

Features

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

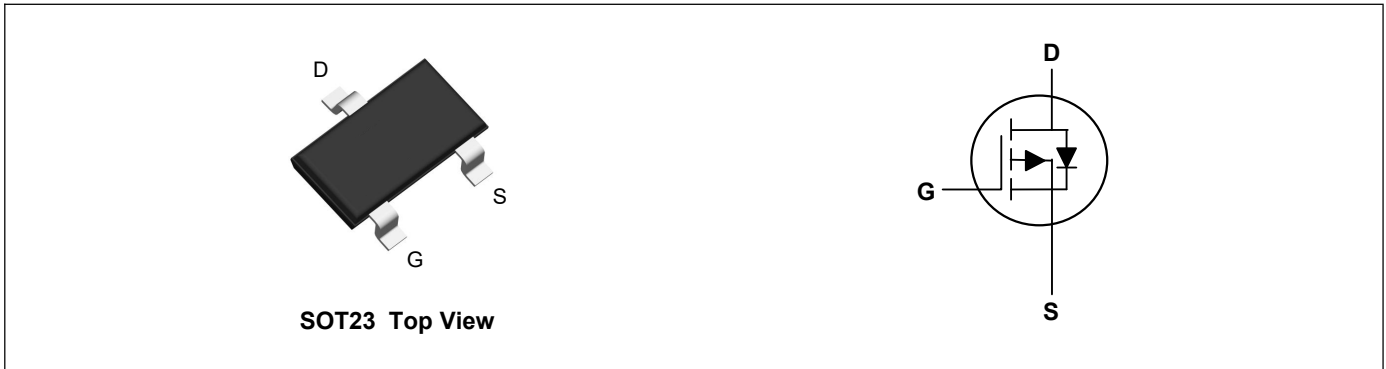
Product Summary



V_{DS}	-20	V
I_D	-3	A
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	110	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-2.5V$)	140	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}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-3	A
Pulsed Drain Current ²	I_{DM}	-10	A
Total Power Dissipation	P_D	1	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	$R_{\theta JA}$	---	125	$^{\circ}C/W$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-3A$	---	64	110	$m\Omega$
		$V_{GS}=-2.5V, I_D=-2A$	---	89	140	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.4	-0.7	-1	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=-5V, I_D=-2A$	5	---	---	S
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-2.5V, I_D=-3A$	---	3.3	---	nC
Gate-Source Charge	Q_{gs}		---	0.7	---	
Gate-Drain Charge	Q_{gd}		---	1.3	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=-10V, I_D=-1A,$ $V_{GS}=-4.5V, R_G=10\Omega$	---	11	---	ns
Rise Time	T_r		---	35	---	
Turn-Off Delay Time	$T_{d(off)}$		---	30	---	
Fall Time	T_f		---	10	---	
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1\text{MHz}$	---	405	---	pF
Output Capacitance	C_{oss}		---	75	---	
Reverse Transfer Capacitance	C_{rss}		---	55	---	

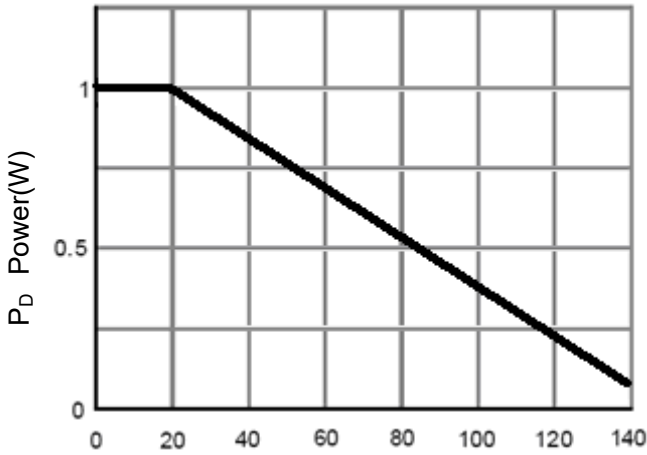
Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ²	I_S	$V_G=V_D=0V$, Force Current	---	---	-3	A
Diode Forward Voltage ¹	V_{SD}	$V_{GS}=0V, I_S=-1.3A, T_J=25^\circ\text{C}$	---	---	-1.2	V

