

Features

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

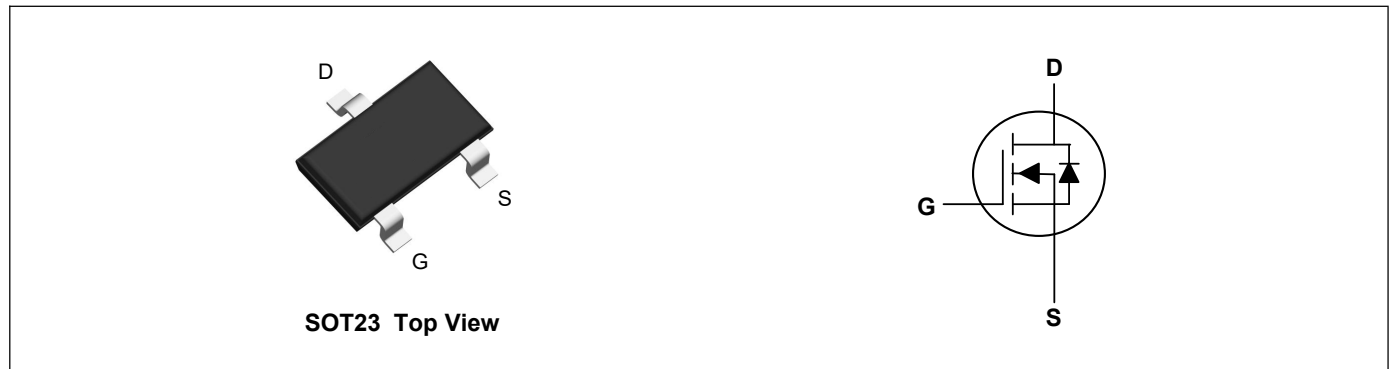
Product Summary



V_{DS}	30	V
I_D	5.8	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	31	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	43	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}	± 20	V
Continuous Drain Current ¹	I_D	5.8	A
Pulsed Drain Current ²	I_{DM}	20	A
Total Power Dissipation ³	P_D	1.4	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	$R_{\theta JA}$	---	89	$^{\circ}C/W$

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	R _{DS(ON)}	V _{GS} =10V, I _D =5A	---	26	31	mΩ
		V _{GS} =4.5V, I _D =4A	---	36	43	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.2	1.6	2.4	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, 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 =5A	---	15	---	S
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =6A	---	12.6	---	nC
Gate-Source Charge	Q _{gs}		---	1.9	---	
Gate-Drain Charge	Q _{gd}		---	2.6	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =15V, R _G =3Ω, V _{GS} =10V, R _L =3Ω	---	5	---	ns
Rise Time	T _r		---	3	---	
Turn-Off Delay Time	T _{d(off)}		---	15	---	
Fall Time	T _f		---	3.5	---	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	485	---	pF
Output Capacitance	C _{oss}		---	65	---	
Reverse Transfer Capacitance	C _{rss}		---	54	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ²	I _S		---	---	5.8	A
Diode Forward Voltage ¹	V _{SD}	V _{GS} =0V, I _S =6A, T _J =25°C	---	---	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

