AS03N06M

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	40mΩ@10V	4.5A
	50mΩ@4.5V	

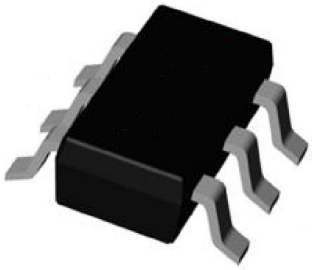
Feature

- Enhancement mode
- Very low on-resistance RDS(on) @ VGS=4.5V
- Fast Switching
- High Effective

Application

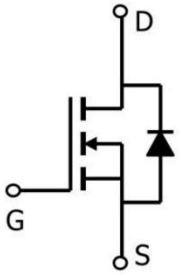
- Battery protection
- Power management
- Load switch

Package

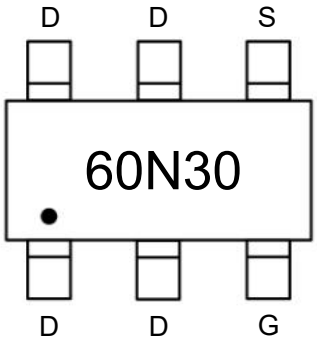


SOT-23-6L

Circuit diagram



Marking



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N-Channel Enhancement Mode MOSFET

Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	4.5	A
Pulsed Drain Current	I_{DM}	18	A
Power Dissipation	P_D	1.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	83.3	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 ºC, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.6	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =6A		30	40	mΩ
		V_{GS} =4.5V, I_D =4A		40	50	
Dynamic characteristics[1)]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		1090		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			64		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V, I_D =10A		25.3		nC
Gate-Source Charge	Q_{gs}			4.7		
Gate-Drain Charge	Q_{gd}			6.1		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V R_G=3Ω,I_D=2A		6		nS
Turn-on rise time	t_r			6.1		
Turn-off delay time	$t_{d(off)}$			17		
Turn-off fall time	t_f			3		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				8	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=1A			1.2	V
Reverse Recovery Time	t_{rr}	IF=20A ,T_J = 25℃ di/dt = 100A/us		29.5		nS
Reverse Recovery Charge	Q_{rr}			50		nC

Notes:

1) Guaranteed by design, not subject to production testing.

