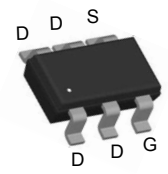
N-Channel Enhancement Mode MOSFET

Features

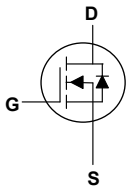
- Low Rdson for low conduction loss
- Reliable and Rugged
- ROHS Compliant & Halogen-Free

Pin Description

SOT-23-6L



Symbol



Applications

- Power Management in Desktop Computer
- DC/DC Converters

V_{DSS}	30	V
$R_{DS(ON)-Typ}$	46	mΩ
I_D	3.4	A

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

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	±12	V
T_J	Maximum Junction Temperature	-55 to 150	℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
I_{DM} ①	Pulse Drain Current Tested	20	A
I_D	Continuous Drain Current	3.4	A
P_D	Maximum Power Dissipation	1.15	W

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$ ③	Thermal Resistance Junction-Ambient1 (Steady-State)	106	℃/W
$R_{\theta JL}$	Thermal Resistance-Junction to Lead (Steady-State)	64	℃/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	30	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V	---	---	1	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} , I_D=250uA	0.5	---	1.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	---	---	±100	nA
$R_{DS(ON)}$	Drain-Source On-state Resistance	V_{GS}=10V , I_D=3.4A	---	46	60	mΩ
		V_{GS}=4.5V , I_D=3A	---	53	70	mΩ
Dynamic Characteristics⑤						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Freq.=1MHz	---	235	---	pF
C_{oss}	Output Capacitance		---	35	---	
C_{rss}	Reverse Transfer Capacitance		---	18	---	
$T_{d(on)}$	Turn-on Delay Time	V_{GS}=10V, V_{DS}=15V, R_L=4.4Ω, R_{GEN}=3Ω	---	3.5	---	nS
T_r	Turn-on Rise Time		---	1.5		
$T_{d(off)}$	Turn-off Delay Time		---	17.5	---	
T_f	Turn-off Fall Time		---	2.5	---	
Q_g	Total Gate Charge	V_{DS}=15V , V_{GS}=10V , I_D=3.4A	---	10	---	nC
Q_{gs}	Gate-Source Charge		---	0.95	---	
Q_{gd}	Gate-Drain Charge		---	1.6	---	
Source-Drain Characteristics （T_J=25℃）						
V_{SD}	Diode Forward Voltage②	V_{GS}=0V , I_{SD}=1A ,T_J=25℃	---	0.75	1.0	V
t_{rr}	Reverse Recovery Time	I_F=3.4A, di/dt=100A/μs, T_J=25℃	---	8.5	---	nS
Q_{rr}	Reverse Recovery Charge		---	2.55	---	nC

