PT2312
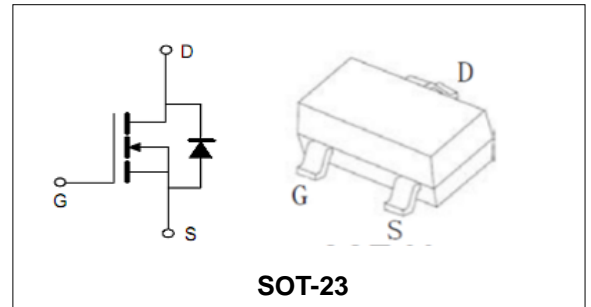
20V N-Channel Enhancement Mode MOSFET

Features

• Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance

High Power and Current handing capability

BVDSS	20	V
ID	5	A
RDSON@VGS=4.5V	14	mΩ
RDSON@VGS=2.5V	18	mΩ
RDSON@VGS=1.8V	28	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
PT2312	SOT-23	AE9T	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		±12	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	5	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested (Sillicon Limit)　(Note1)	TA =25°C	15	A
I_D	Continuous Drain current	TA =25°C	5	A
P_D	Maximum Power Dissipation	TA =25°C	0.75	W
$R_{θJA}$	Thermal Resistance Junction−to−Ambient　(Note2)		140	°C/W

20V N-Channel Enhancement Mode MOSFET

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=20V,VGS=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.4	--	1	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note3)	VGS=4.5V, ID=5A	--	14	28	mΩ
		VGS=2.5V, ID=4.5A	--	18	35	mΩ
		VGS=1.8V, ID=4A		28	42	mΩ
Dynamic Electrical Characteristics @ T$_J$ = 25°C (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS= 8V,	--	500	--	pF
C_{oss}	Output Capacitance	VGS=0V,	--	300	--	pF
C_{rss}	Reverse Transfer Capacitance	F=1MHz	--	140	--	pF
Q_g	Total Gate Charge	VDS= 10V,	--	11.2	--	nC
Q_{gs}	Gate-Source Charge	ID= 5A,	--	1.4	--	nC
Q_{gd}	Gate-Drain Charge	VGS= 4.5V	--	2.2	--	nC
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDD=10V,	--	15	--	nS
t_r	Turn-on Rise Time	ID=1A,	--	40	--	nS
$t_{d(off)}$	Turn-off Delay Time	RG=6Ω,	--	48	--	nS
t_f	Turn-off Fall Time	VGS=4.5V	--	31	--	nS
Source- Drain Diode Characteristics @ TJ = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage (Note3)	IS=1.8A,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.

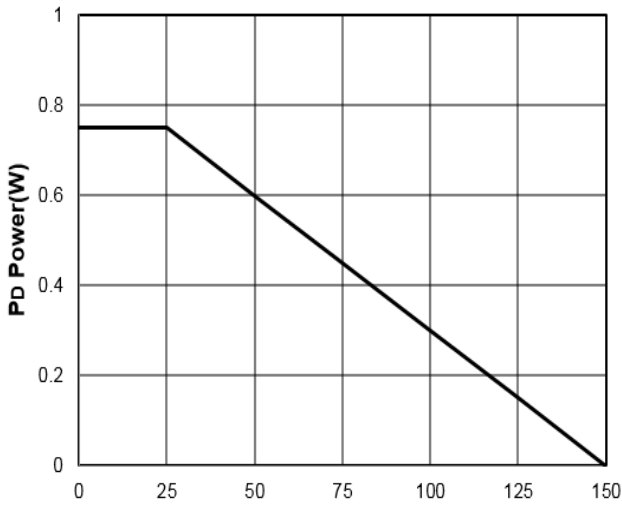**20V N-Channel Enhancement Mode MOSFET**

