Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

## Product Summary

V_{DS}	-40	V
I_D	-2.9	A
$R_{DS(ON)}$ (at V_{GS}=-10V)	68	mΩ
$R_{DS(ON)}$ (at V_{GS}=-4.5V)	100	mΩ

Applications

- High Frequency Point-of-Load,Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- Load Switch
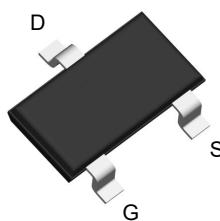
SOT23 Top View
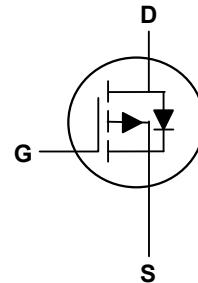
Absolute Maximum Ratings(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_D@T_A$=25℃	-2.9	A
Continuous Drain Current	$I_D@T_A$=100℃	-2.32	A
Pulsed Drain Current[2]	I_{DM}	-11.6	A
Total Power Dissipation （T_A=25℃）	P_D	1	W
Power Dissipation – Derate above 25℃		8	mW/℃
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient[1]	$R_{θJA}$	---	125	℃/W

Electrical Characteristics (T$_J$=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV$_{DSS}$	V$_{GS}$=0V , I$_D$=-250uA	-40	---	---	V
Static Drain-Source On-Resistance[2]	R$_{DS(ON)}$	V$_{GS}$=-10V , I$_D$=-2A	---	55	68	mΩ
		V$_{GS}$=-4.5V , I$_D$=-1A	---	75	100	mΩ
Gate Threshold Voltage	V$_{GS(th)}$	V$_{GS}$=V$_{DS}$, I$_D$ =-250uA	-1.0	---	-2.5	V
Drain-Source Leakage Current	I$_{DSS}$	V$_{DS}$=-40V , V$_{GS}$=0V , T$_J$=25℃	---	---	-1	uA
		V$_{DS}$=-32V, V$_{GS}$=0V, T$_J$=125℃	---	---	-10	uA
Gate-Source Leakage Current	I$_{GSS}$	V$_{GS}$=±20V , V$_{DS}$=0V	---	---	±100	nA
Forward Transconductance	gfs	V$_{DS}$=-10V , I$_D$=-1A	---	3	---	S
Total Gate Charge	Q$_g$	V$_{DS}$=-32V , V$_{GS}$=-10V , I$_D$=-2A	---	6.4	13	nC
Gate-Source Charge	Q$_{gs}$		---	0.5	2	
Gate-Drain Charge	Q$_{gd}$		---	2.7	6	
Turn-On Delay Time	T$_{d(on)}$	V$_{DD}$=-20V , V$_{GS}$=-10V , R$_G$=6Ω, I$_D$=-1A	---	12	24	ns
Rise Time	T$_r$		---	9	20	
Turn-Off Delay Time	T$_{d(off)}$		---	45	90	
Fall Time	T$_f$		---	5	10	
Input Capacitance	C$_{iss}$	V$_{DS}$=-25V , V$_{GS}$=0V , f=1MHz	---	600	1200	pF
Output Capacitance	C$_{oss}$		---	60	120	
Reverse Transfer Capacitance	C$_{rss}$		---	43	80	

Drain-Source Diode Characteristics

| Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[1]	I$_S$	V$_G$=V$_D$=0V , Force Current	---	---	-2.9	A
Pulsed Source Current[2]	I$_{SM}$		---	---	-5.8	A
Diode Forward Voltage[2]	V$_{SD}$	V$_{GS}$=0V , I$_S$=-1A , T$_J$=25℃	---	---	-1	V

Note:

1.The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The power dissipation is limited by 150℃ junction temperature