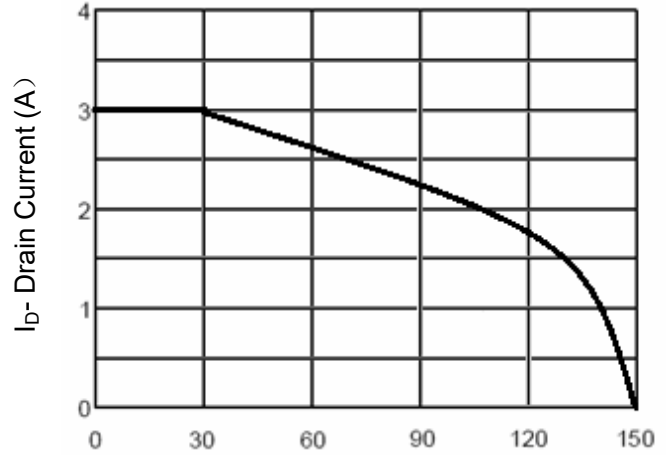
Note:

- 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 $\leq 300\mu s$, duty cycle $\leq 2\%$

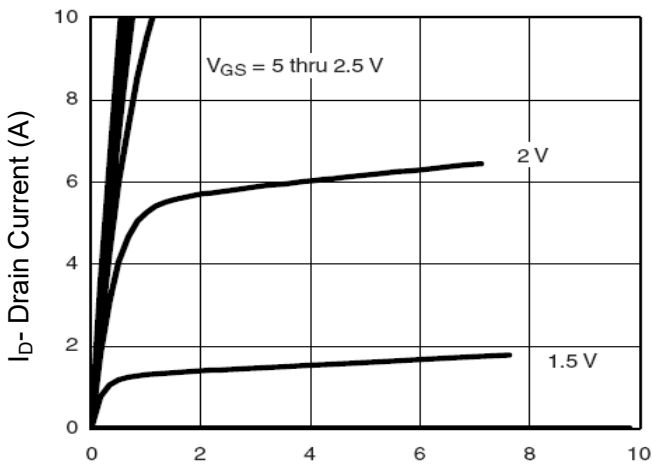
Typical Characteristics



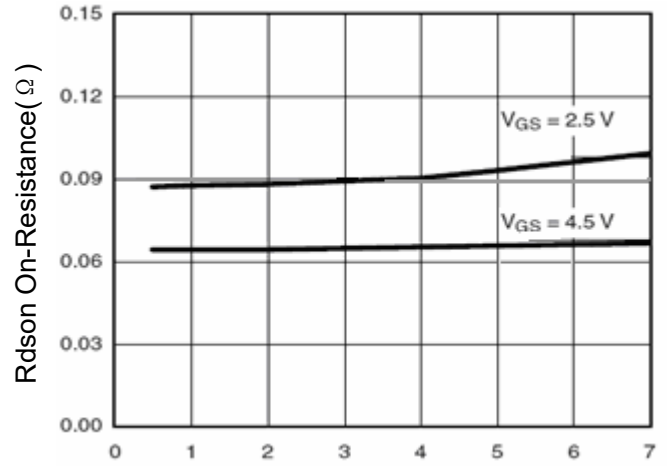
T_J-Junction Temperature(°C)
Figure 1 Power Dissipation