Typical Characteristics

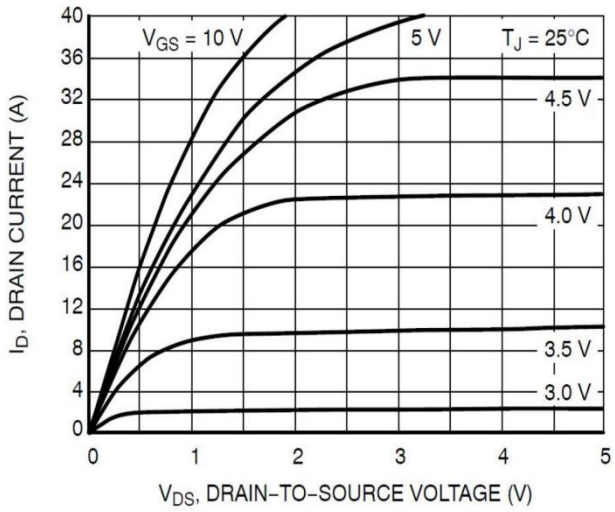


Figure 1. On−Region Characteristics

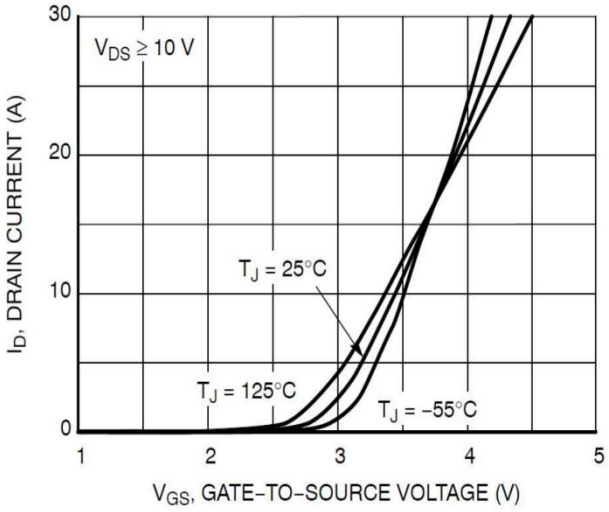


Figure 2. Transfer Characteristics

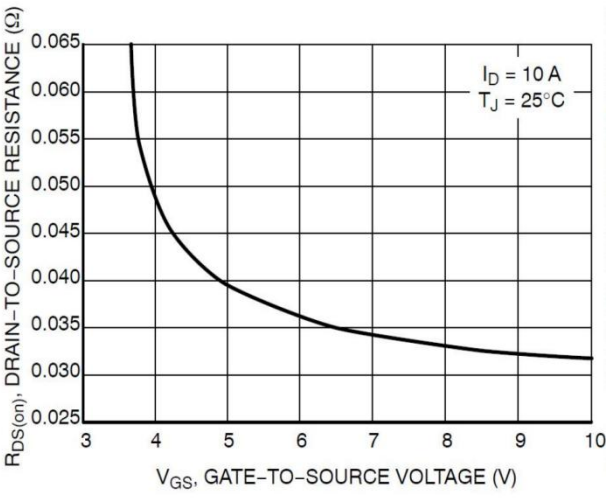


Figure 3. On−Resistance vs. Gate−to−Source Voltage

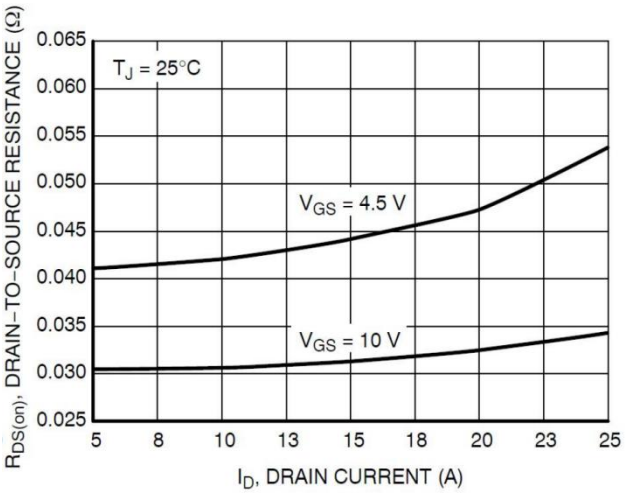


Figure 4. On−Resistance vs. Drain Current and Gate Voltage

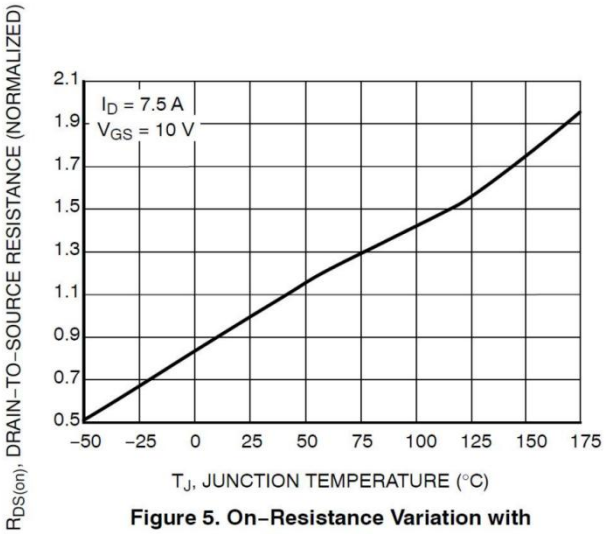


