

Features

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

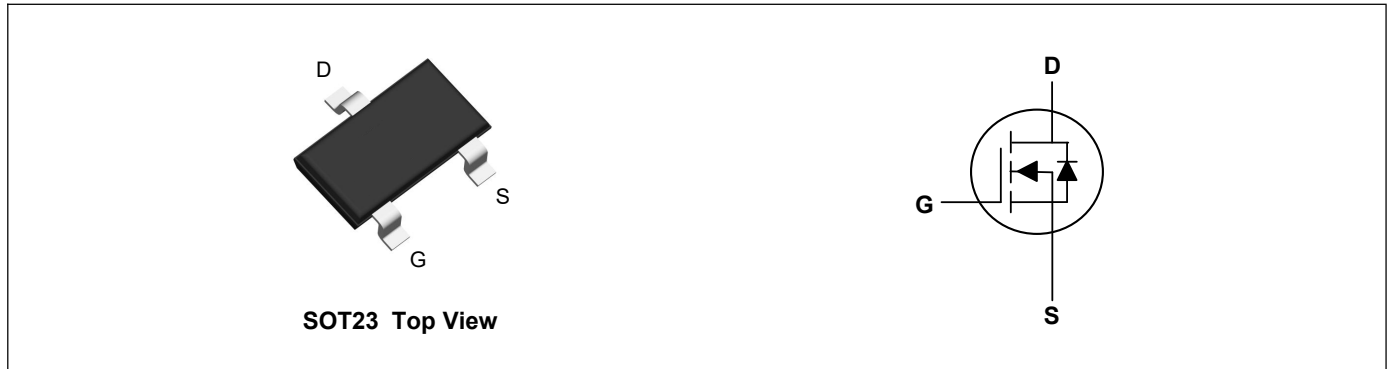
Product Summary



V_{DS}	30	V
I_D	5.8	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	25	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	28	m Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



Absolute Maximum Ratings($T_A=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	$I_D@T_A=25^{\circ}C$	5.8	A
Continuous Drain Current	$I_D@T_A=70^{\circ}C$	4.6	A
Pulsed Drain Current ²	I_{DM}	23	A
Total Power Dissipation ³	$P_D@T_A=25^{\circ}C$	1.5	W
Total Power Dissipation ³	$P_D@T_A=70^{\circ}C$	0.9	W
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	100	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30	---	---	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =5A	---	20	25	mΩ
		V _{GS} =4.5V, I _D =4A	---	22	28	mΩ
		V _{GS} =2.5V, I _D =2A	---	32	40	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	0.5	---	1.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V, T _A =25°C	---	---	1	uA
		V _{DS} =24V, V _{GS} =0V, T _A =125°C	---	---	100	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	---	---	±100	nA
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V, I _D =5A	---	6.2	---	nC
Gate-Source Charge	Q _{gs}		---	1.2	---	
Gate-Drain Charge	Q _{gd}		---	1.9	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =15V, V _{GS} =4V, R _G =3.3Ω, I _D =5A	---	7.5	---	ns
Rise Time	T _r		---	18	---	
Turn-Off Delay Time	T _{d(off)}		---	36	---	
Fall Time	T _f		---	5	---	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	650	---	pF
Output Capacitance	C _{oss}		---	54	---	
Reverse Transfer Capacitance	C _{rss}		---	47	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I _S	T _A =25°C	---	---	1.5	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =5A, T _J =25°C	---	0.83	1.2	V

Note:

- 1.The data tested by surface mounted on a 1 inch² 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°C junction temperature

