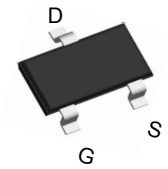
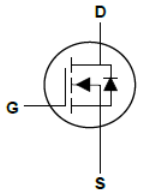
N-Channel Enhancement Mode MOSFET

Features

- High Speed Power Switching
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

Pin Description

SOT23-3L	Symbol
	

Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	100	V
$R_{DS(ON)-Typ}$	130	mΩ
I_D	1.9	A

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

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	100	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	4.8	A
I_D	Continuous Drain Current	1.9	A
P_D	Maximum Power Dissipation	1.3	W
E_{AS}	Avalanche Energy, Single pulse	5	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	100	℃/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.

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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	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	1.2	---	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=1A	---	130	160	mΩ
		V_{GS}=4.5V, I_D=0.5A	---	140	180	mΩ
Dynamic Characteristics⑤						
gfs	Forward Transconductance	V_{DS}=5V , I_D=1A	---	4.5	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	5.4	---	Ω
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, Freq.=1MHz	---	451	---	pF
C_{oss}	Output Capacitance		---	32	---	
C_{rss}	Reverse Transfer Capacitance		---	18	---	
$T_{d(on)}$	Turn-on Delay Time	V_{DS}=50V,V_{GS}=10V, I_D=1A,R_G=6Ω	---	10	---	nS
T_r	Turn-on Rise Time		---	8	---	
$T_{d(off)}$	Turn-off Delay Time		---	30	---	
T_f	Turn-off Fall Time		---	5	---	
Q_g	Total Gate Charge	V_{DS}=50V,V_{GS}=10V, I_D=1A	---	8.4	---	nC
Q_{gs}	Gate-Source Charge		---	1.1	---	
Q_{gd}	Gate-Drain Charge		---	1.5	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	I_S=1A, V_{GS}=0V	---	---	1.1	V
t_{rr}	Reverse Recovery Time	I_F=1A,V_R=50V, dI_F/dt=100A/us	---	20	---	nS
Q_{rr}	Reverse Recovery Charge		---	12	---	nC

