

Features

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

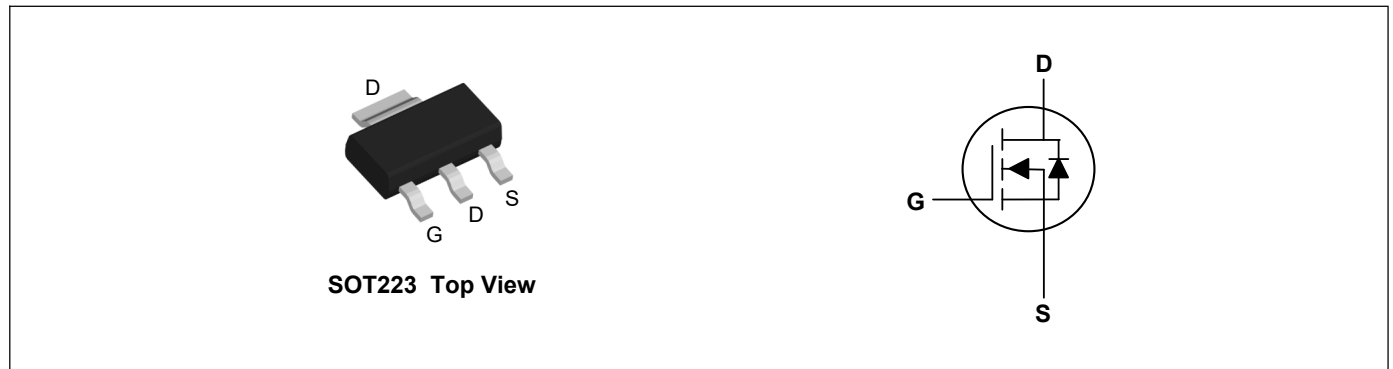
Product Summary



V_{DS}	100	V
I_D	9	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	27	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	37	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}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	9	A
Pulsed Drain Current ²	I_{DM}	6.4	A
Single Pulse Avalanche Energy ³	EAS	96	mJ
Total Power Dissipation ⁴	P_D	2.5	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	$R_{\theta JA}$	---	50	$^{\circ}C/W$

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	100	---	---	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =9A	---	21	27	mΩ
		V _{GS} =4.5V, I _D =9A	---	30	37	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.2	1.9	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V, T _J =25°C	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =9A	---	12	---	S
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =9A	---	26	---	nC
Gate-Source Charge	Q _{gs}		---	7.4	---	
Gate-Drain Charge	Q _{gd}		---	3.8	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =50V, R _G =2.5Ω, V _{GS} =10V, R _L =5.5Ω	---	10	---	ns
Rise Time	T _r		---	4	---	
Turn-Off Delay Time	T _{d(off)}		---	22	---	
Fall Time	T _f		---	5	---	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	1600	---	pF
Output Capacitance	C _{oss}		---	139	---	
Reverse Transfer Capacitance	C _{rss}		---	11	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ²	I _S		---	---	9	A
Diode Forward Voltage ¹	V _{SD}	V _{GS} =0V, I _S =9A, T _J =25°C	---	---	1.2	V
Reverse Recovery Time	t _{rr}	I _F =4.5A, di/dt=100A/μs, T _J =25°C	---	34.6	---	nS
Reverse Recovery Charge	Q _{rr}		---	57.7	---	nC

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 EAS data shows Max. rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=0.5mH
4. The power dissipation is limited by 150°C junction temperature