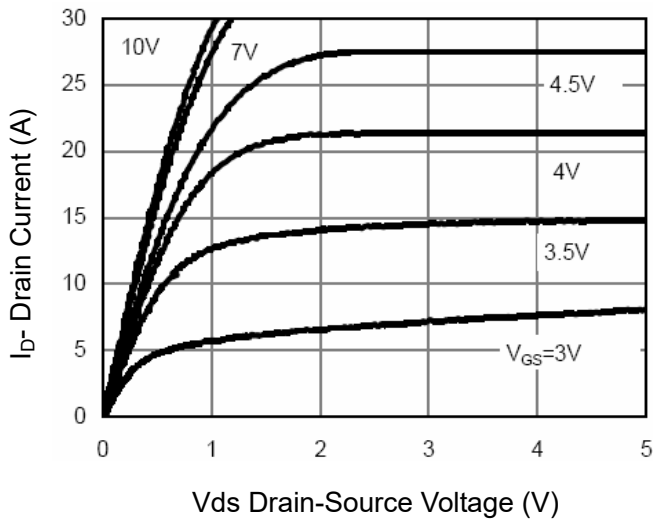


Figure 1 Output Characteristics

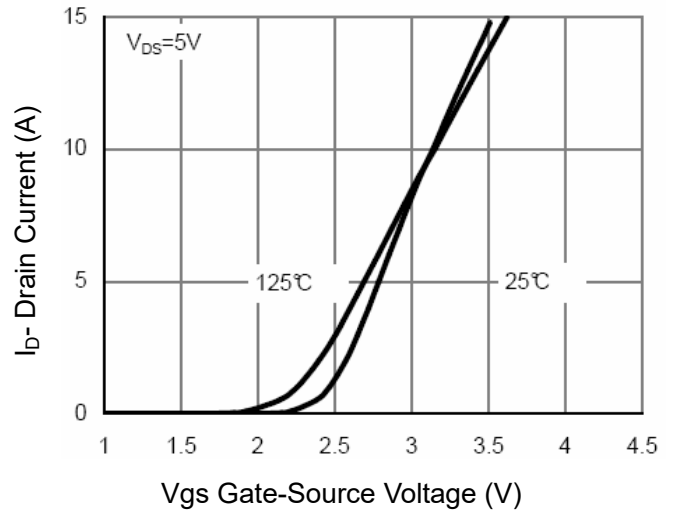


Figure 2 Transfer Characteristics

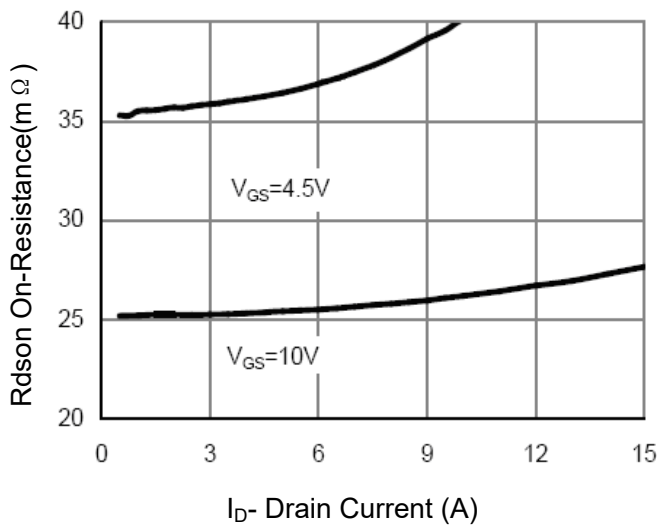


Figure 3 Drain-Source On-Resistance

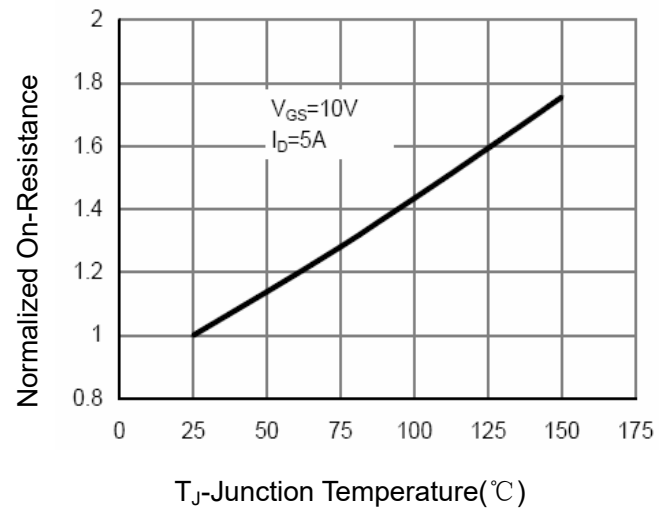


Figure 4 Drain-Source On-Resistance