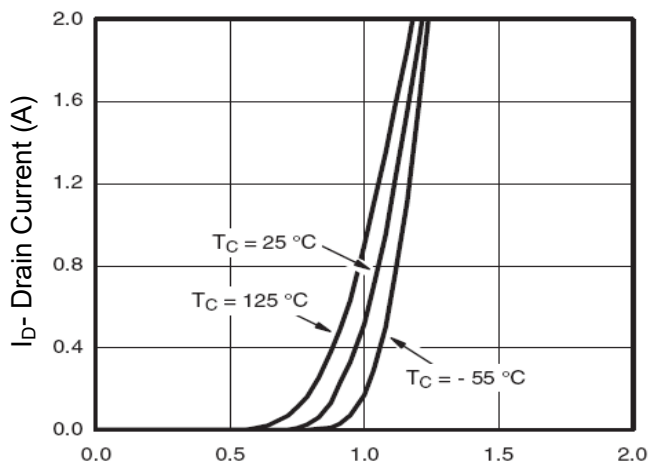
T_J-Junction Temperature(°C)
Figure 2 Drain Current



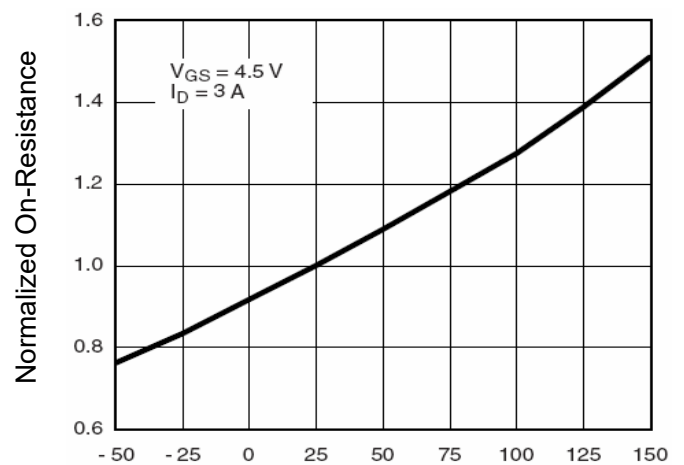
V_{ds} Drain-Source Voltage (V)
Figure 3 Output Characteristics