Typical Characteristics

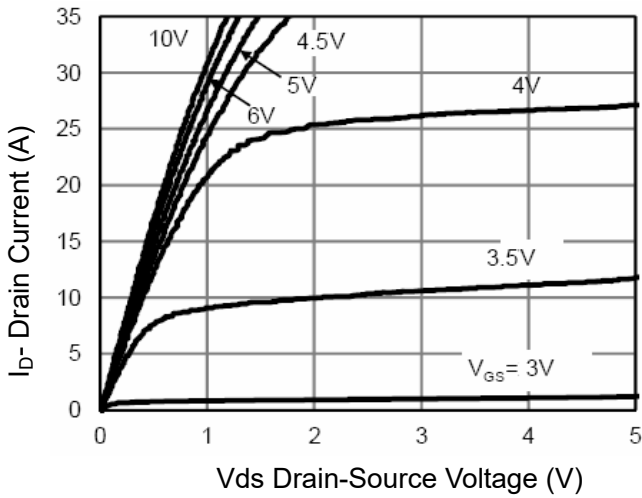


Figure 1 Output Characteristics

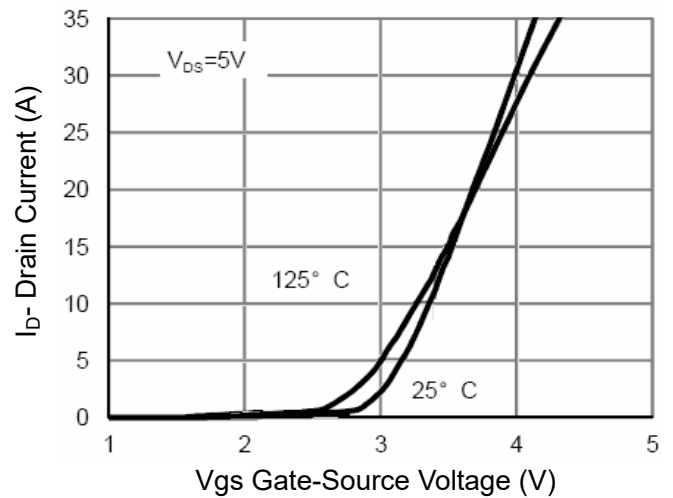


Figure 2 Transfer Characteristics

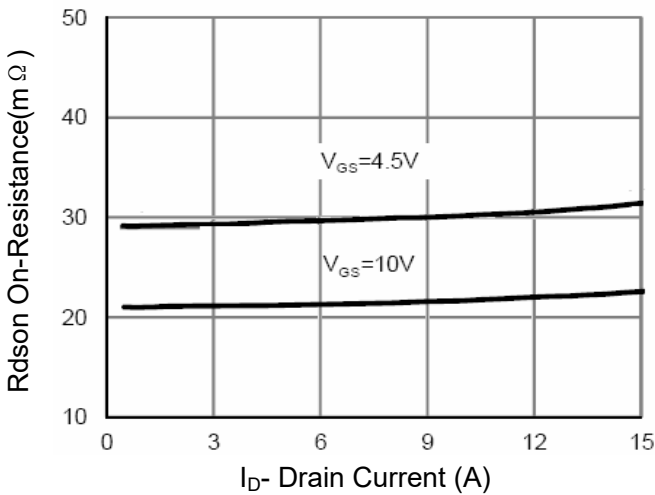


Figure 3 Rdson- Drain Current

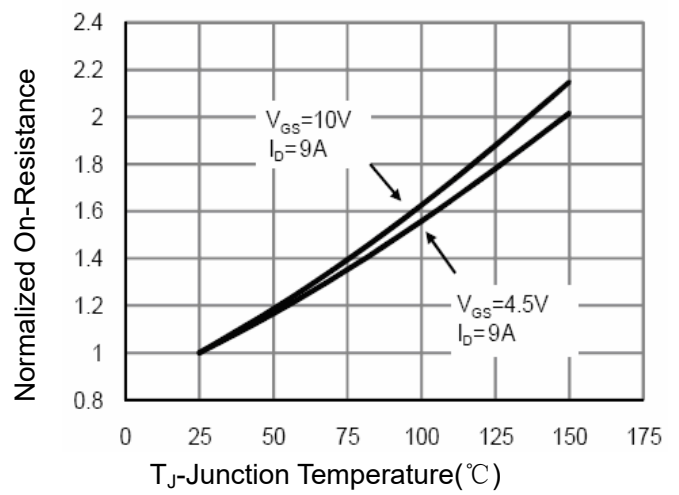