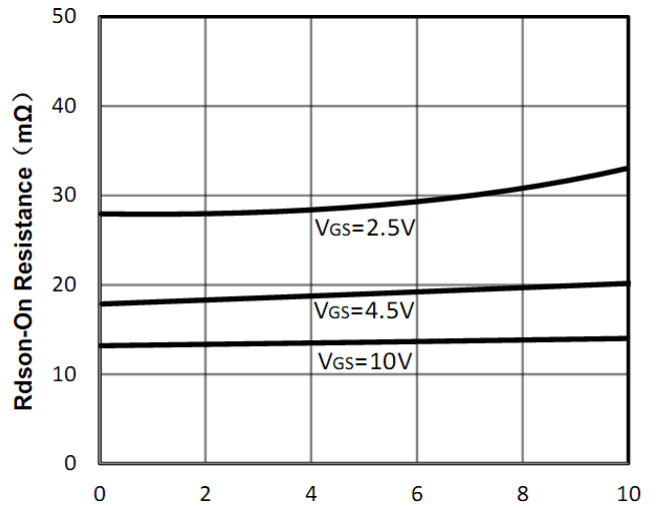### Typical Characteristics

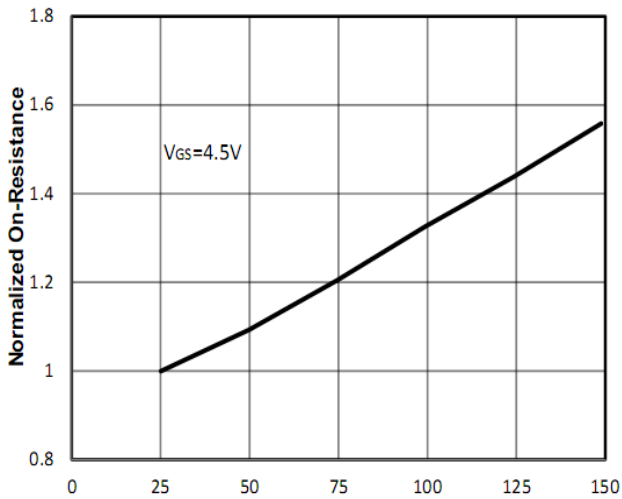Figure1：T$_J$ Junction Temperature（°C）

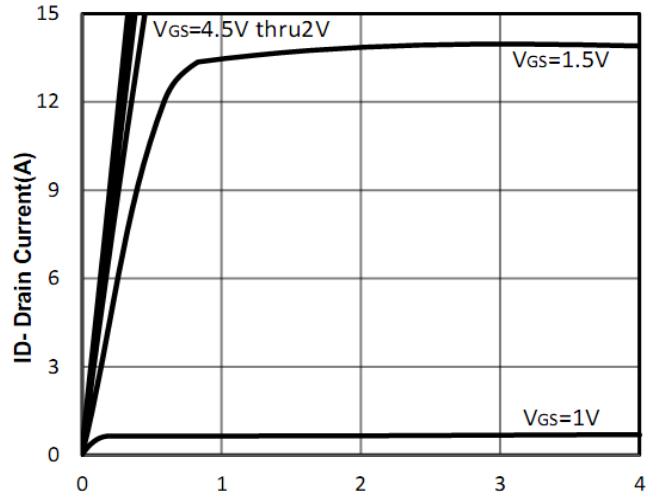Figure2：I$_D$ Drain Current（A）

Figure3：T$_J$ Junction Temperature（°C）
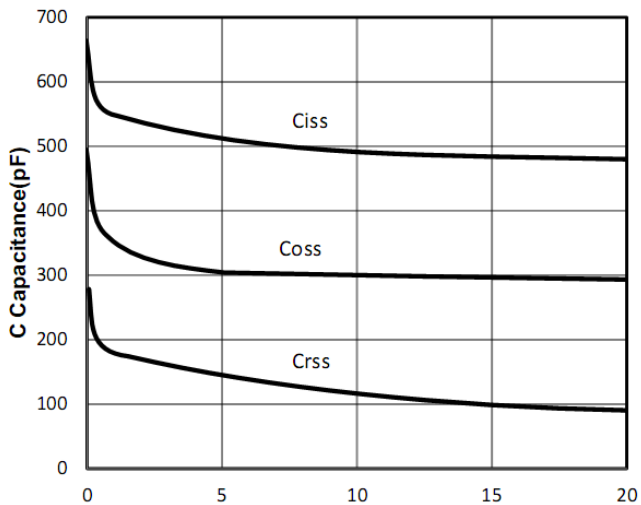