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

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

Typical Characteristics

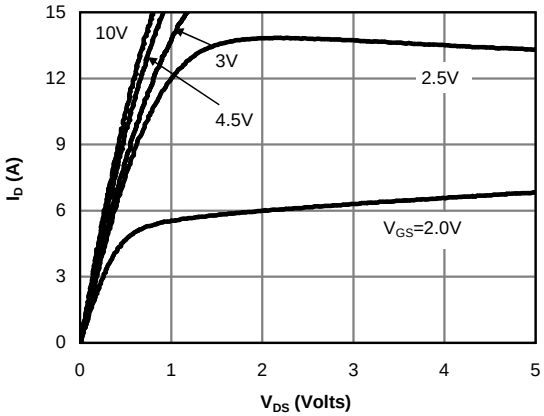

Fig 1: On-Region Characteristics

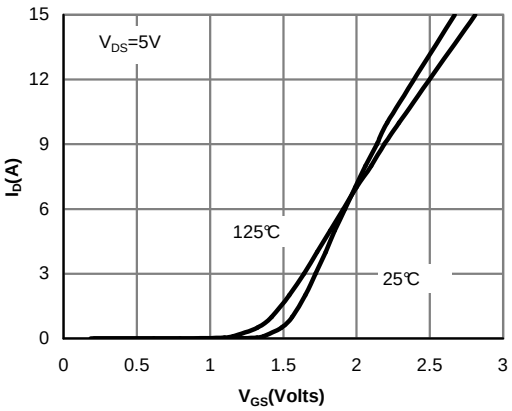

Figure 2: Transfer Characteristics

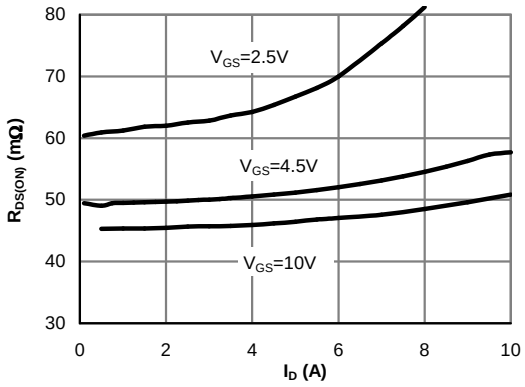

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

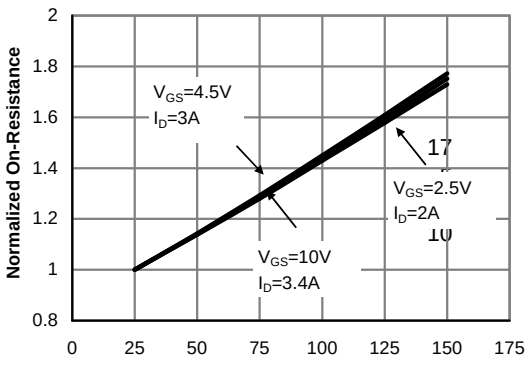

Figure 4: On-Resistance vs. Junction Temperature

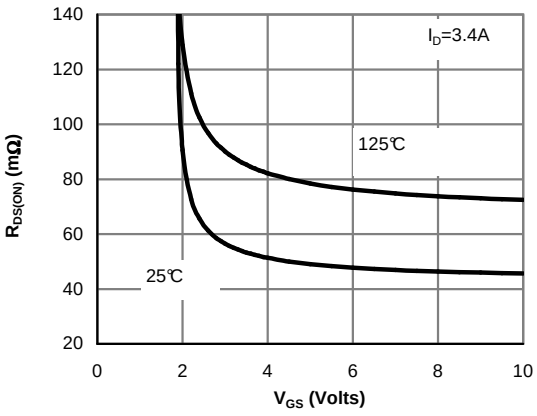

Figure 5: On-Resistance vs. Gate-Source Voltage

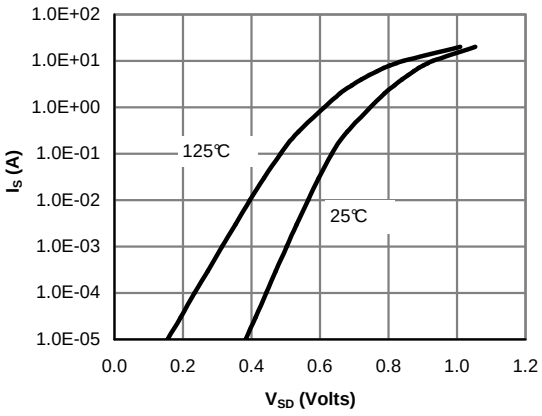

Figure 6: Body-Diode Characteristics

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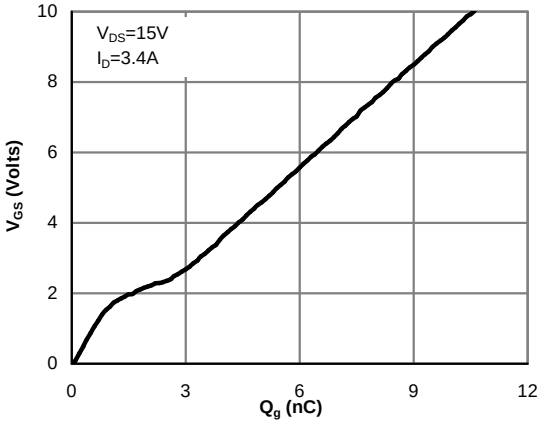