Figure 4 Rdson-Junction Temperature

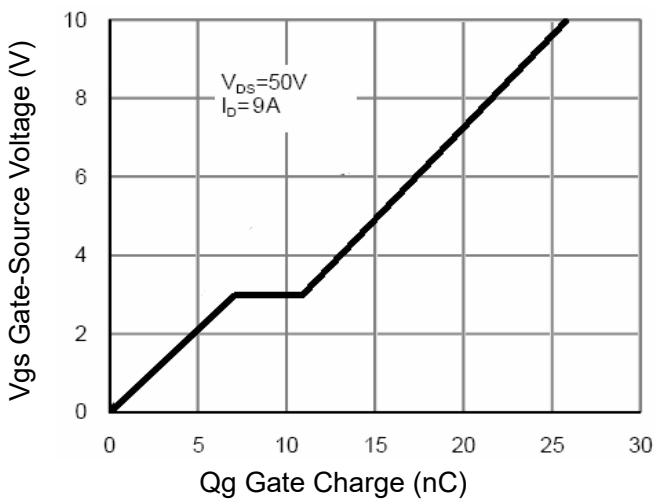


Figure 5 Gate Charge

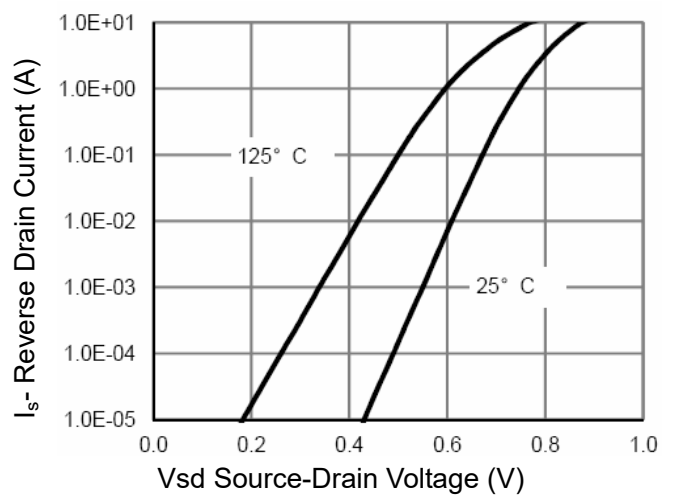


Figure 6 Source- Drain Diode Forward

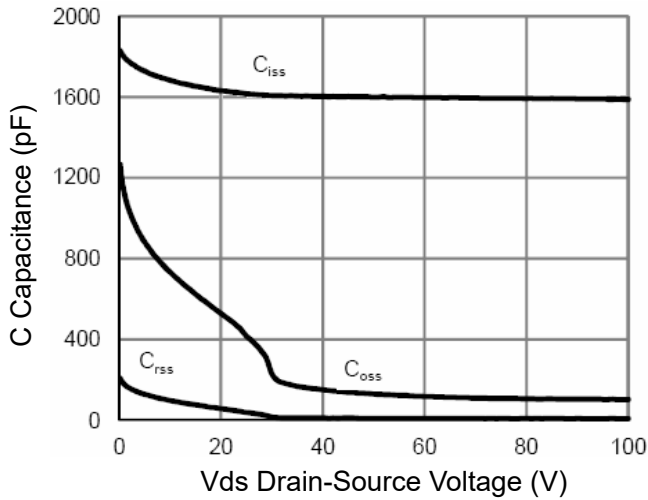


Figure 7 Capacitance vs Vds

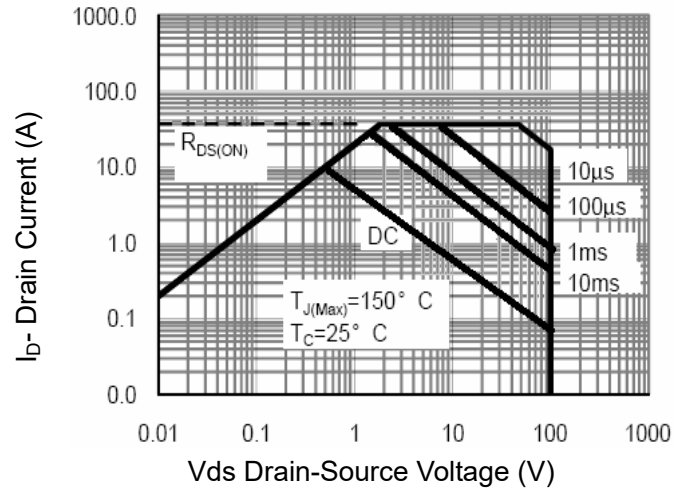