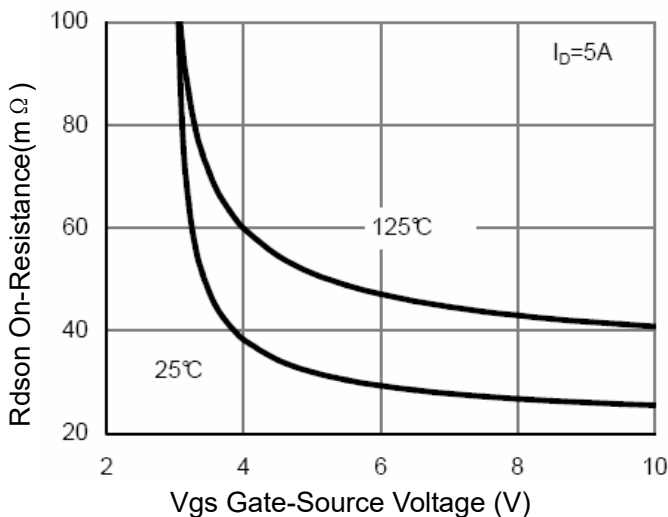


Figure 5 Rdson vs Vgs

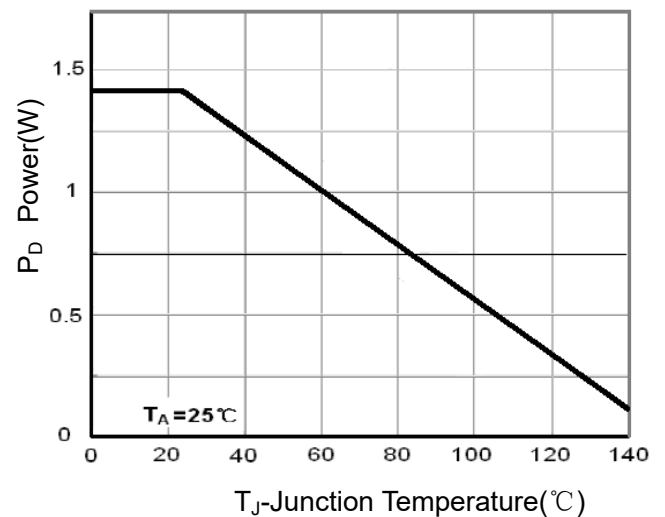


Figure 6 Power Dissipation

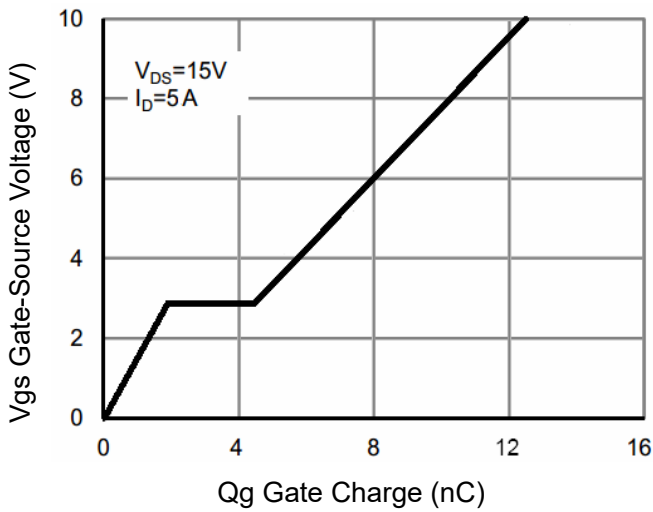


Figure 7 Gate Charge

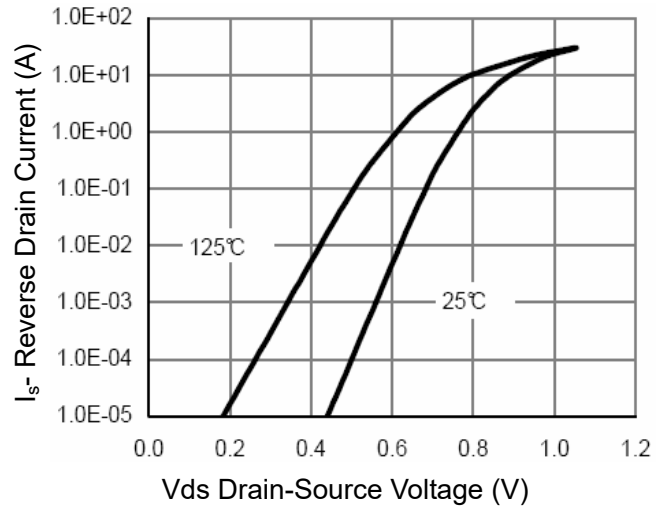


Figure 8 Source- Drain Diode Forward