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

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

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Typical Characteristics

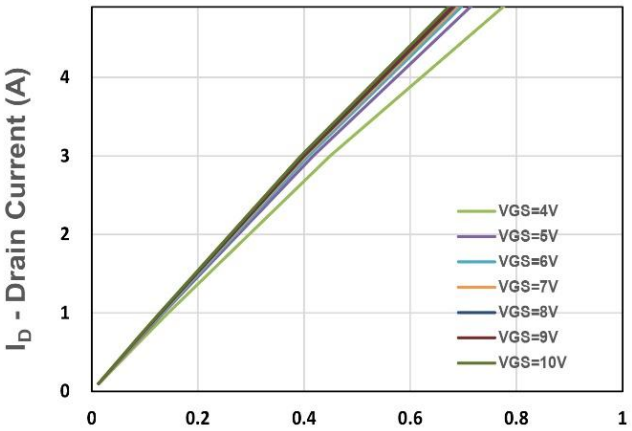


Figure 1. Output Characteristics

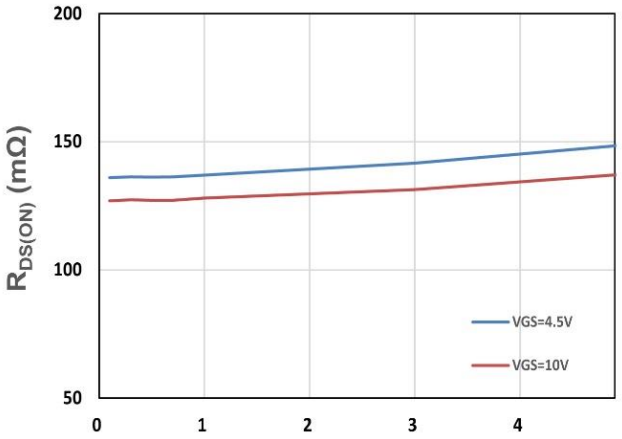


Figure 2. On-Resistance vs. ID

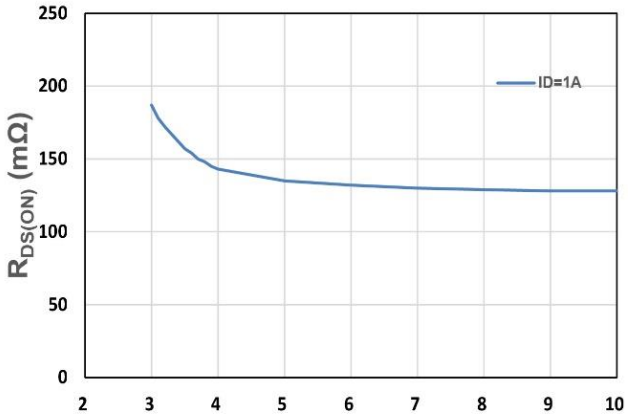


Figure 3. On-Resistance vs. VGS

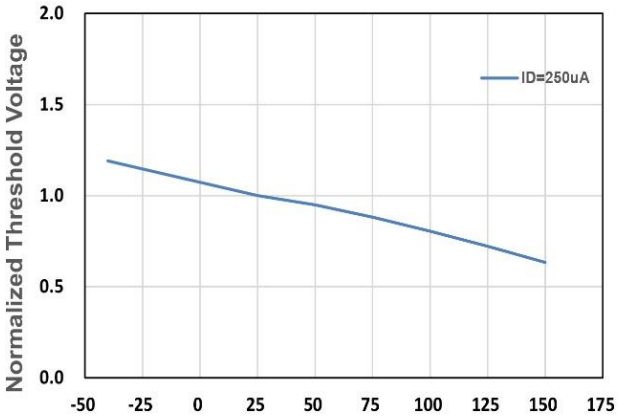


Figure 4. Gate Threshold Voltage