Figure 7: Gate-Charge Characteristics

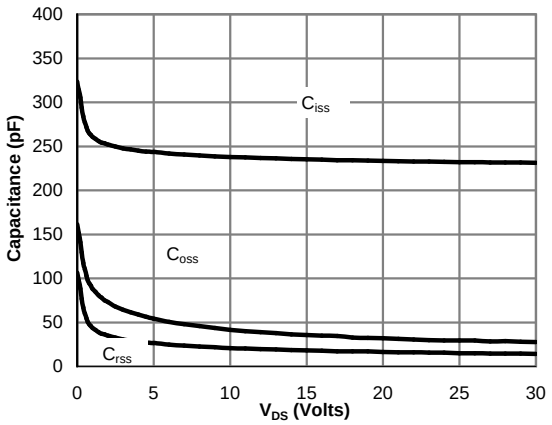


Figure 8: Capacitance Characteristics

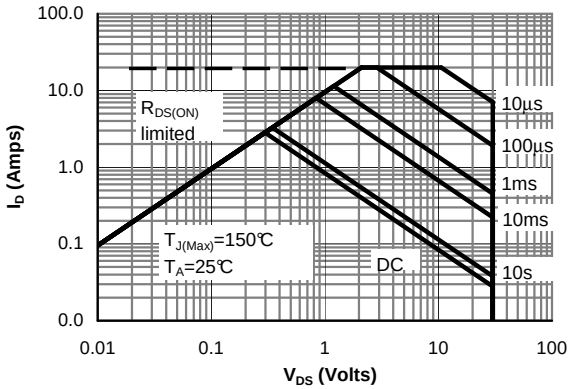


Figure 9: Maximum Forward Biased Safe Operating Area

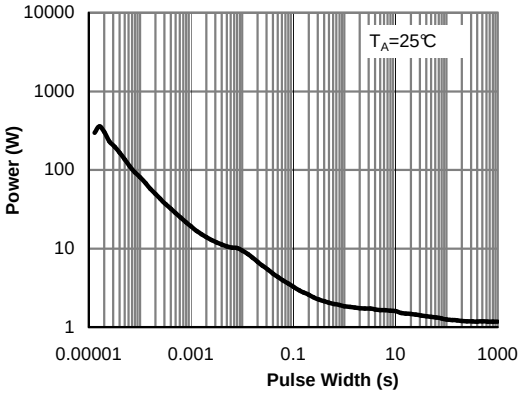


Figure 10: Single Pulse Power Rating Junction-to-Ambient

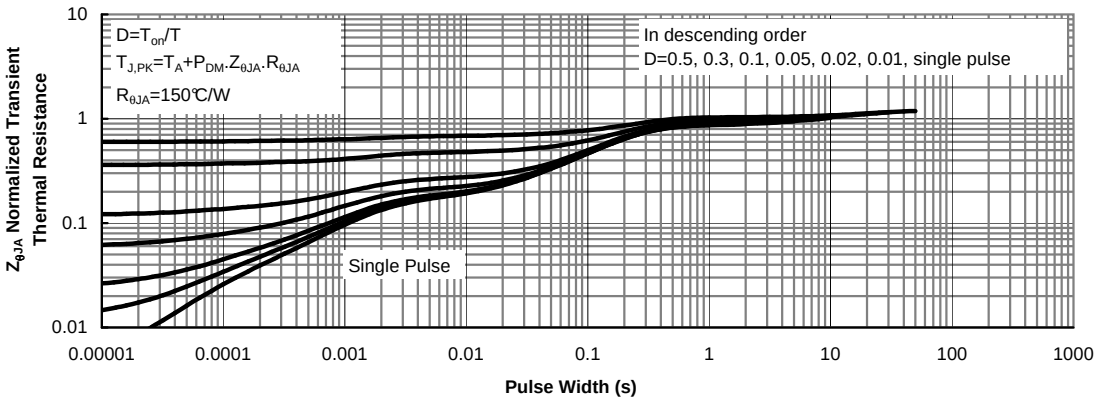