Figure 8 Safe Operation Area

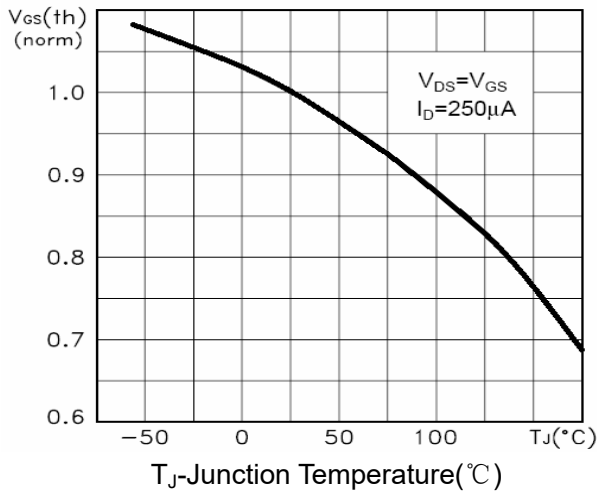


Figure 9 V_{GS(th)} vs Junction Temperature

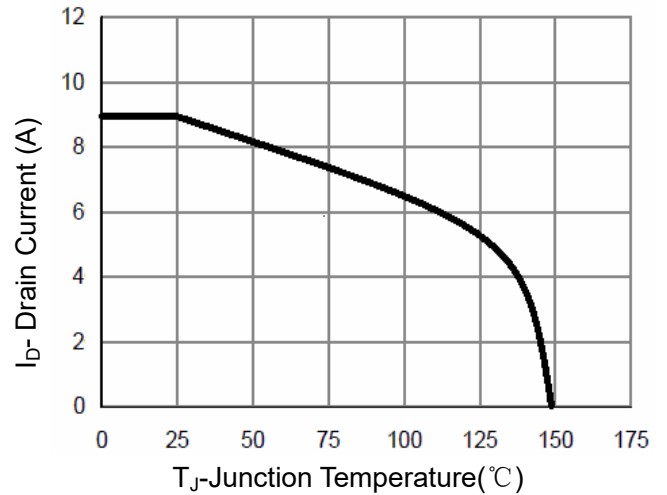


Figure 10 Current De-ratin

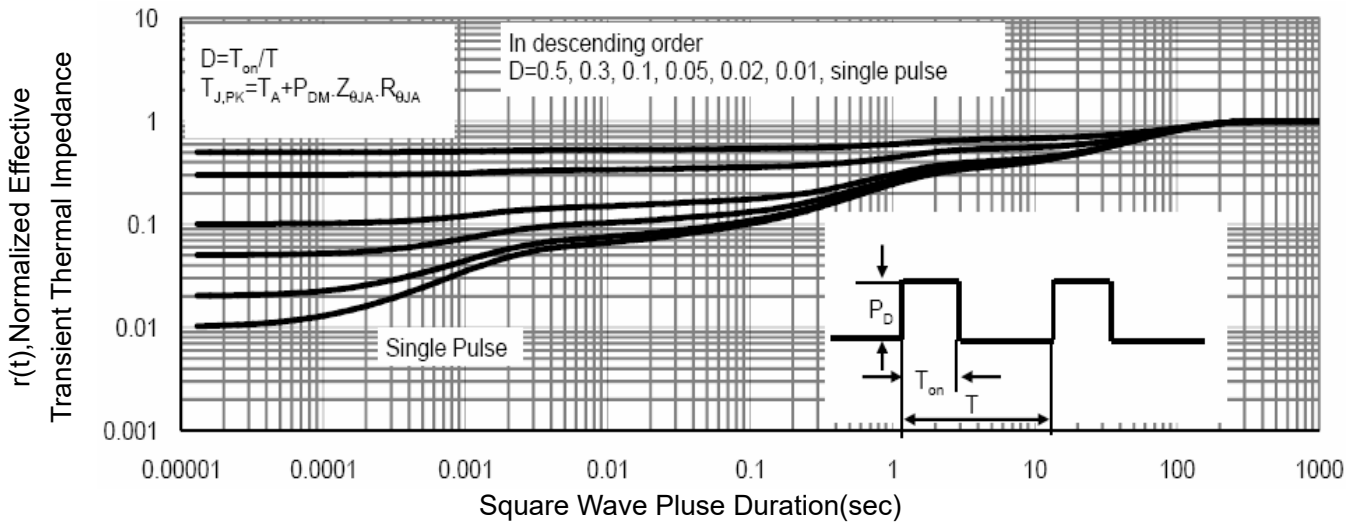
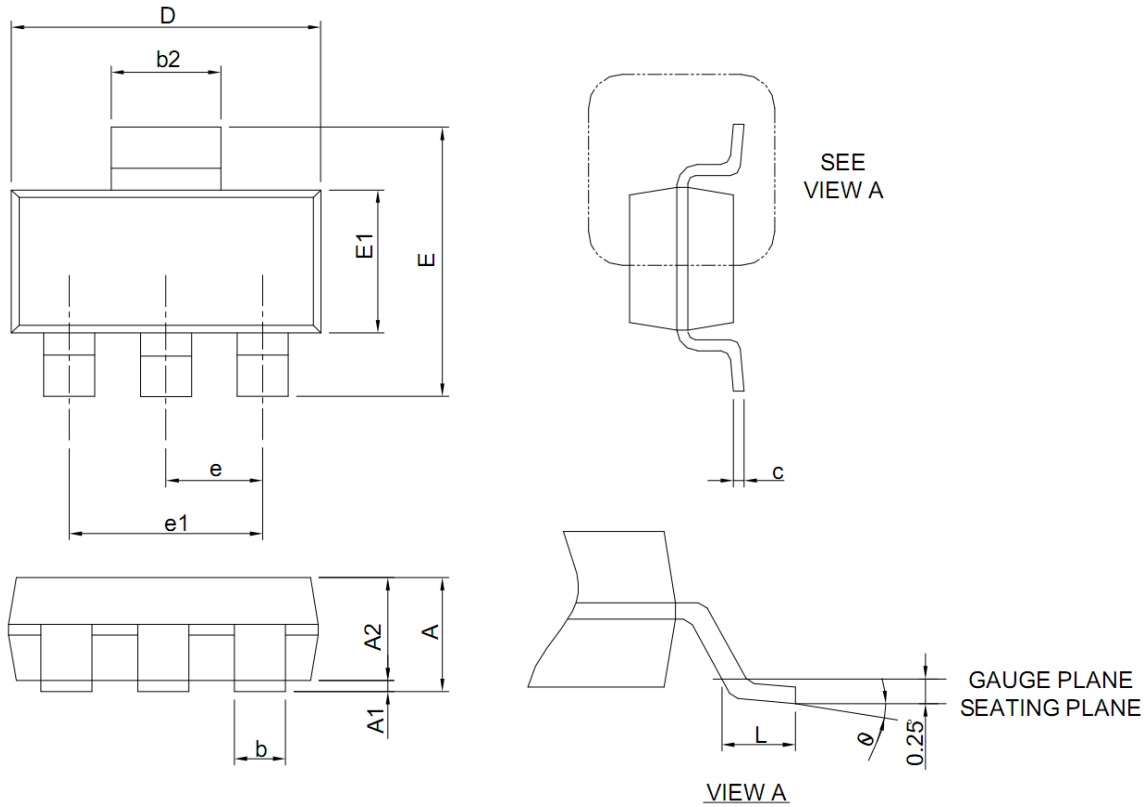


Figure 11 Normalized Maximum Transient Thermal Impedance

SOT223 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	1.50	1.65	1.80	A1	0.02	0.06	0.10
A2	1.50	1.60	1.70	b	0.66	0.72	0.80
b2	2.90	3.00	3.10	c	0.23	0.30	0.35
D	6.30	6.50	6.70	E	6.70	7.00	7.30
E1	3.30	3.50	3.70	e	2.30 REF		
e1	4.60 REF			L	0.75	--	1.15
θ	0°	--	10°				