Typical Characteristics

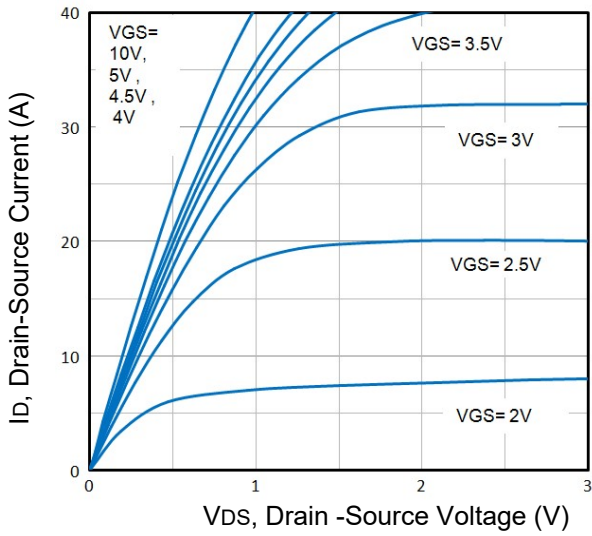


Fig1. Typical Output Characteristics

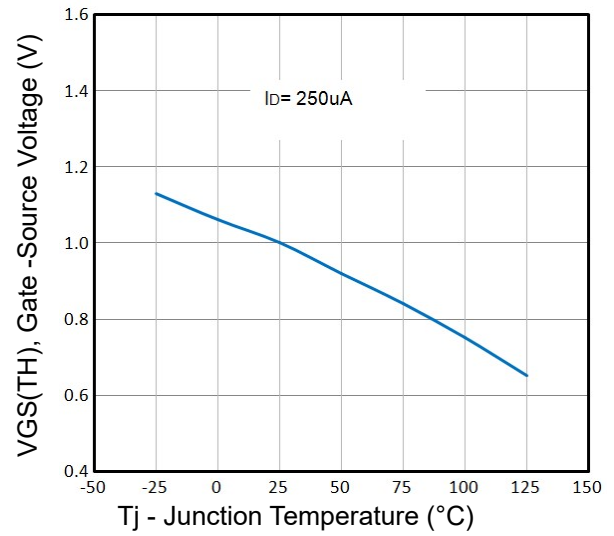


Fig2. Normalized Threshold Voltage Vs. Temperature

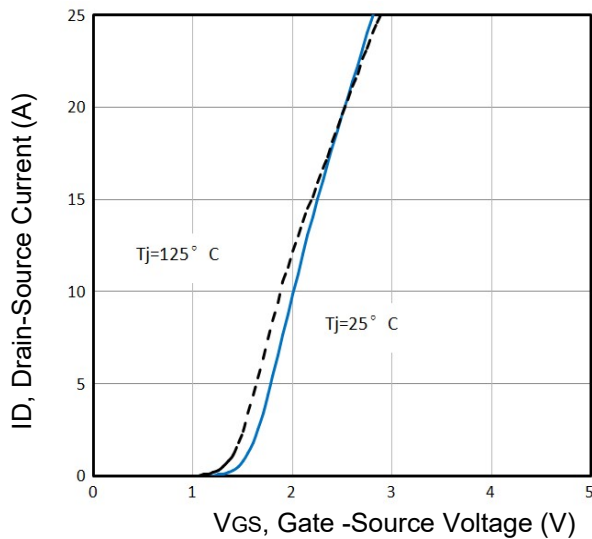


Fig3. Typical Transfer Characteristics

