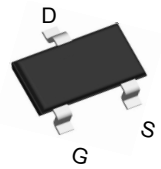
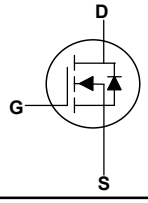
N-Channel Enhancement Mode MOSFET

Features

- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description

SOT-23	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	150	V
$R_{DS(ON)-Typ}$	700	mΩ
I_D	0.76	A

Absolute Maximum Ratings(T_A=25℃, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	150	V
V_{GSS}	Gate-Source Voltage	±20	V
T_J	Maximum Junction Temperature	-55 to 150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
I_{DM} ①	Pulse Drain Current Tested	1.9	A
I_D	Continuous Drain Current	0.76	A
P_D	Maximum Power Dissipation	1.1	W
E_{AS}	Single Pulse Avalanche Energy[3]	0.4	mJ
I_{AS}	Avalanche Current	2.8	A

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	110	℃/W

Note ①: Max. current is limited by bonding wire.

Note ②: UIS tested and pulse width are limited by maximum junction temperature 150℃.

Note ③: Surface Mounted on 1in^2 FR-4 board with 1oz.

Electrical Characteristics (T_J=25℃, Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	150	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1.0	---	2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V , I_D=0.5A	---	700	880	mΩ
		V_{GS}=4.5V , I_D=0.5A	---	720	940	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V, Freq.=1MHz	---	220	---	pF
C_{oss}	Output Capacitance		---	7	---	
C_{rss}	Reverse Transfer Capacitance		---	3	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DS}=75V , V_{GS}=10V , R_G=6Ω, I_D=1A	---	1	---	nS
T_r	Turn-on Rise Time		---	19		
$T_{d(off)}$	Turn-off Delay Time		---	11	---	
T_f	Turn-off Fall Time		---	19	---	
gfs	Forward Transconductance	V_{DS}=5V , I_D=0.1A	---	0.68	---	S
Q_g	Total Gate Charge	V_{DS}=75V , V_{GS}=10V , I_D=1A	---	6.4	---	nC
Q_{gs}	Gate-Source Charge		---	1	---	
Q_{gd}	Gate-Drain Charge		---	1	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}	Diode Forward Voltage②	V_{GS}=0V , I_S=0.5A ,T_J=25℃	---	0.7	1.1	V
t_{rr}	Reverse Recovery Time	I_F=0.5A ,V_R=20V di/dt=100A/μs，T_J=25℃	---	18	---	nS
Q_{rr}	Reverse Recovery Charge		---	9	---	nC

Note ④： Pulse test (pulse width≤300us, duty cycle≤2%).

Note ⑤：Guaranteed by design, not subject to production testing.