Figure4：V$_{DS}$ Drain-Source Voltage（V）
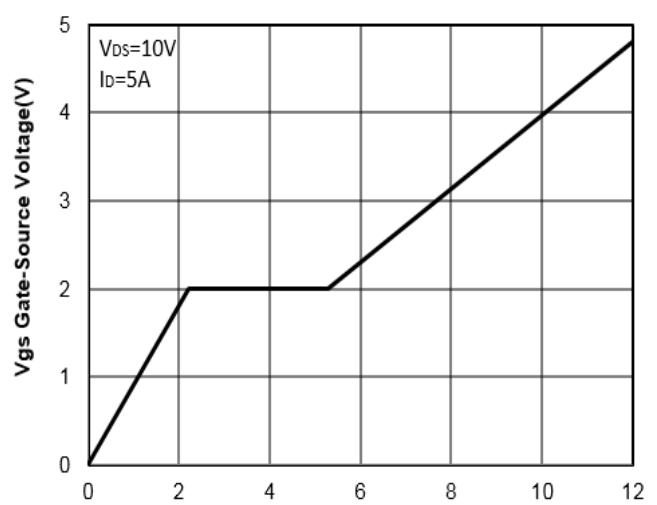
Figure5：V$_{DS}$ Drain-Source Voltage（V）

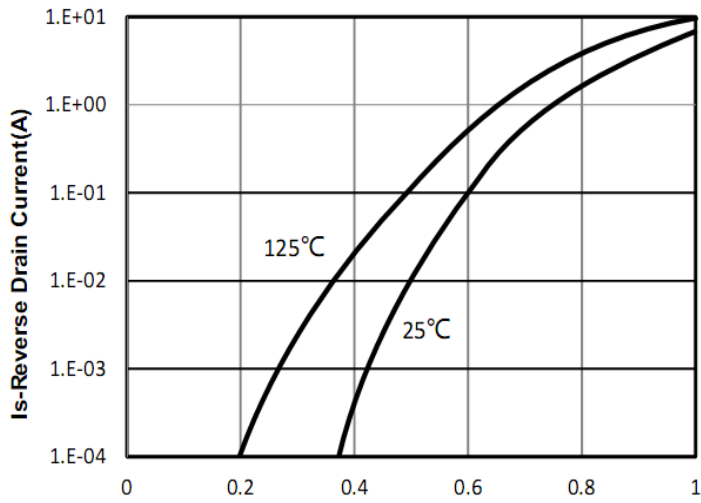Figure6：Qg Gate Charge（nC）

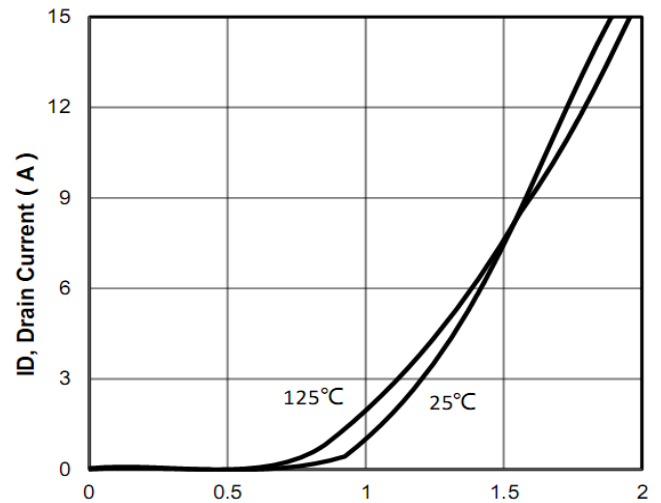**20V N-Channel Enhancement Mode MOSFET**