Figure 5. On−Resistance Variation with Temperature

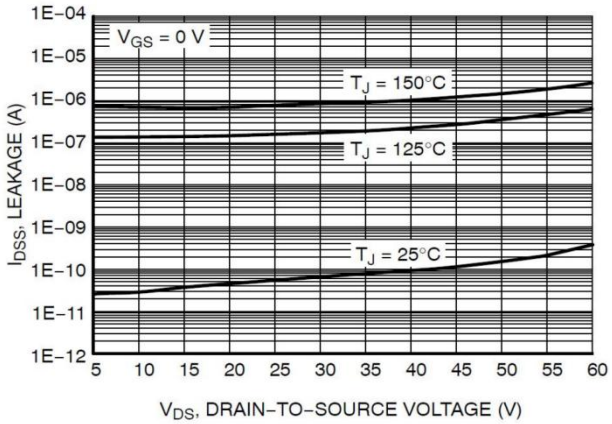


Figure 6. Drain−to−Source Leakage Current vs. Voltage

Typical Characteristics

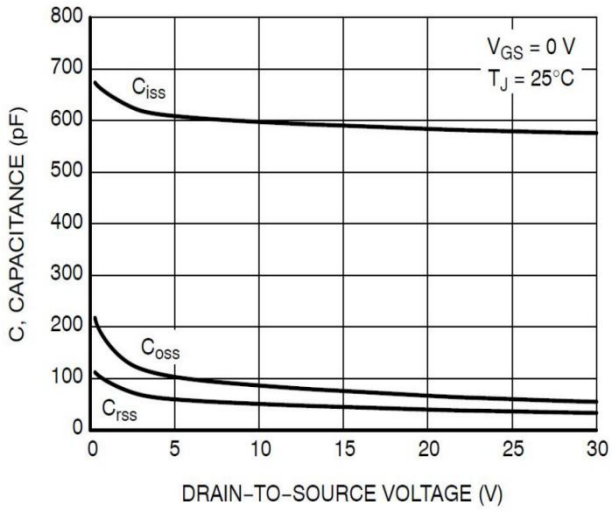


Figure 7. Capacitance Variation

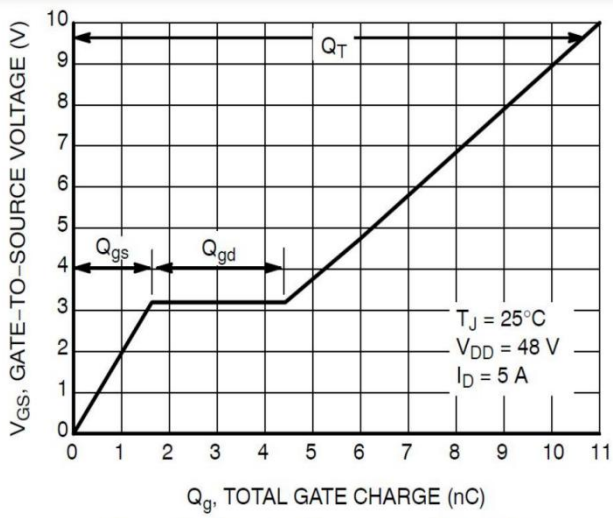


Figure 8. Gate−to−Source vs. Gate Charge

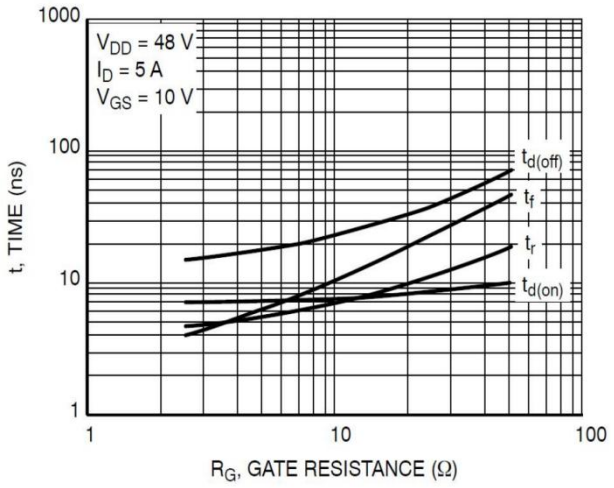


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

