PT2302A

20V/3.5A N-Channel Enhancement Mode MOSFET

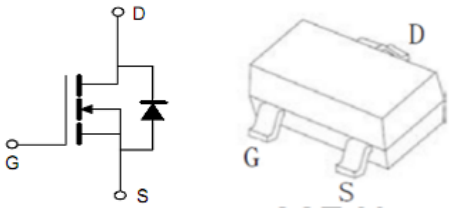
Features

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- High Power and Current handing capability

BVDSS	20	V
ID	3.5	A
RDSON@VGS=4.5V	23	mΩ
RDSON@VGS=2.5V	32	mΩ

Applications

- Low Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as Aeromodelling, Power bank, Brushless motor, Main board , and Others



SOT-23

Order Information

Product	Package	Marking	Reel Size	Reel	Carton
PT2302A	SOT-23	A2sHB	7inch	3000PCS	180000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	TA =25°C	3	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested (Note1)	TA =25°C	12	A
I_D	Continuous Drain current	TA =25°C	3.5	A
P_D	Maximum Power Dissipation	TA =25°C	1.25	W
$R_{\theta JA}$	Thermal Resistance Junction−to−Ambient (Note2)		100	°C/W

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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	VDS=16V,VGS=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±10V,VDS=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.45	--	1.2	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note3)	VGS=4.5V, ID=3A	--	23	30	mΩ
		VGS=2.5V, ID=2.5A	--	32	40	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS= 10V, VGS=0V, f=1MHz	--	439	--	pF
C_{oss}	Output Capacitance		--	65	--	pF
C_{rss}	Reverse Transfer Capacitance		--	53	--	pF
Q_g	Total Gate Charge	VDS= 10V, ID= 3A, VGS= 4.5V	--	5.7	--	nC
Q_{gs}	Gate-Source Charge		--	0.6	--	nC
Q_{gd}	Gate-Drain Charge		--	1.8	--	nC
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDS=10V, ID= 3A, RG=6Ω, VGS=4.5V	--	3.97	--	nS
t_r	Turn-on Rise Time		--	2.03	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	9.13	--	nS
t_f	Turn-off Fall Time		--	4.27	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	IS=1A,VGS=0V	--	--	1.2	V