Typical Characteristics

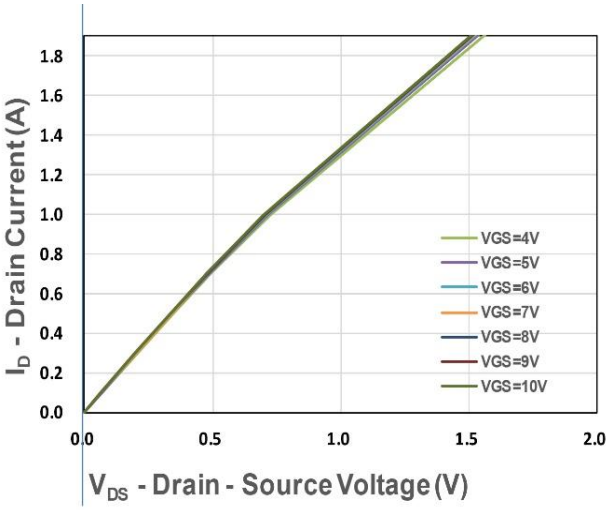


Figure 1. Output Characteristics

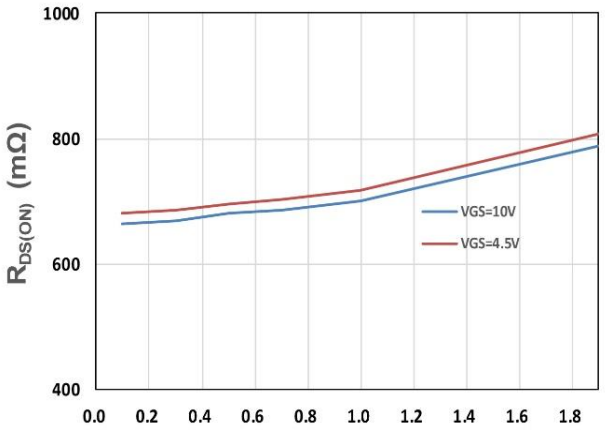


Figure 2. On-Resistance vs. ID

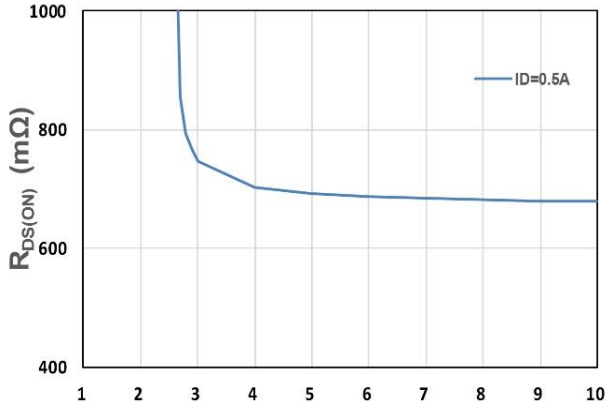


Figure 3. On-Resistance vs. VGS

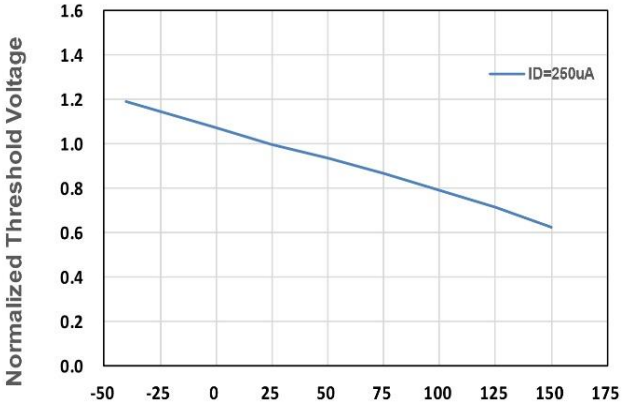


Figure 4. Gate Threshold Voltage

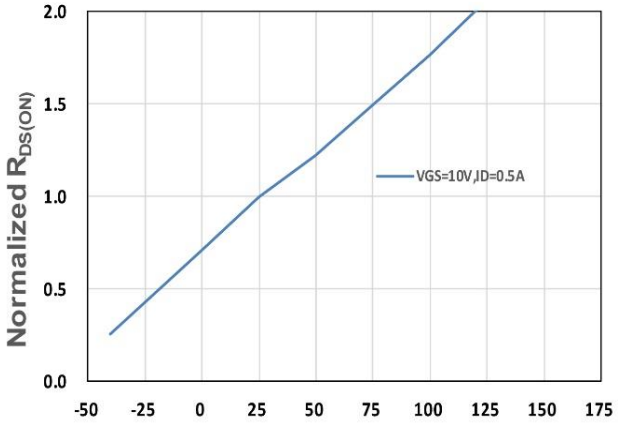


Figure 5. Drain-Source On Resistance