Typical Characteristics
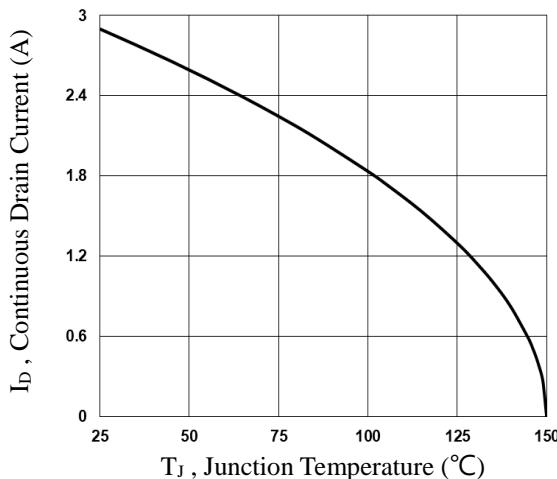

Fig.1   Continuous Drain Current vs. T$_J$
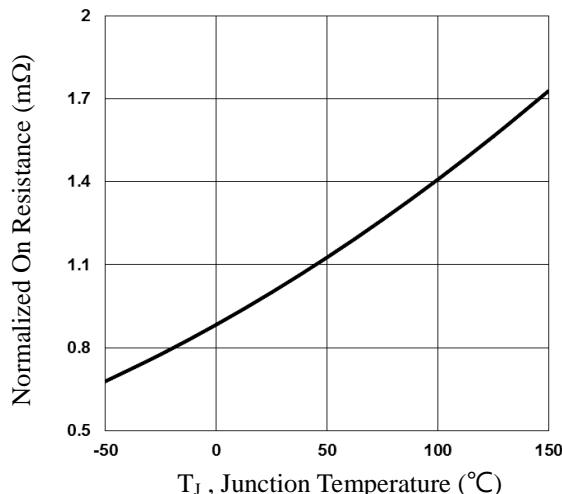
Fig.2   Normalized RDSON vs. T$_J$
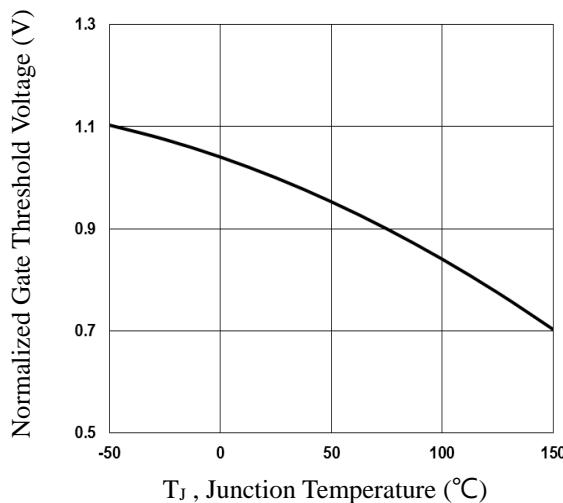

**Fig.3   Normalized V$_{th}$ vs. T$_J$**
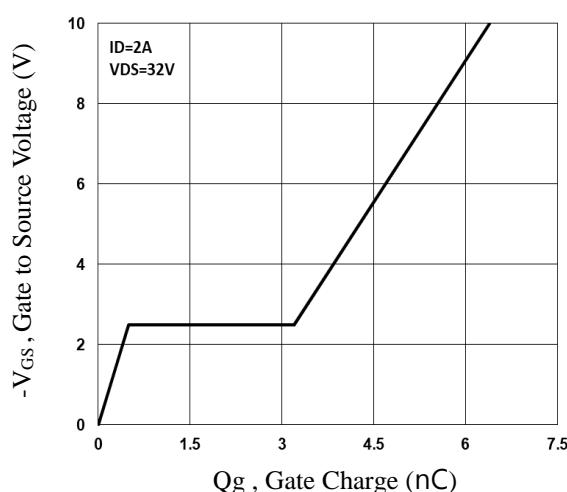
**Fig.4   Gate Charge Waveform**
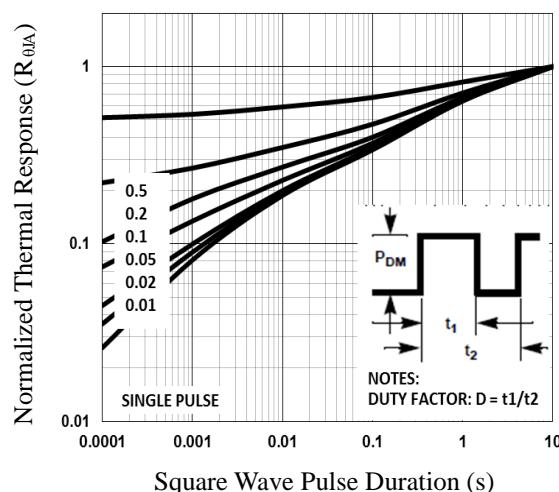
Fig.5   Normalized Transient Impedance
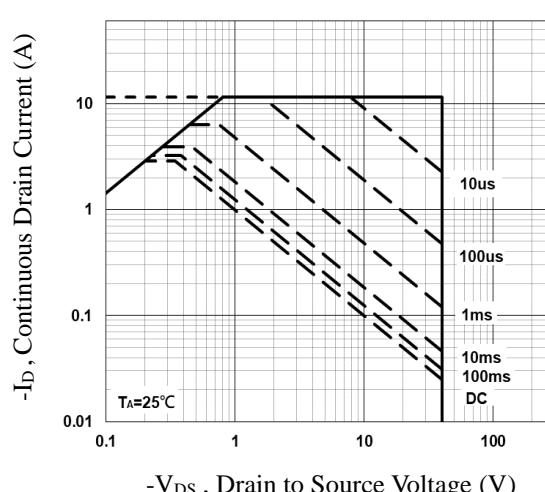
Fig.6   Maximum Safe Operation Area
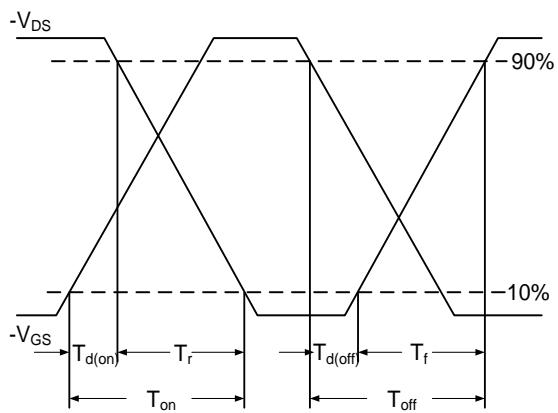
Fig.7   Switching Time Waveform
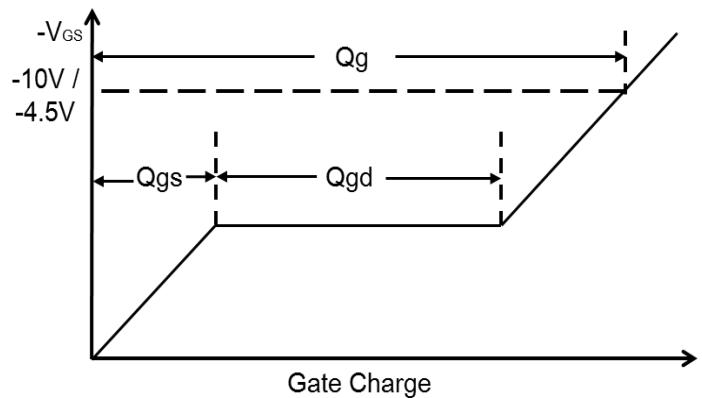
Fig.8   Gate Charge Waveform

