	Turn on Delay Time	V _{DD} =-5V, Id=-2A, R _G =3.3Ω, V _{GS} =-5V	--	8	--	ns
t _r	Turn on Rise Time		--	30	--	ns
t _{d(off)}	Turn Off Delay Time		-	65	--	ns

t_f	Turn Off Fall Time		--	18	--	ns
Source Drain Diode Characteristics						
I_{SD}	Source drain current(Body Diode) ^①	$T_c=25^\circ\text{C}$	--	--	-5	A
V_{SD}	Forward on voltage	$T_j=25^\circ\text{C}$, $I_{SD}=-4\text{A}$, $V_{GS}=0\text{V}$	--	-0.8	-1.2	V

Notes:

- ① Pulse test ; Pulse width 300 μs , duty cycle 2%.
- ② Pulse width limited by maximum allowable junction temperature

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

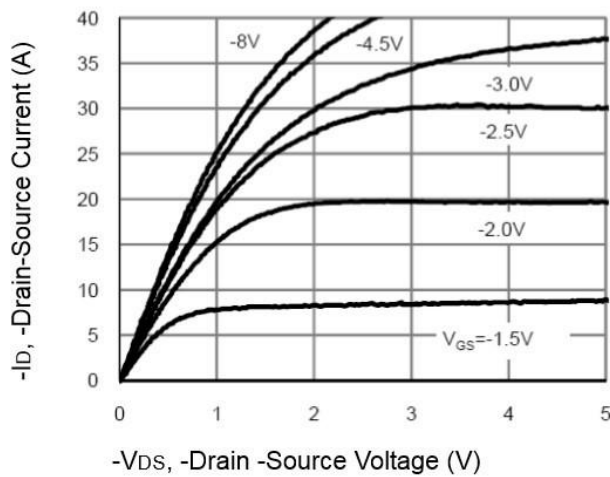


Fig1. Typical Output Characteristics

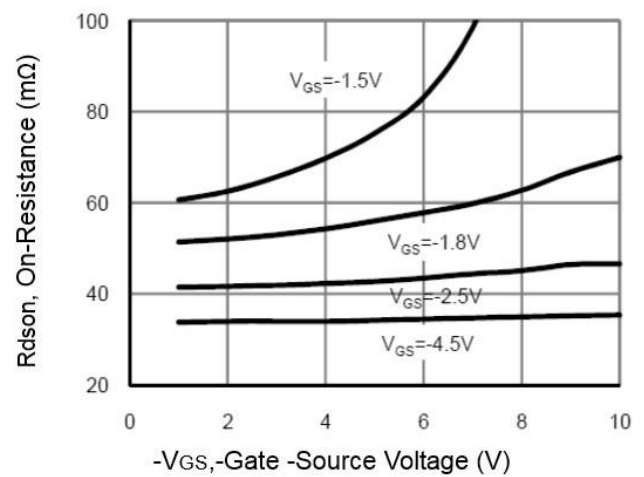


Fig2. On-Resistance vs Drain Current and Gate Voltage

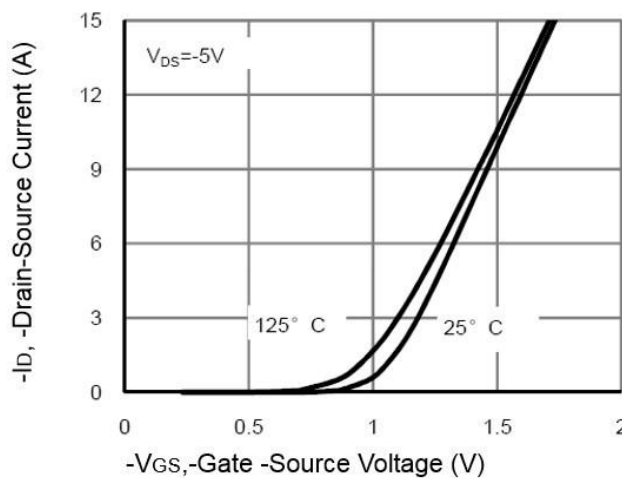


Fig3. Typical Transfer Characteristics

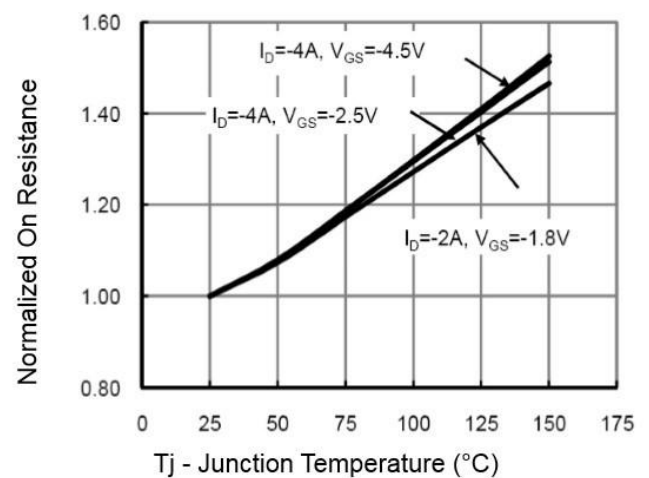


Fig4. Normalized On-Resistance Vs. Temperature

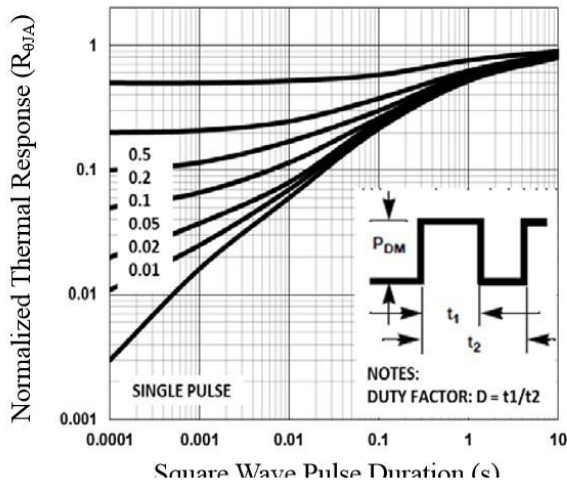


Fig5. Normalized Transient Impedance

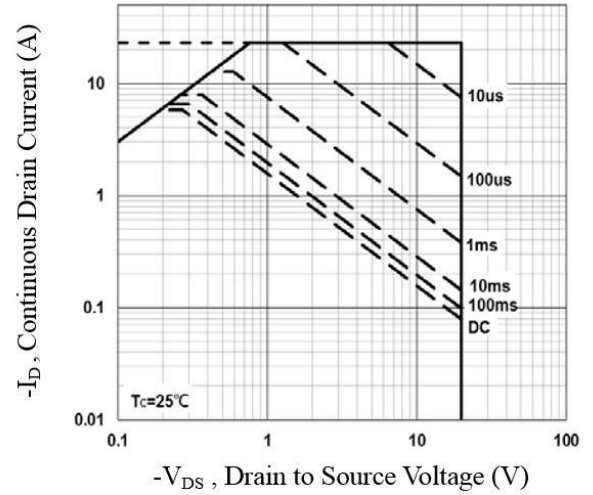


Fig6. Maximum Safe Operation Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