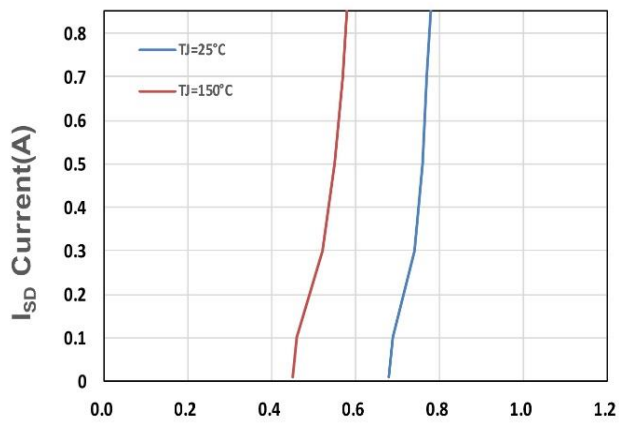
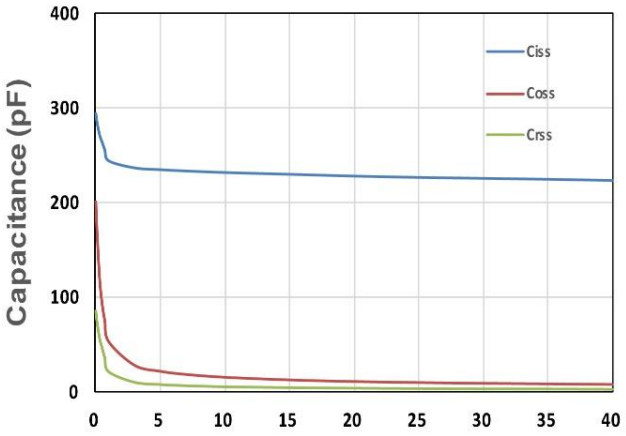
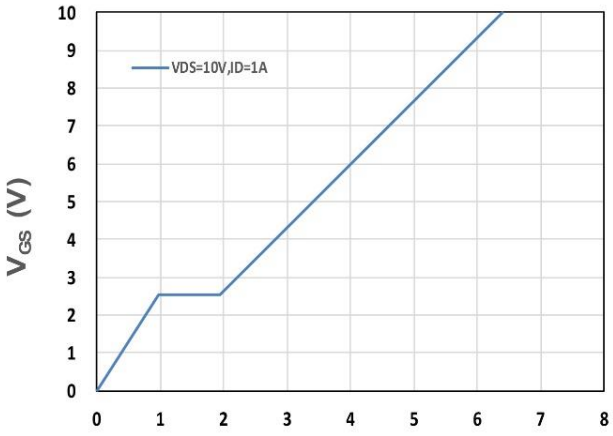


Figure 6. Source-Drain Diode Forward

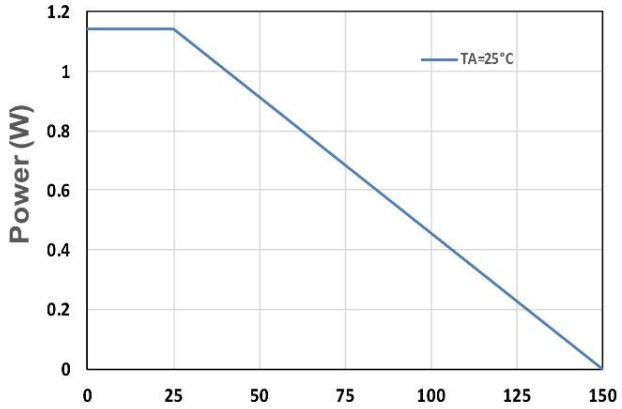
N-Channel Enhancement Mode MOSFET



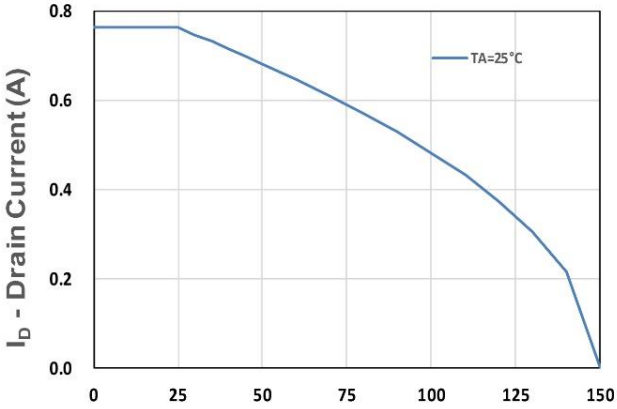
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



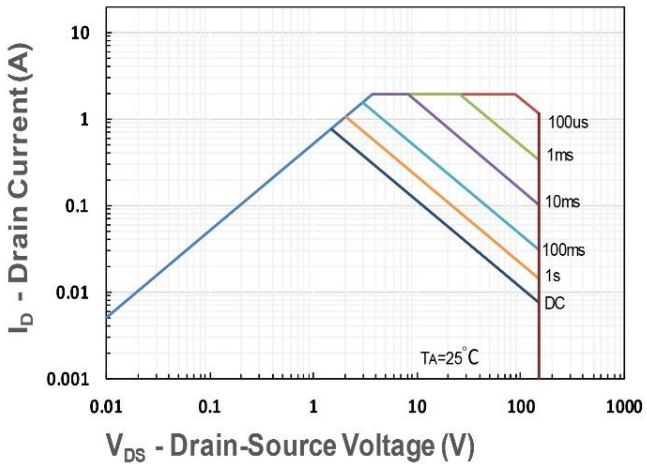
Qg, Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