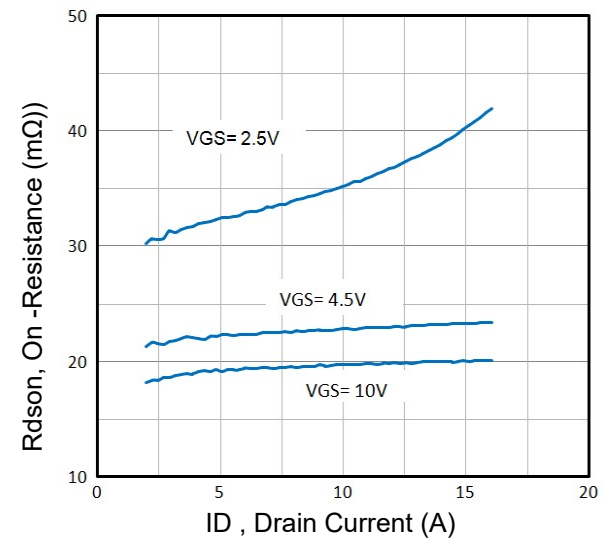


Fig4. On-Resistance vs. Drain Current and VGS

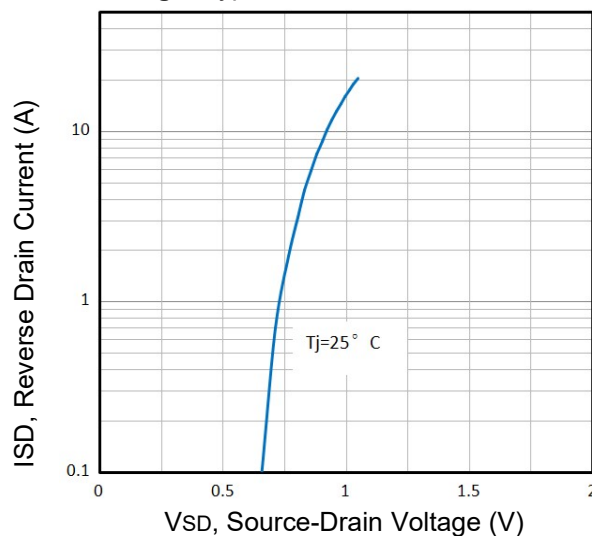


Fig5. Typical Source-Drain Diode Forward Voltage

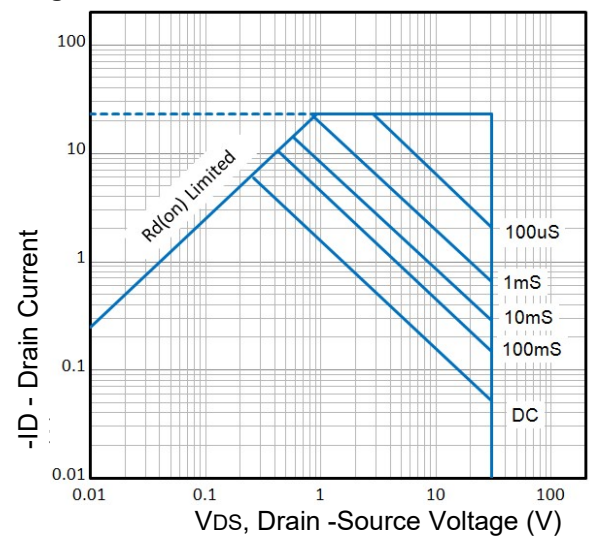


Fig6. Maximum Safe Operating Area