I_D- Drain Current (A)
Figure 4 Drain-Source On-Resistance



V_{gs} Gate-Source Voltage (V)
Figure 5 Transfer Characteristics



T_J-Junction Temperature(°C)
Figure 6 Drain-Source On-Resistance

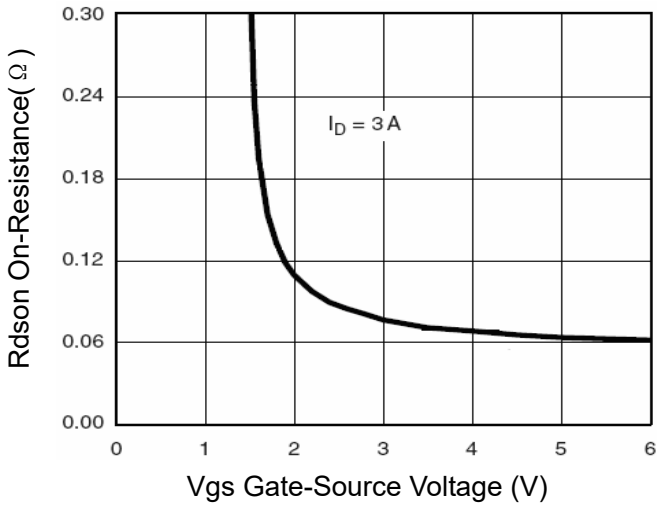


Figure 7 Rdson vs Vgs

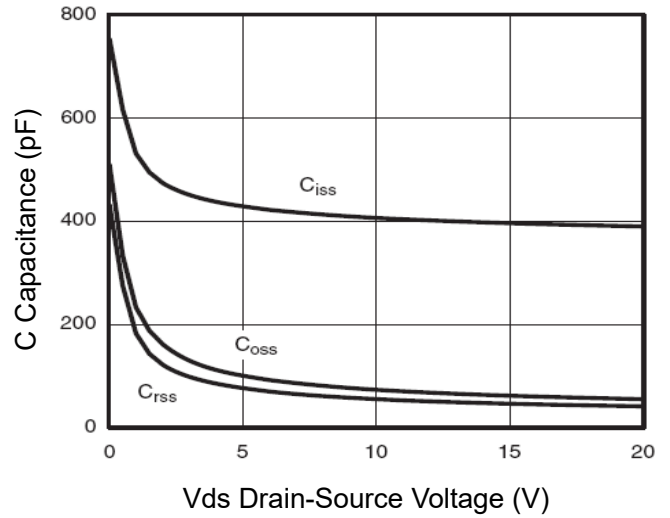


Figure 8 Capacitance vs Vds