SOT23 Package Outline Dimensions
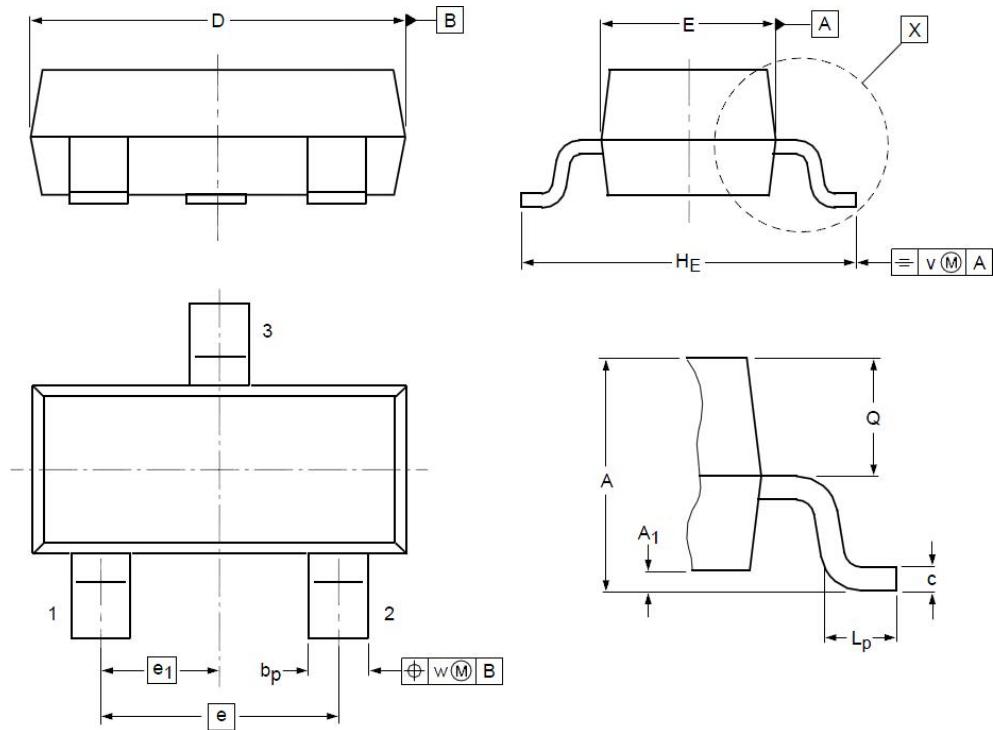
Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.05	1.20	e_1	--	0.95	--
A_1	0.01	0.05	0.10	H_E	2.10	2.40	2.50
b_p	0.38	0.42	0.48	L_P	0.40	0.50	0.60
c	0.09	0.13	0.15	Q	0.45	0.49	0.55
D	2.80	2.92	3.00	V	--	0.20	--
E	1.20	1.33	1.40	W	--	0.10	--
e	--	1.90	--				