20V N-Channel Mosfet

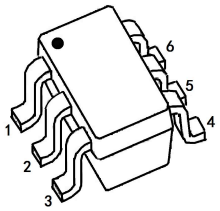
FEATURES

- $R_{DS(ON)}$=15mΩ(Typ.) @V_{GS}=4.5V
- $R_{DS(ON)}$=19mΩ(Typ.) @V_{GS}=2.5V

APPLICATIONS

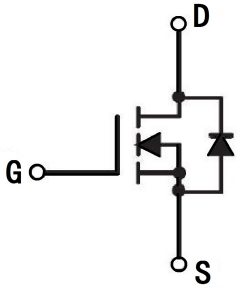
- Load Switch
- Battery Management

SOT-23-6L



1: D	3: G	5: D
2: D	4: S	6: D

N-CHANNEL MOSFET



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current note1	T_a = 25℃	6	A
		T_a = 100℃	4.2	A
I_{DM}	Pulsed Drain Current note2		24	A
E_{AS}	Single Pulsed Avalanche Energy note3		2.5	mJ
P_D	Power Dissipation		1.25	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		100	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

MOSFET ELECTRICAL CHARACTERISTICS T_a=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V,I_D = 250μA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{GS} = ±12V,V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS},I_D = 250μA	0.5	0.65	1.0	V
$R_{DS(ON)}$	Gate Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=4A	-	15	20	mΩ
		V_{GS}=2.5V, I_D=3A	-	19	28	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =10V, V_{GS} = 0V, f = 1.0MHz	-	620	-	pF
C_{oss}	Output Capacitance		-	170	-	pF
C_{rss}	Reverse Transfer Capacitance		-	140	-	pF
Q_g	Total Gate Charge	V_{DS}=10V, I_D=6A, V_{GS}=4.5V	-	10	-	nC
Q_{gs}	Gate-Source Charge		-	2	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	3.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{GS} = 4.5V, V_{DS}=10V, R_G =3.3Ω, I_D=3A	-	9	-	ns
t_r	Turn-On Rise Time		-	5	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	23	-	ns
t_f	Turn-Off Fall Time		-	10	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	6	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	24	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_{SD}=5A, T_J = 25℃	-	-	1.2	V

Notes: 1. Calculated continuous current based on maximum allowable junction temperature.

2 . Repetitive rating; pulse width limited by max. junction temperature.

3 . VDS=16 V, RG=25 Ω, L=0.3 mH, starting Tj=25 ℃.