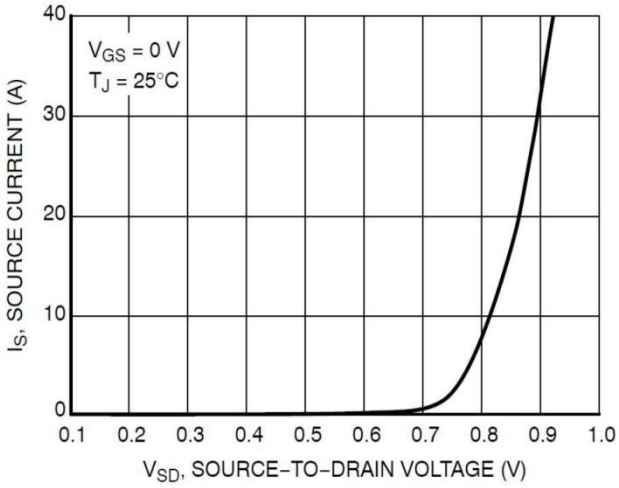


Figure 10. Diode Forward Voltage

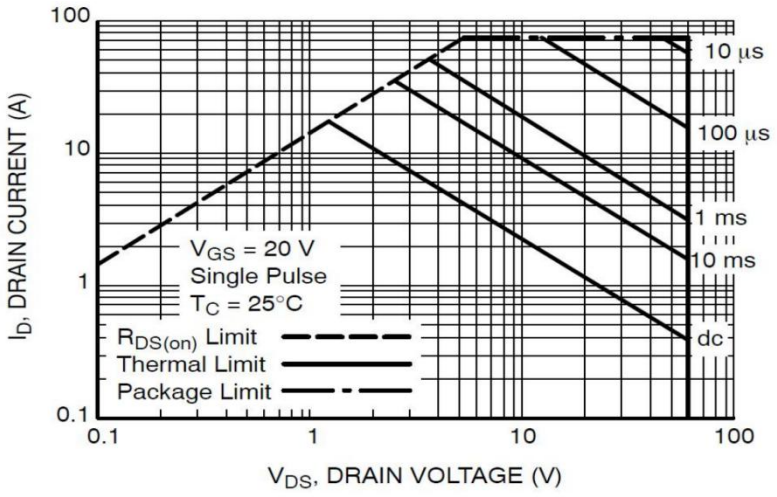


Figure 11. Maximum Rated Forward Biased Safe Operating Area

Typical Characteristics

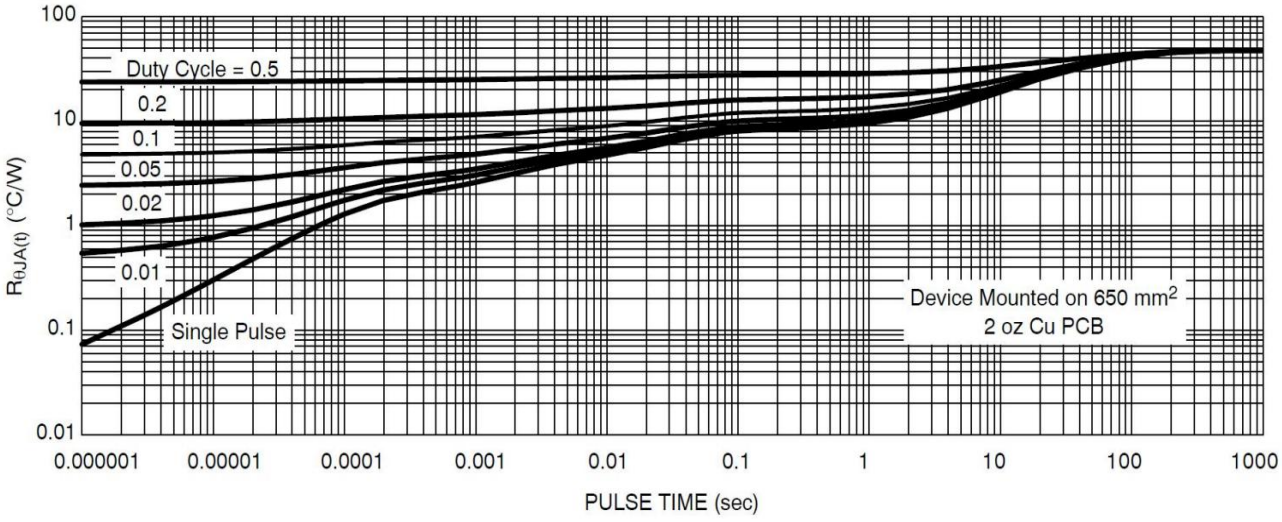
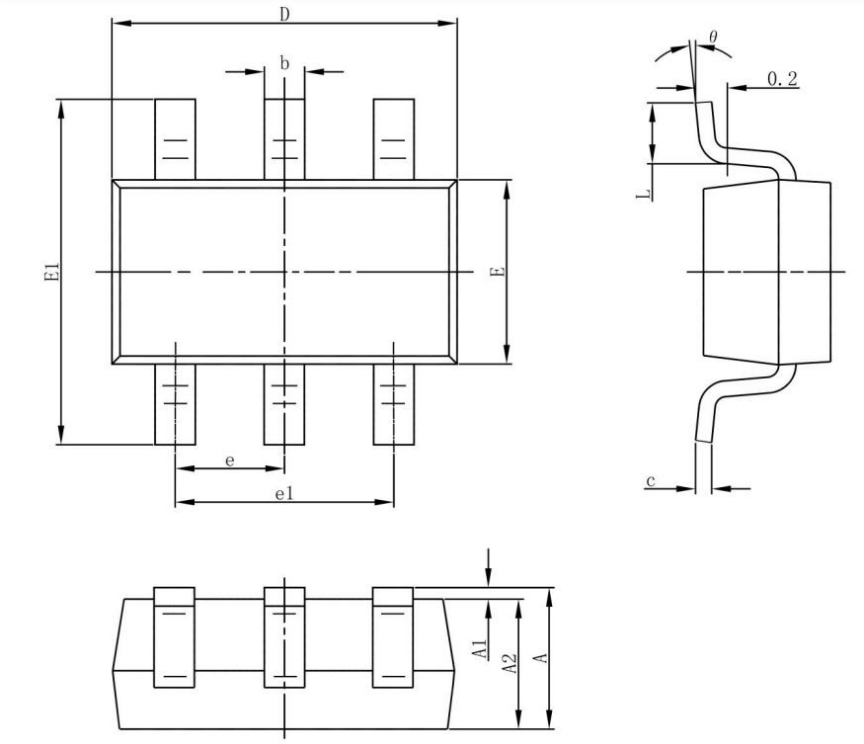


Figure 12. Thermal Response

SOT-23-6L Package Information



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°