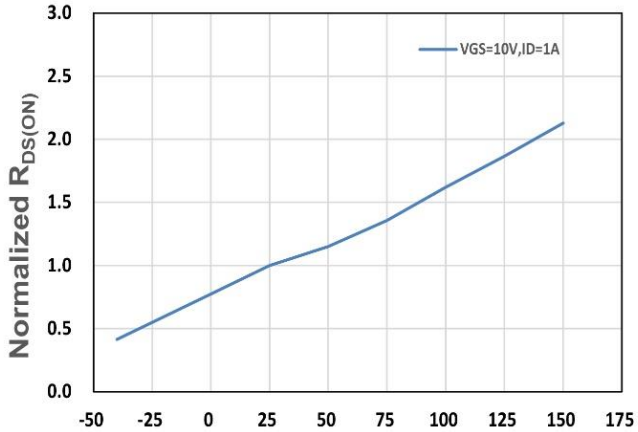


Figure 5. Drain-Source On Resistance

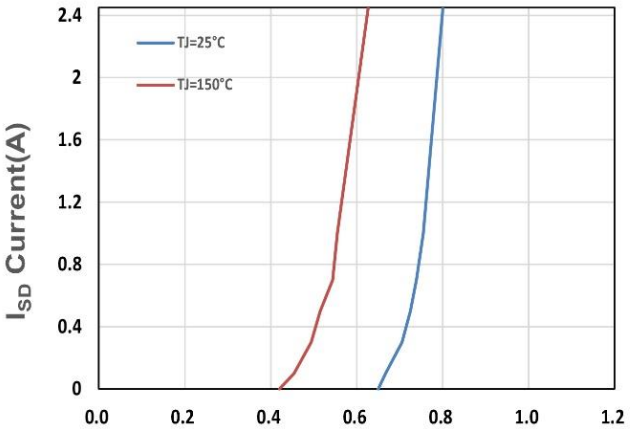


Figure 6. Source-Drain Diode Forward

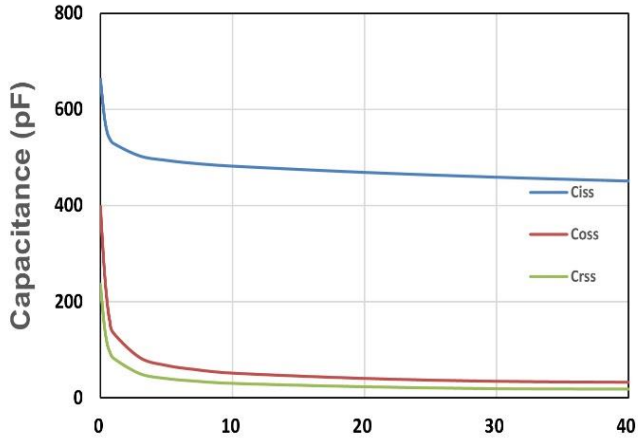


Figure 7. Capacitance

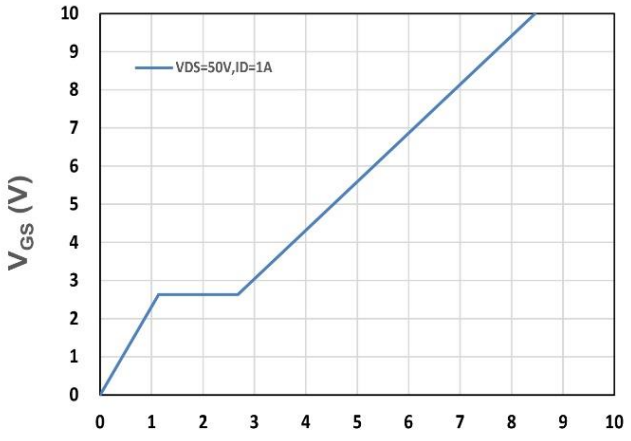


Figure 8. Gate Charge Characteristics

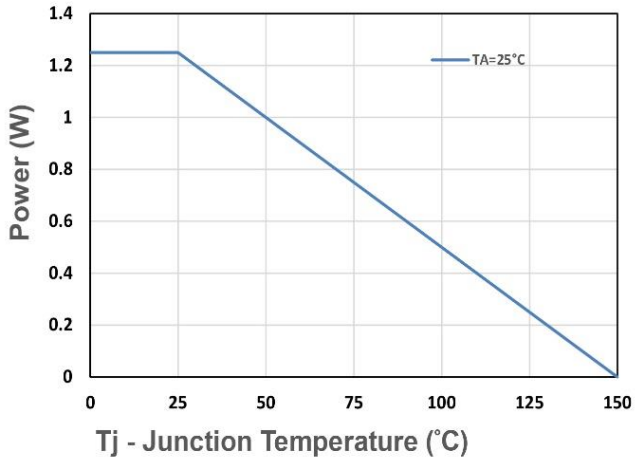


Figure 9. Power Dissipation

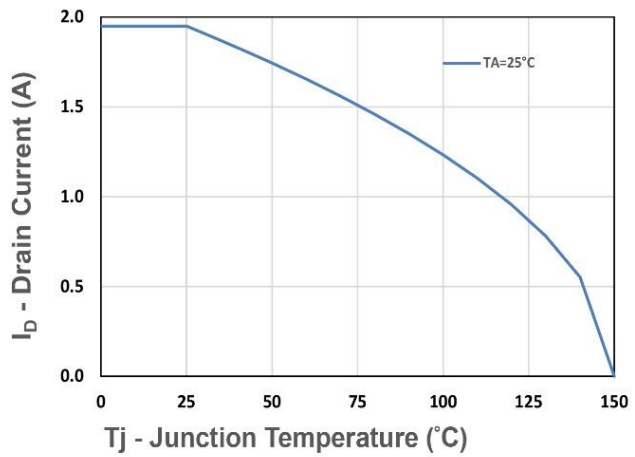


Figure 10. Drain Current