Figure7：Vsd Source-Drain Voltage（V）

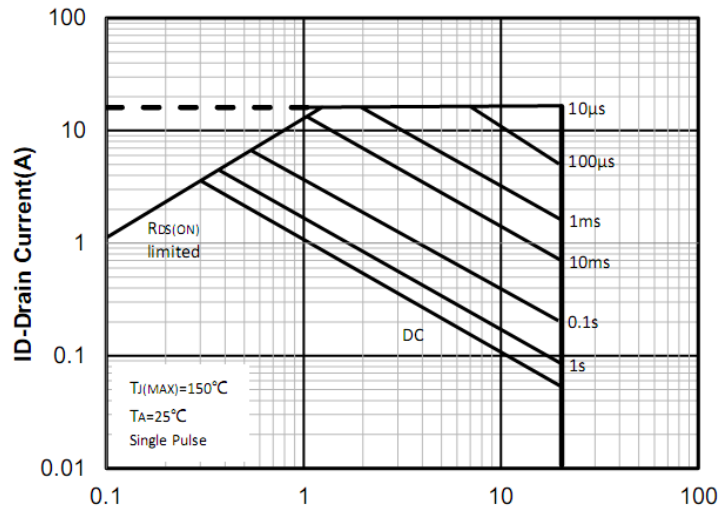Figure8：Vgs Gate-Source Voltage（V）

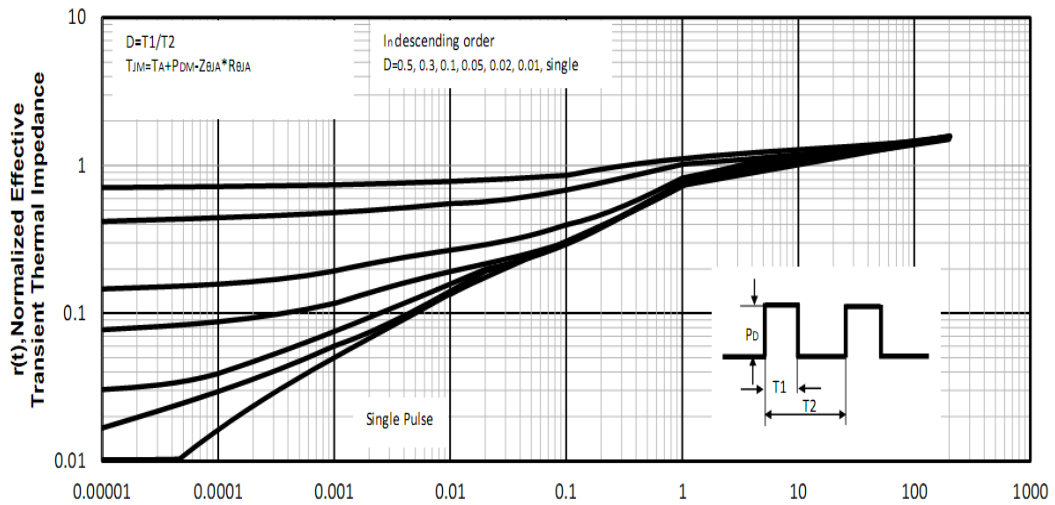Figure9：Vds Drain -Source   Voltage（V）

Figure10：Square Wave Pulse Duration（sec）

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20V N-Channel Enhancement Mode MOSFET
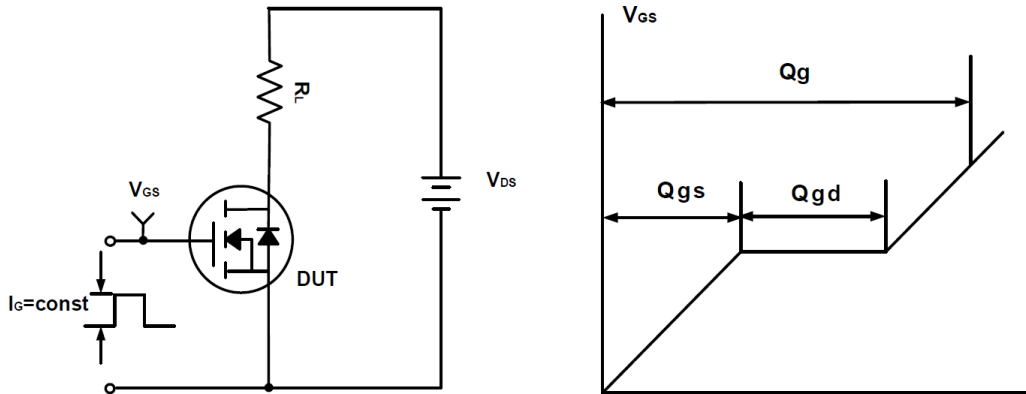
Test Circuit and Waveform:

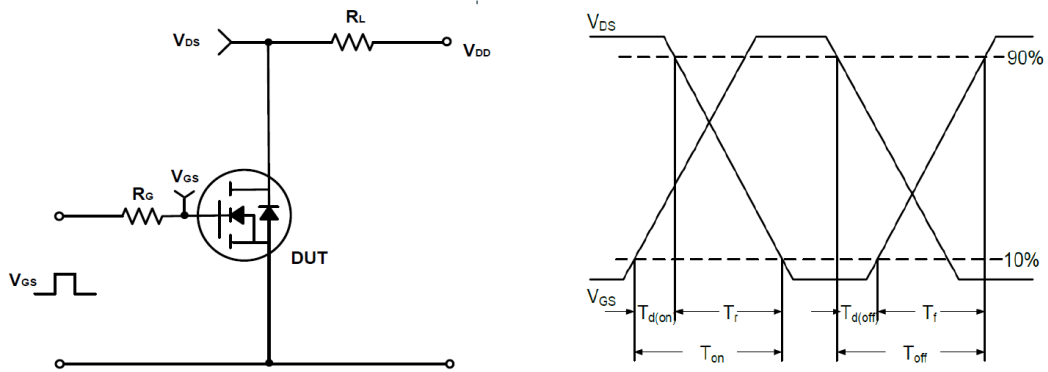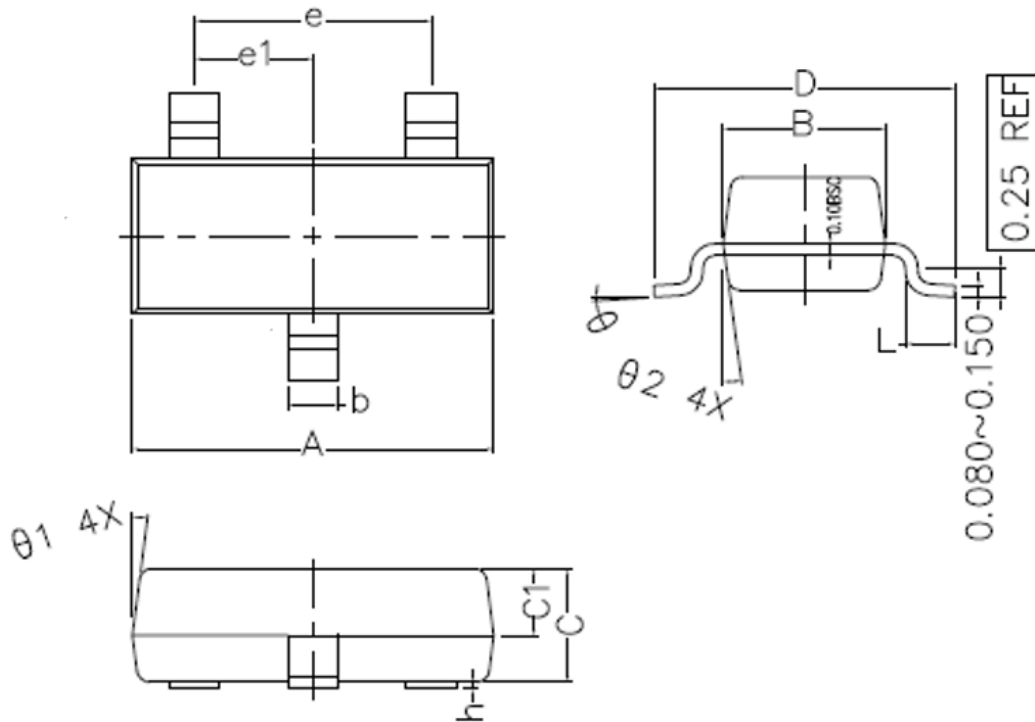**Figure A   Gate Charge Test Circuit &Waveforms**

Figure B   Switching Test Circuit & Waveforms

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20V N-Channel Enhancement Mode MOSFET

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°		