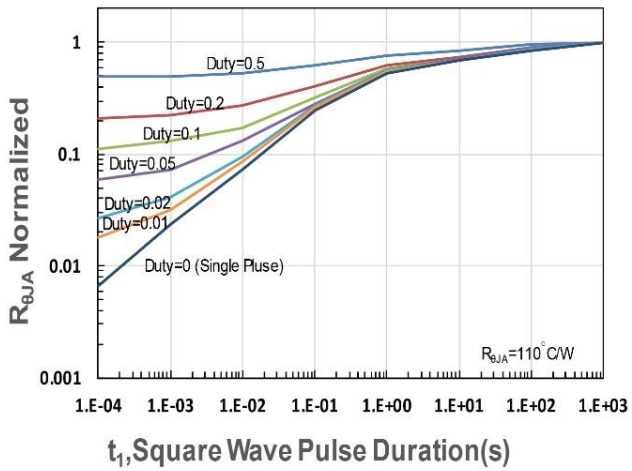
Tj - Junction Temperature (°C)
Figure 9. Power Dissipation



Tj - Junction Temperature (°C)
Figure 10. Drain Current

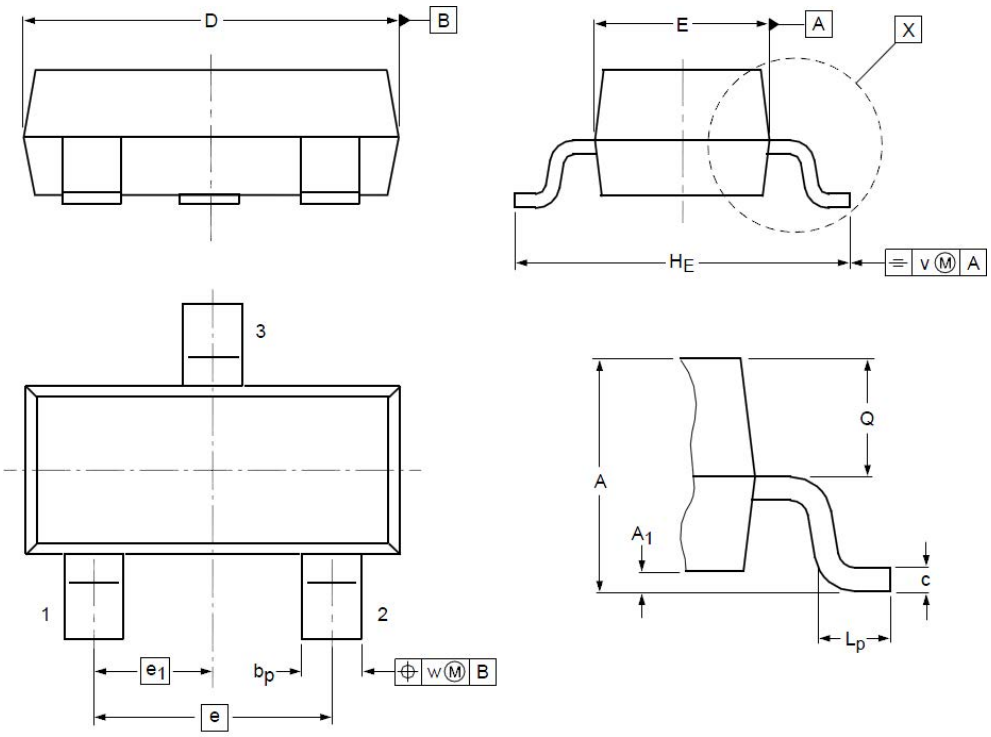


V_{DS} - Drain-Source Voltage (V)
Figure 11. Safe Operating Area



t_1,Square Wave Pulse Duration(s)
Figure 12. RθJA 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	**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	--				