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

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Typical Characteristics

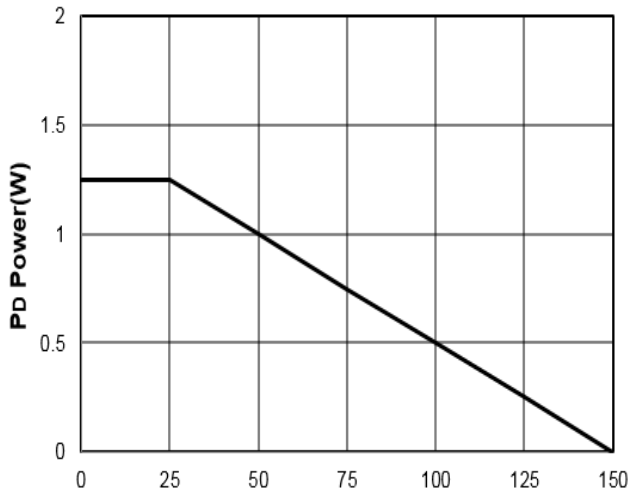

Figure1：T_J -Junction Temperature（°C）

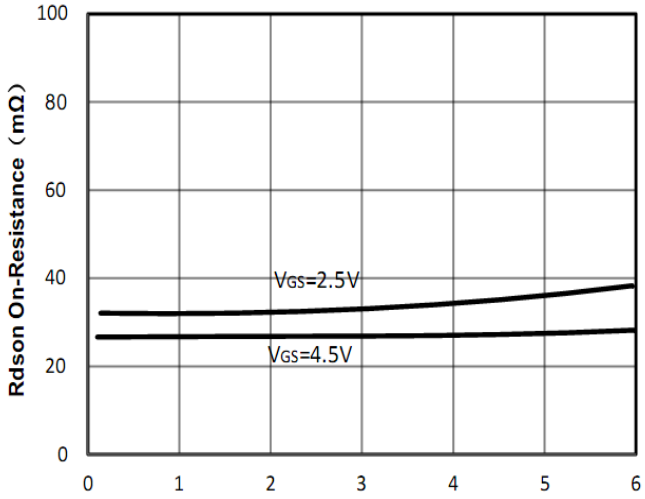

Figure2：I_D -Drain Current（A）

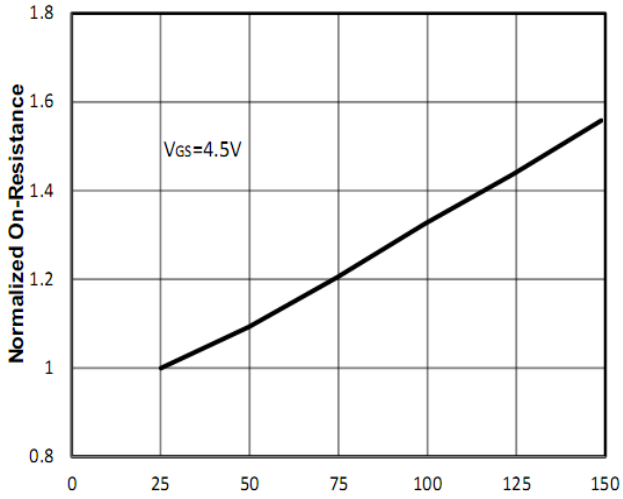