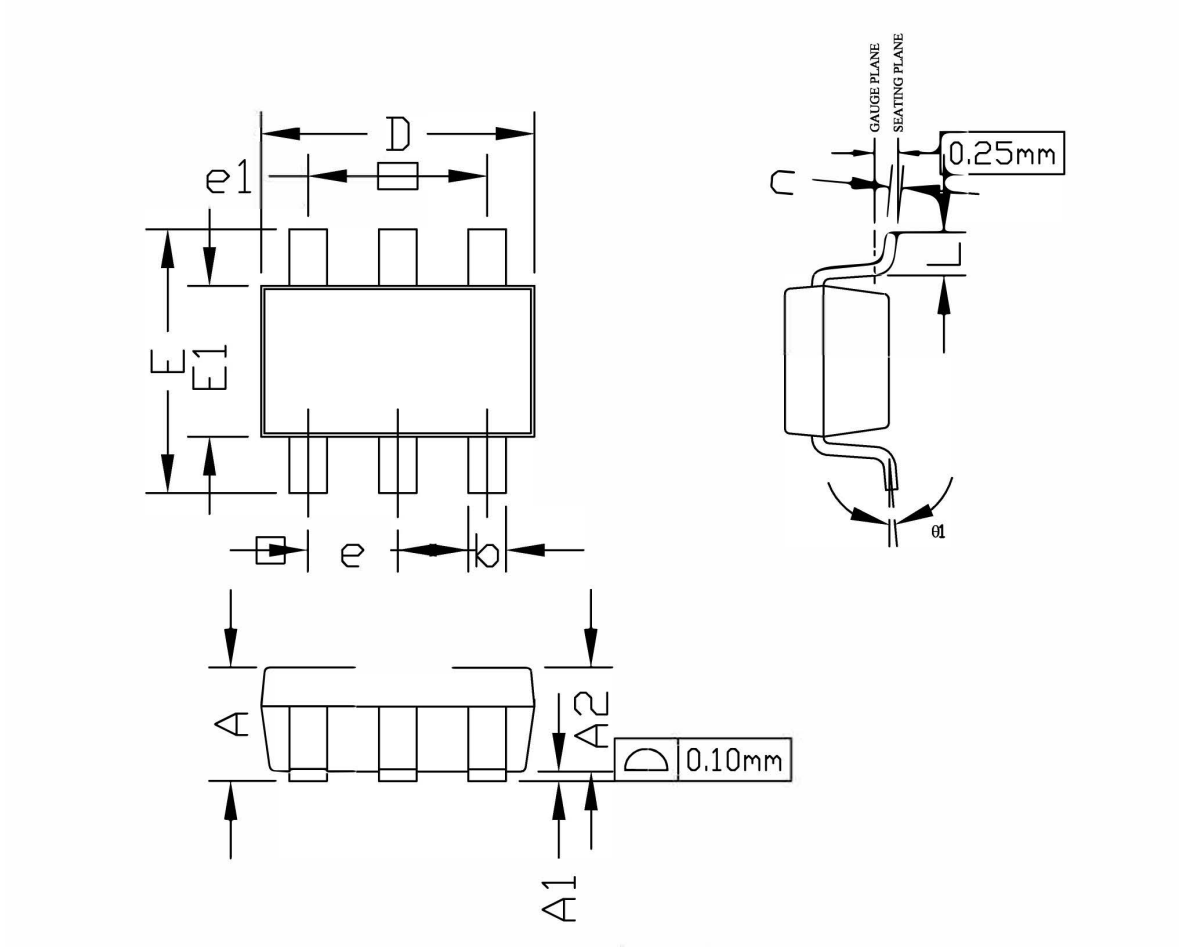


Figure 11: Normalized Maximum Transient Thermal Impedance

SOT23-6L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.80	1.00	1.25	E	2.50	2.80	3.10
A1	0.00	---	0.15	E1	1.50	1.60	1.70
A2	0.80	1.10	1.20	e	0.95 REF		
b	0.25	0.35	0.45	e1	1.90 REF		
c	0.08	0.13	0.20	L	0.30	0.45	0.60
D	2.70	2.90	3.10	θ1	0°		8°