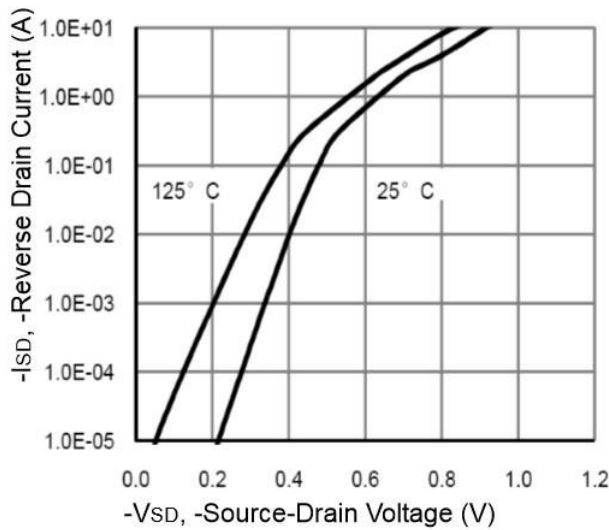


Fig7. Typical Source-Drain Diode Forward Voltage

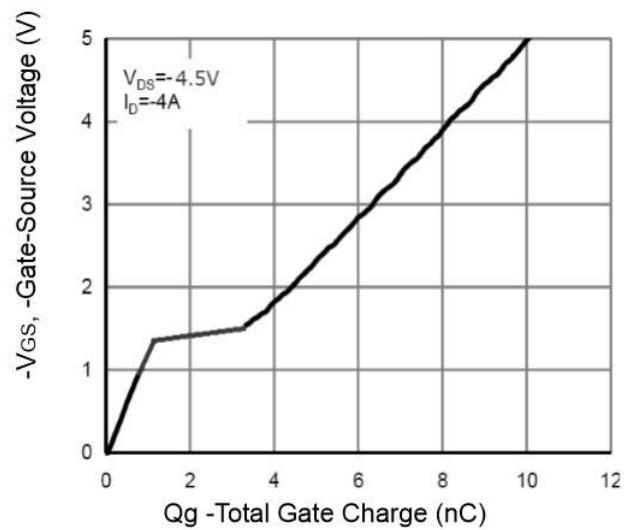


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

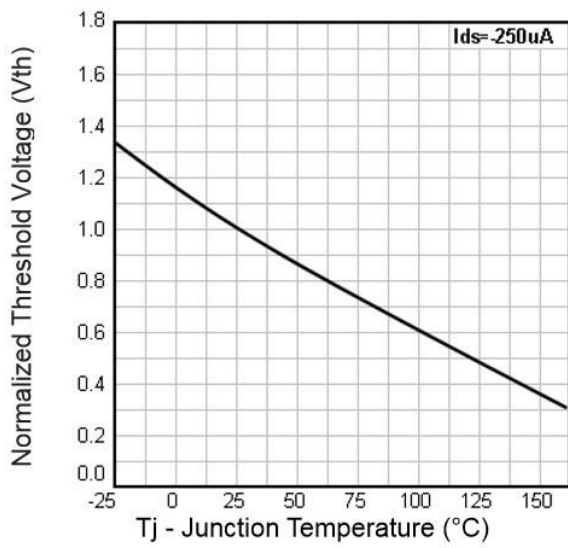


Fig9. Normalized Threshold Voltage Vs. Temperature

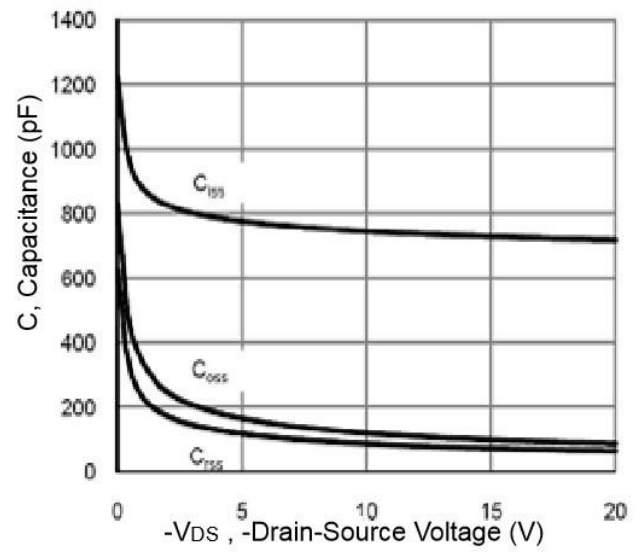


Fig10. Typical Capacitance Vs. Drain-Source Voltage

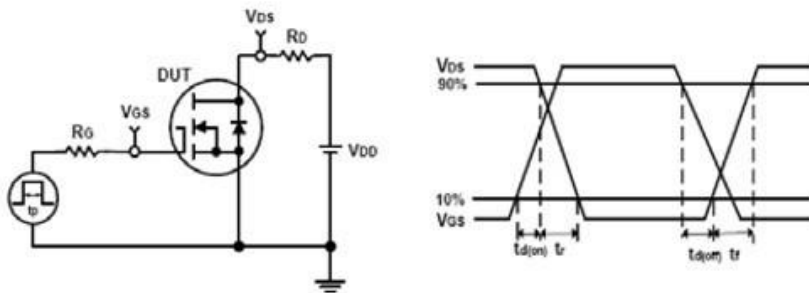
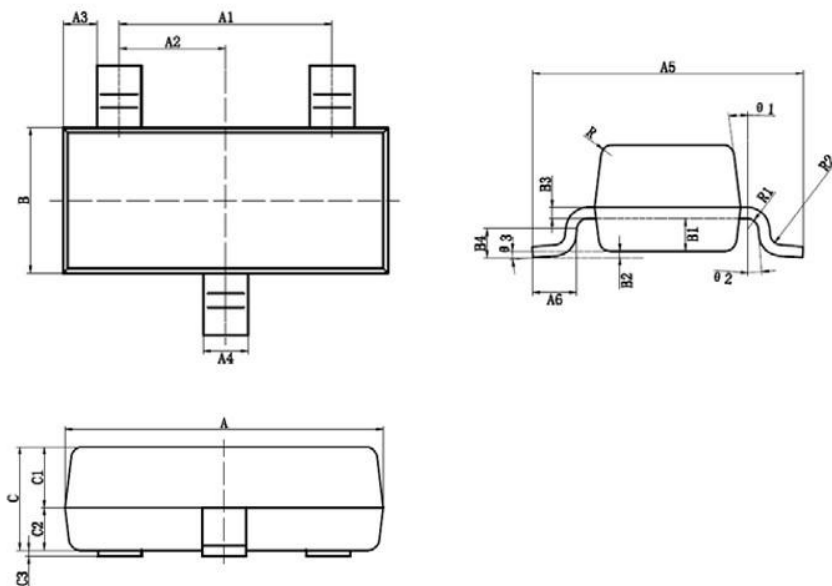


Fig11. Switching Time Test Circuit and waveforms



SOT23 Mechanical Data



Symbol \ Size	Min. (mm)	Max. (mm)	Symbol	Min. (mm)	Max. (mm)
A	2.800	3.000	B4	0.254	0.254
A1	1.800	2.000	C	0.900	0.975
A2	0.95TYP.	1.000	C1	0.535	0.585
A3	0.200	0.400	C2	0.325	0.375
A4	0.300	0.500	C3	0.010	0.110
A5	2.340	2.500	R	0.1TYP.	
A6	0.300	0.600	R1	0.1TYP.	
B	1.275	1.325	R2	0.1TYP.	
B1	0.265	0.315	θ1	7°±1°	
B2	0.010	0.110	θ2	5°REF	
B3	0.100	0.100	θ3	4°±3°	