Typical Performance Characteristics

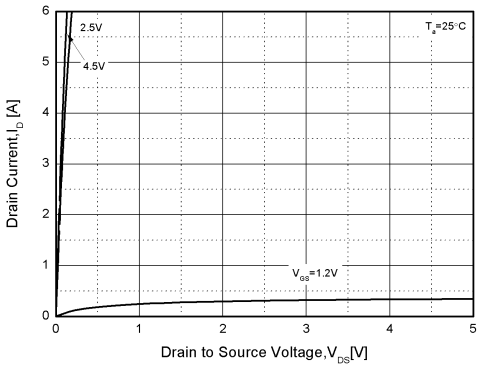


Figure1. Output Characteristics

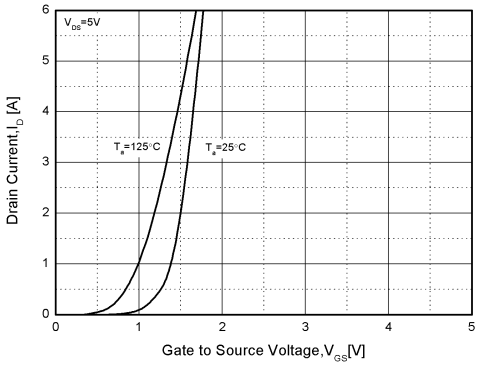


Figure2. Transfer Characteristics

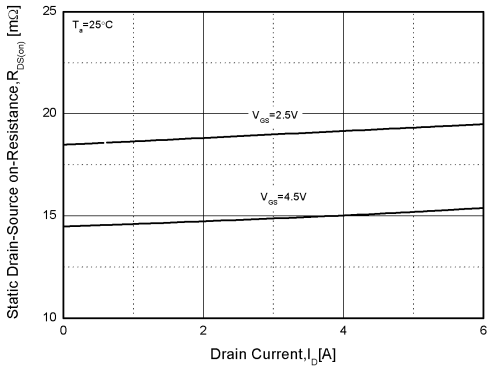


Figure3. Rdson-Drain Current

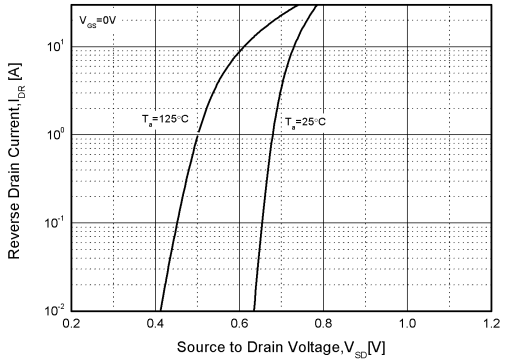


Figure4. Typical Source-Drain Diode Forward Voltage

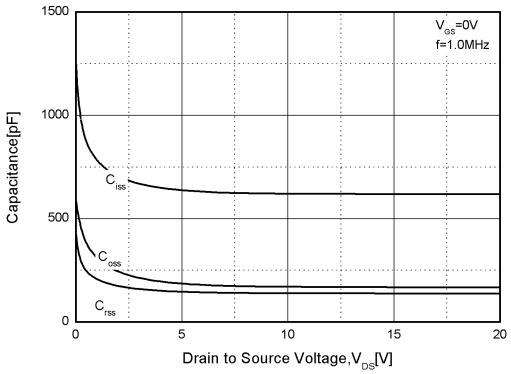


Figure5. Capacitance Characteristics

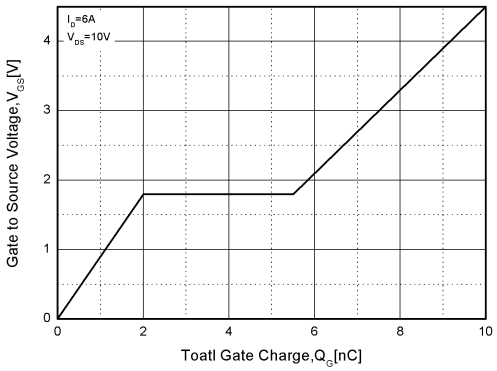


Figure6. Gate Charge

Typical Performance Characteristics (cont.)