Figure3：T_J -Junction Temperature（°C）

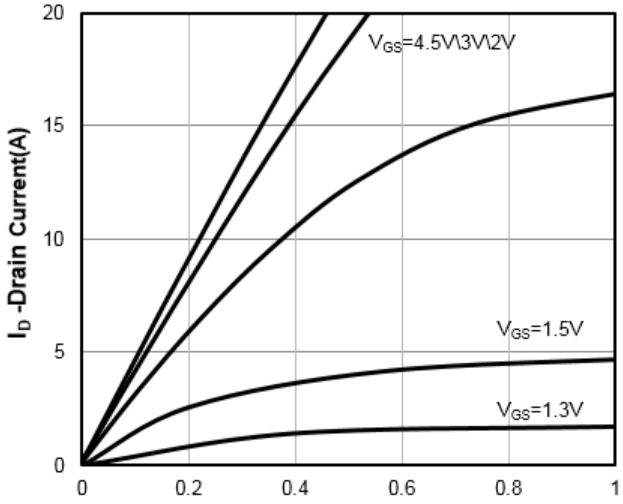

Figure4：V_{DS} –Drain Source Voltage（V）

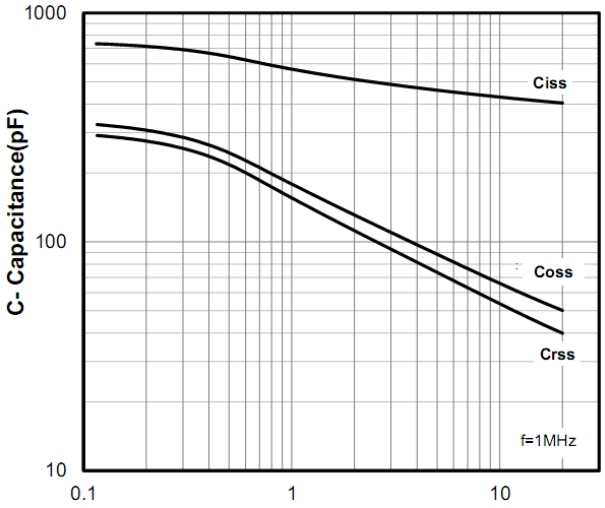

Figure5：V_{DS} -Drain Source Voltage（V）

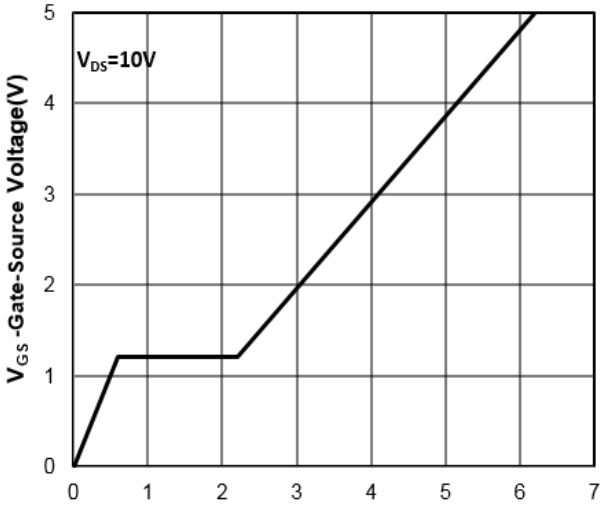

Figure6：Qg -Gate Charge（nC）

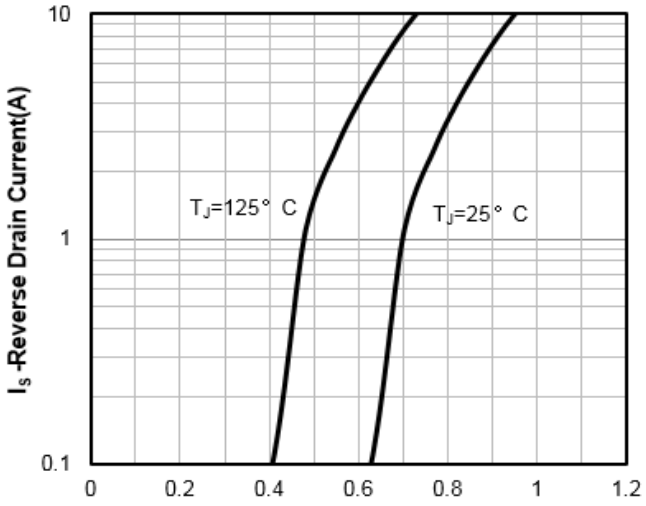