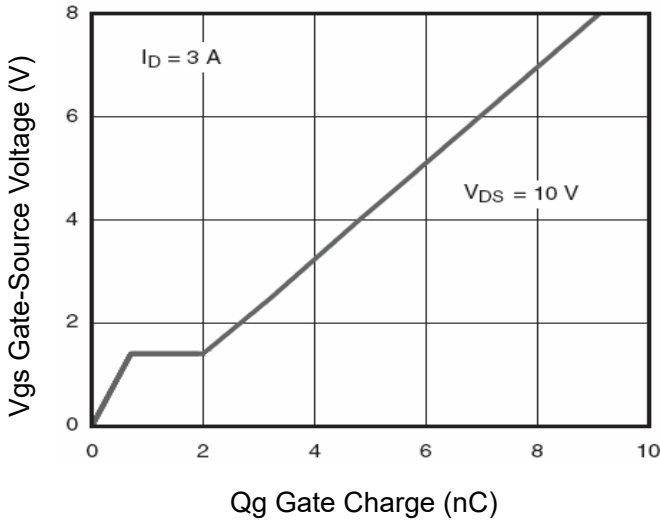


Figure 9 Gate Charge

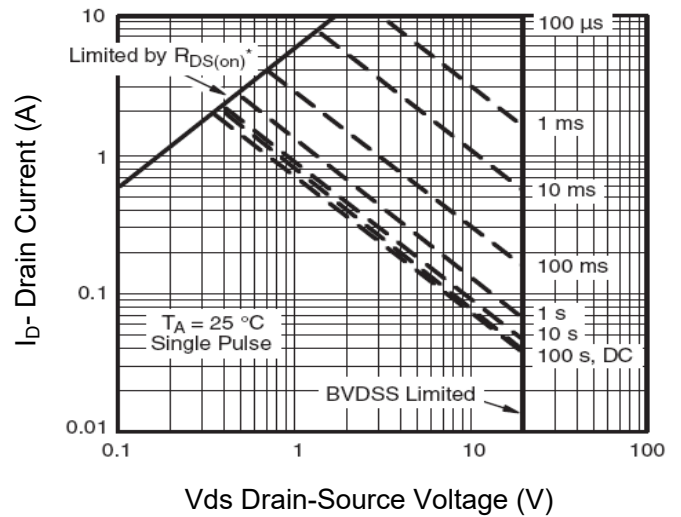


Figure 10 Safe Operation Area

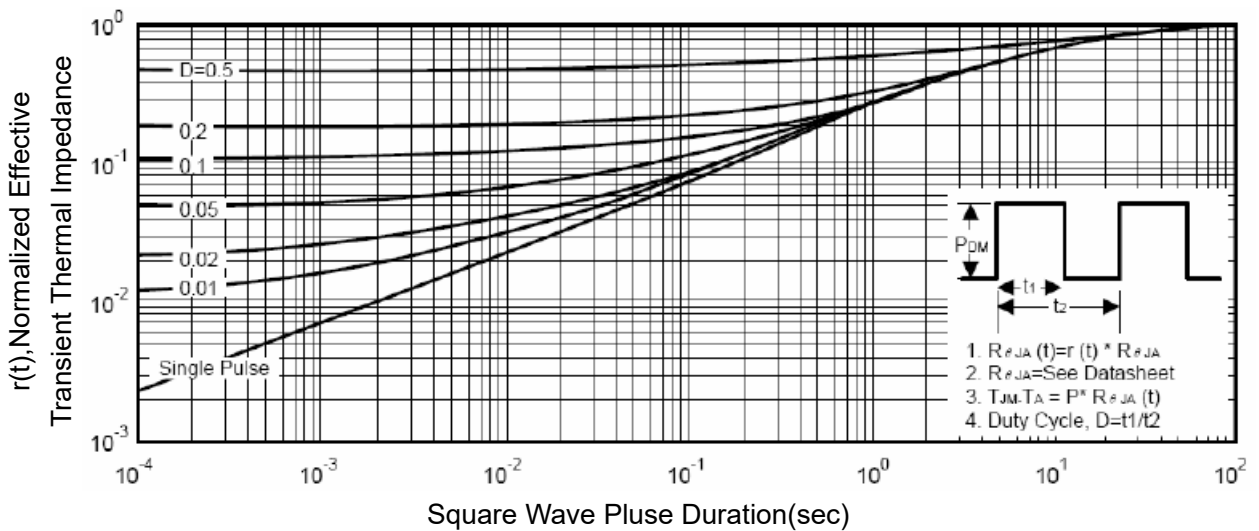
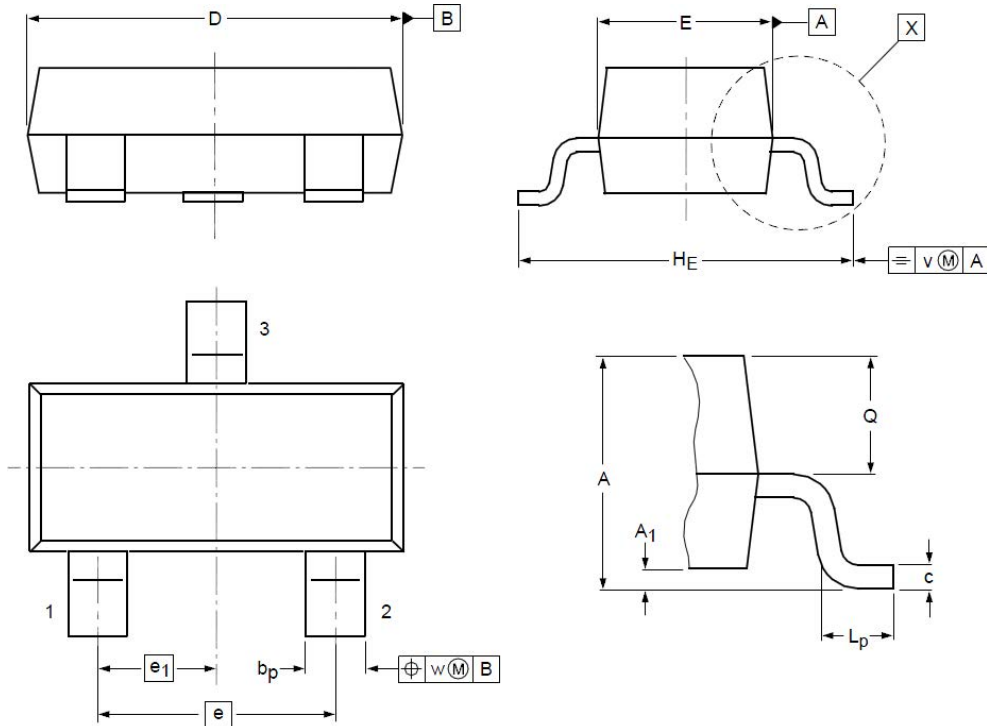


Figure 11 Normalized Maximum Transient Thermal Impedance

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	--				