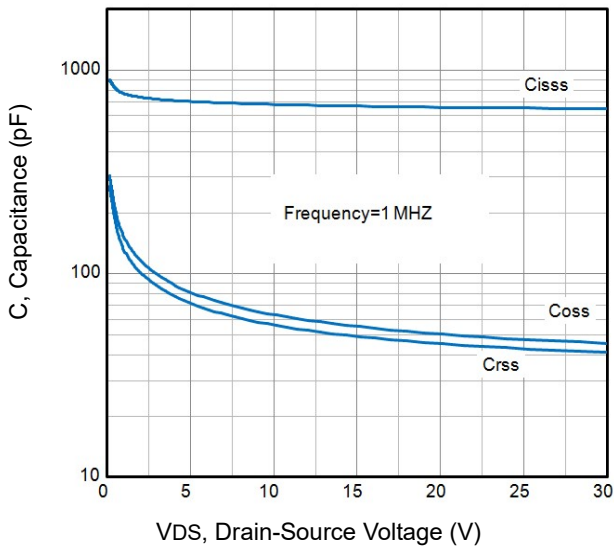


Fig7. Typical Capacitance Vs. Drain-Source Voltage

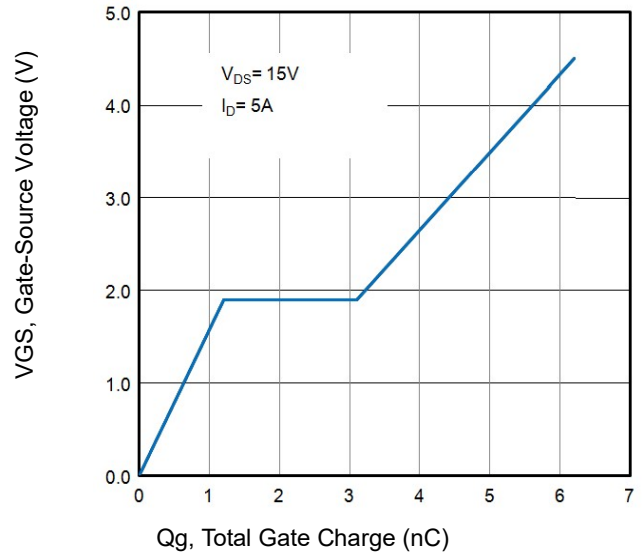


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

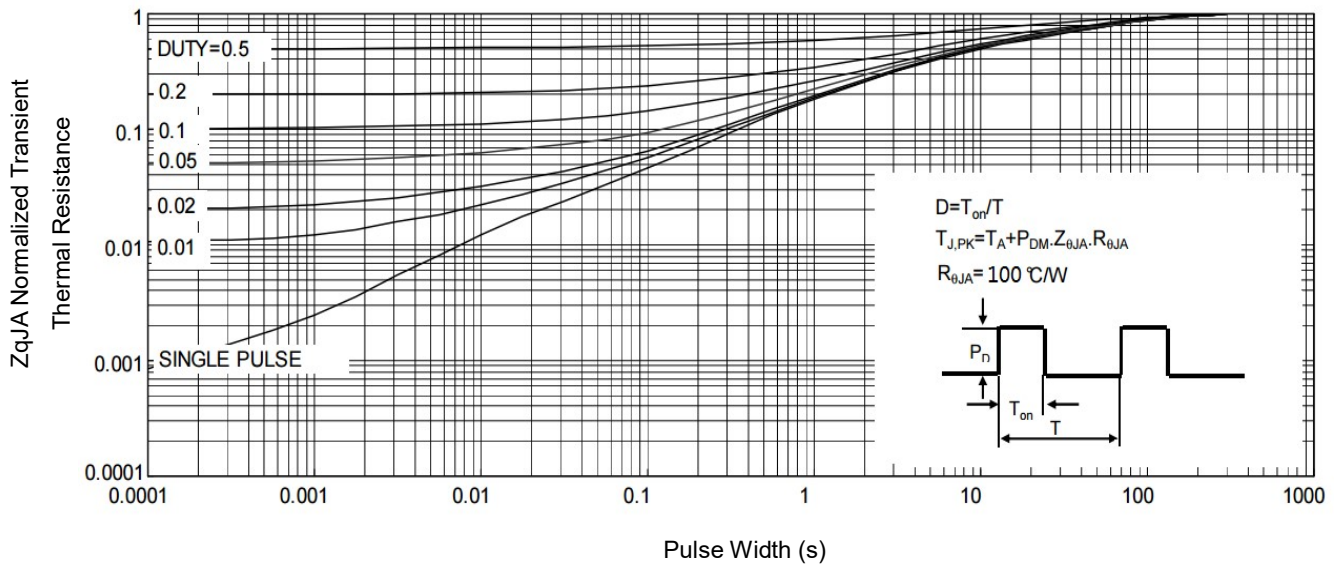


Fig9. Normalized Maximum Transient Thermal Impedance