Figure7：VSD -Source Drain Voltage（V）

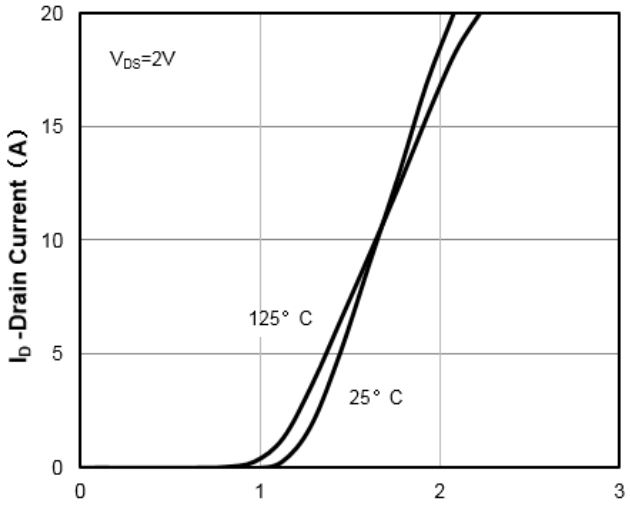

Figure8：VGS –Gate Source Voltage（V）

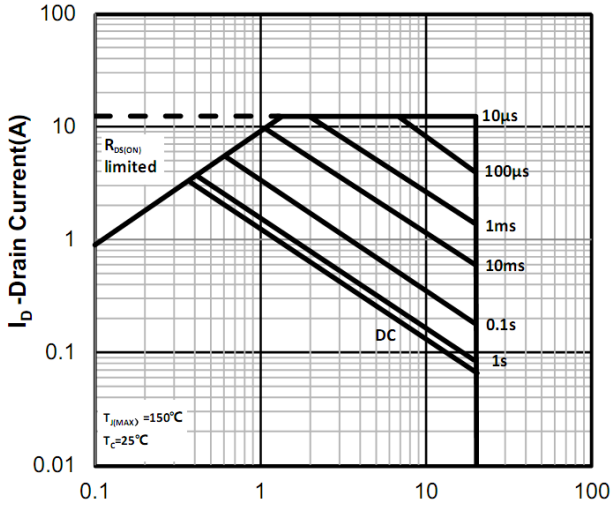

Figure9：VDS -Drain Source Voltage（V）

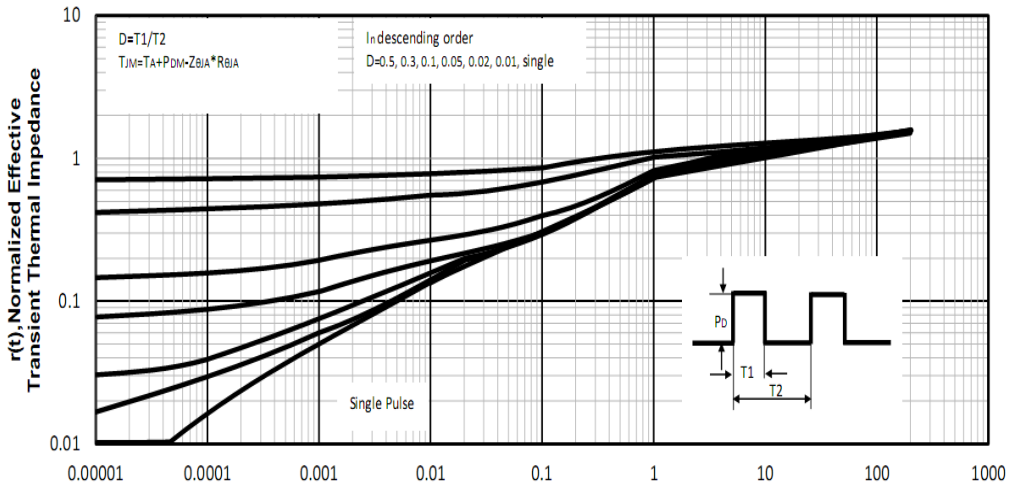

Figure10：Square Wave Pulse Duration（sec）

Test Circuit and Waveform:

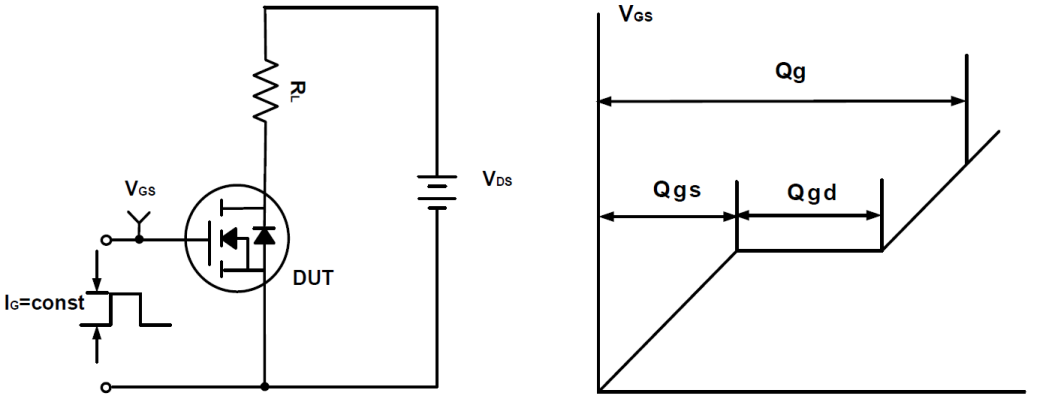

Figure A Gate Charge Test Circuit &Waveforms

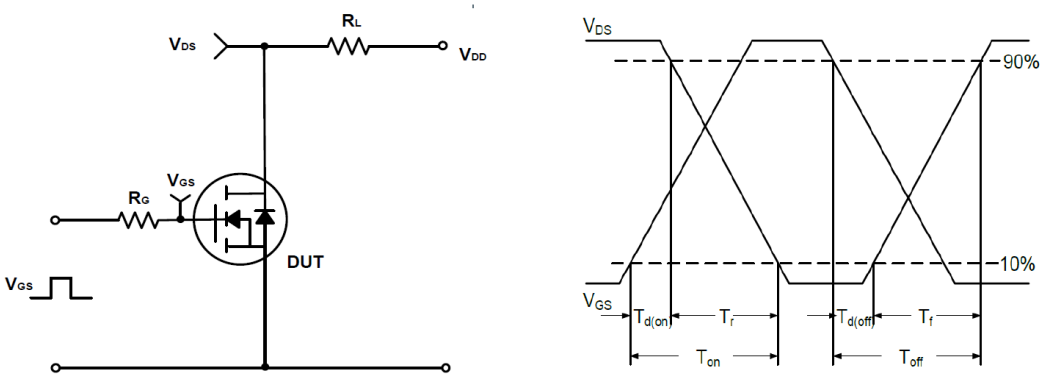

Figure B Switching Test Circuit & Waveforms

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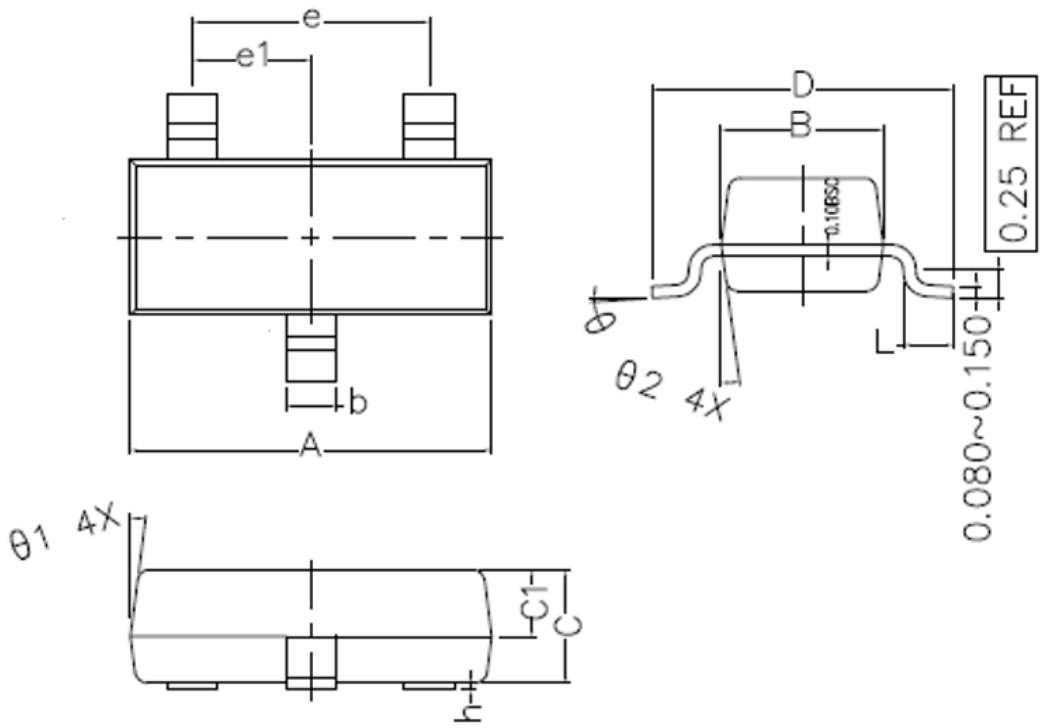
SOT-23 Package Outline Dimensions (Units: mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	2.800	2.900	3.000
B	1.200	1.300	1.400
C	0.900	1.000	1.100
C1	0.500	0.550	0.600
D	2.250	2.400	2.550
L	0.300	0.400	0.500
h	0.010	0.050	0.100
b	0.300	0.400	0.500
e	1.90 TYPE		
e1	0.95 TYPE		
θ_1	7° TYPE		
θ_2	7° TYPE		
θ	0° ~ 7°		