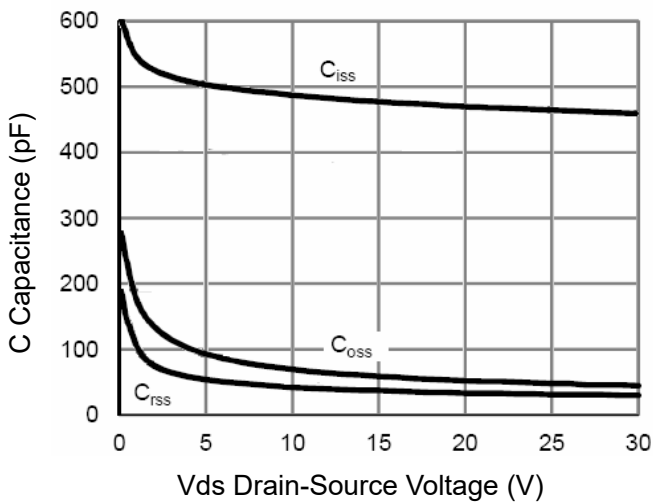


Figure 9 Capacitance vs Vds

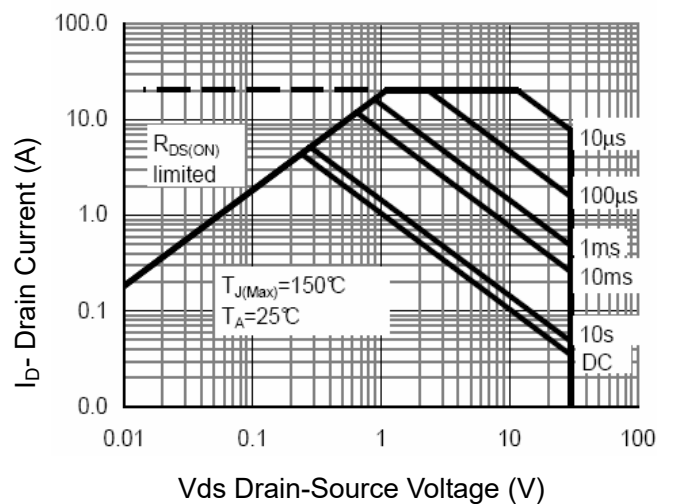


Figure 10 Safe Operation Area

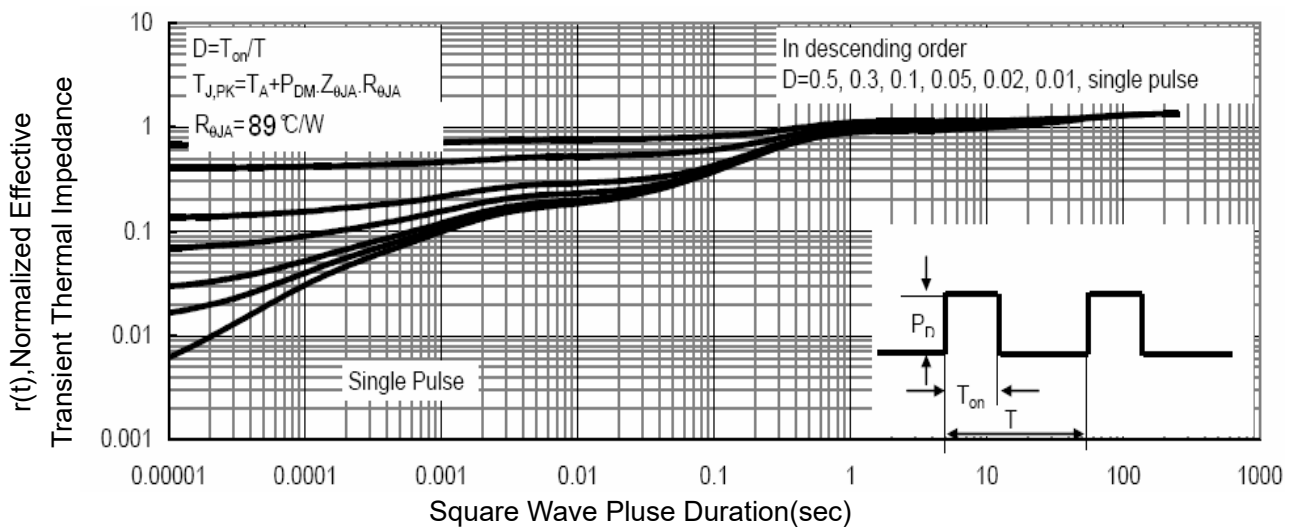


Figure 11 Normalized Maximum Transient Thermal Impedance

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	--				