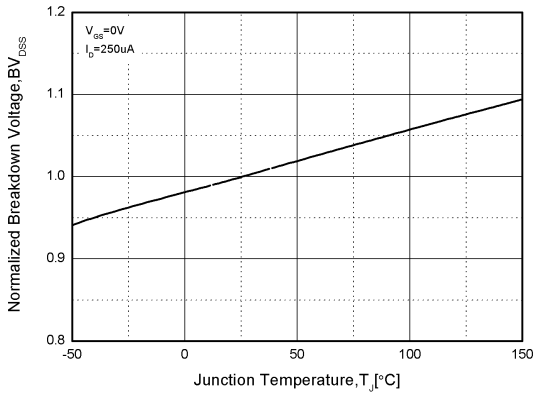


Figure7. Normalized Breakdown Voltage vs. Temperature

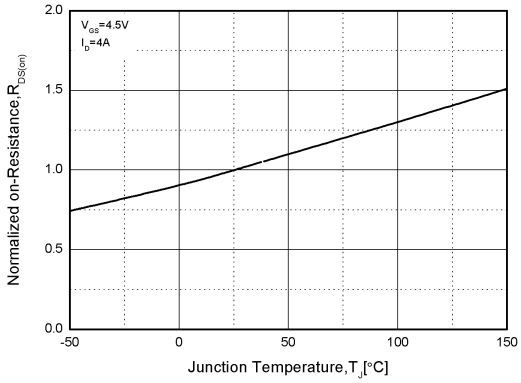


Figure8. Normalized on Resistance vs. Temperature

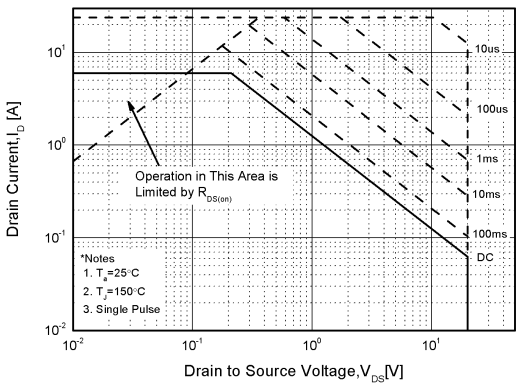


Figure9. Safe Operation Area

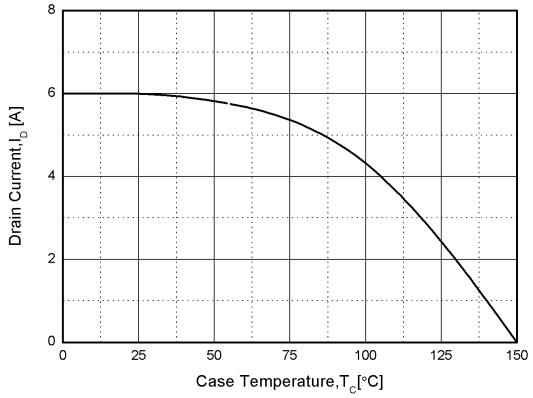


Figure10. Drain Current vs. Case Temperature

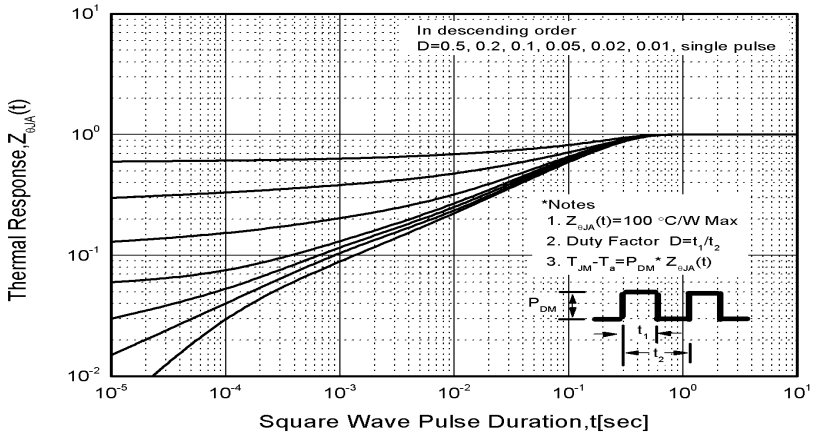
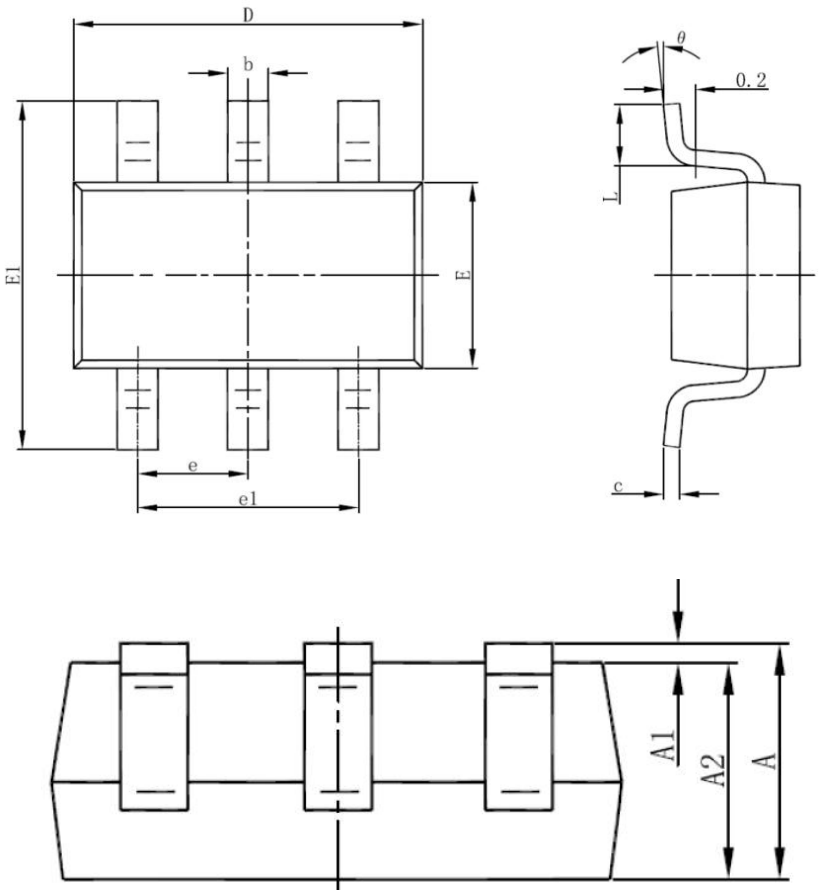


Figure11. Transient Thermal Response Curve

SOT-23-6L package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°