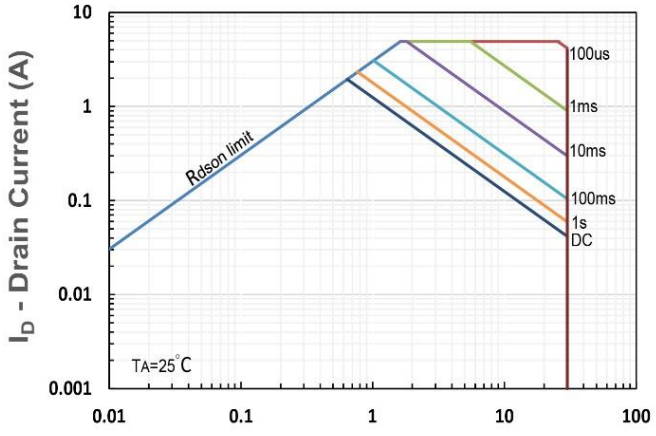


Figure 11. Safe Operating Area

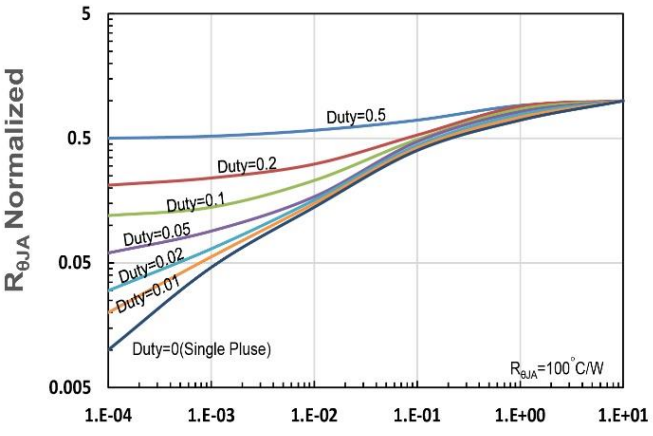
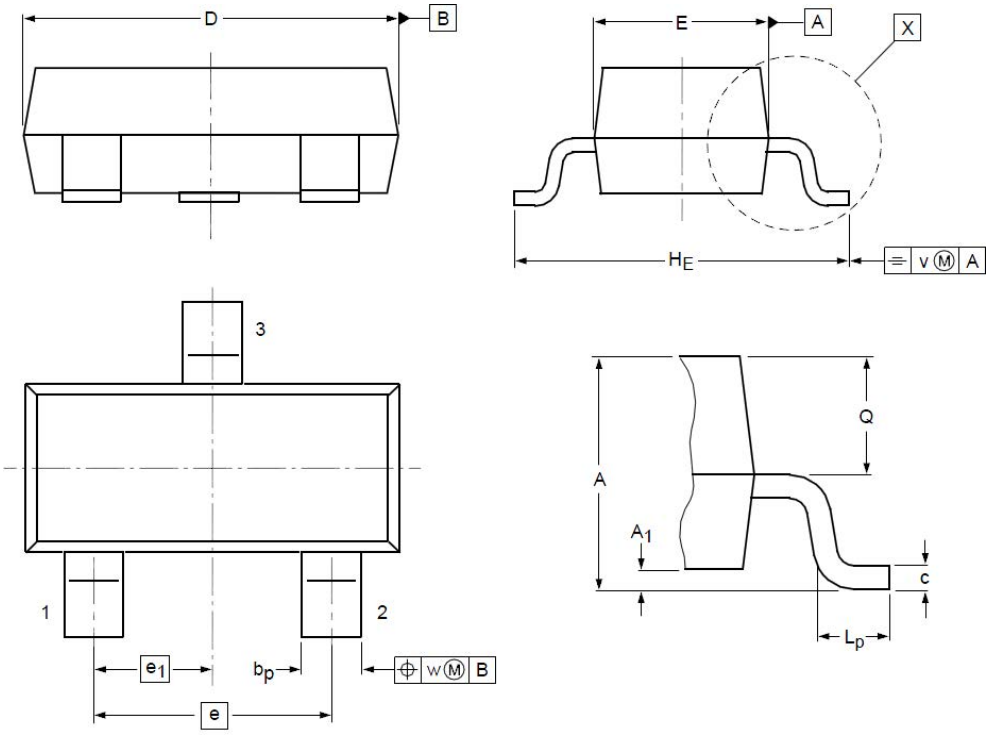


Figure 12. RθJA Transient Thermal Impedance

SOT23-3L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.07	1.25	**e_1**	--	0.95	--
A_1	0.01	0.05	0.10	**H_E**	2.50	2.80	3.00
b_p	0.30	0.40	0.50	**L_P**	0.30	0.45	0.60
c	0.10	0.15	0.20	**Q**	0.23	0.28	0.33
D	2.70	2.90	3.10	**V**	--	0.20	--
E	1.40	1.55	1.75	**W**	--	0.20	--
e	--	1.90	--				