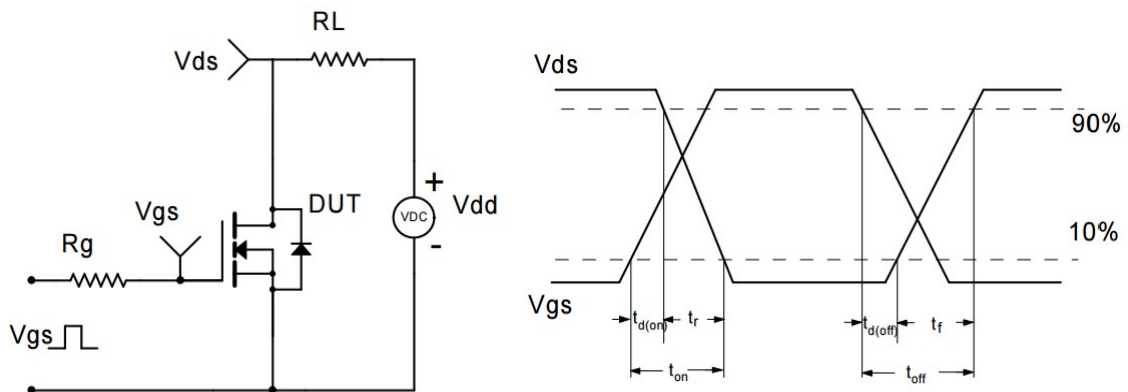
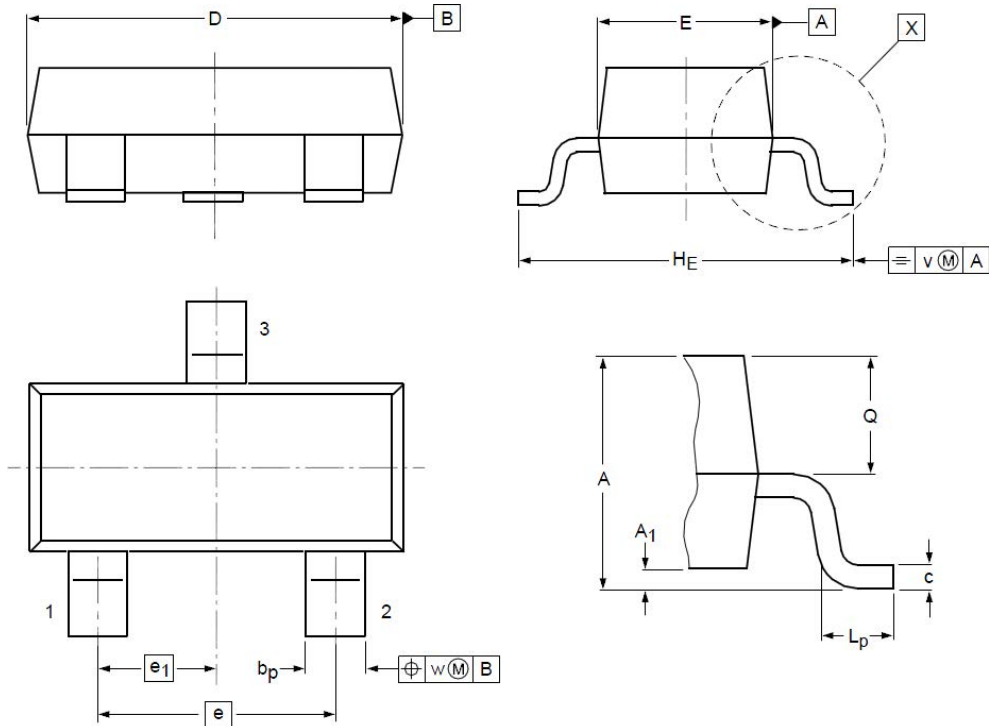


Fig10. Switching Time Test Circuit and waveforms

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	e₁	--	0.95	--
A₁	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	--				