AS6003L

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	90mΩ@10V	3A
	105mΩ@4.5V	

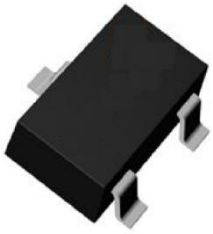
Feature

- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

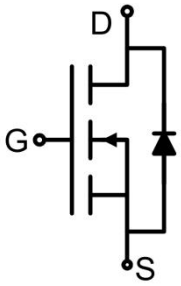
- Battery switch
- DC/DC converter

Package

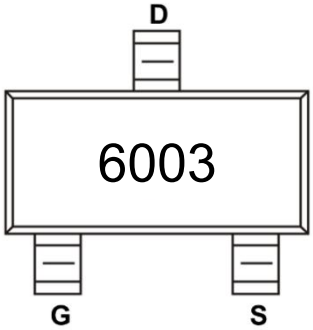


SOT-23-3L

Circuit diagram



Marking



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	3	A
Pulsed Drain Current[1)]	I_{DM}	12	A
Power Dissipation	P_D	1.7	W
Thermal Resistance,Junction-to-Ambient[2)]	$R_{\theta JA}$	73.5	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25 ℃, 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[3)]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.0	V
Drain-source on-resistance[3)]	$R_{DS(on)}$	V_{GS} =10V, I_D =3A		70	90	mΩ
		V_{GS} =4.5V, I_D =2A		80	105	
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		247		pF
Output Capacitance	C_{oss}			34		
Reverse Transfer Capacitance	C_{rss}			19.5		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =4.5V, I_D =3A		6		nC
Gate-Source Charge	Q_{gs}			1		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, V_{GEN} =10V, I_D =1.5A R_{GEN}=1Ω		6		nS
Turn-on rise time	t_r			15		
Turn-off delay time	$t_{d(off)}$			15		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward voltage[3)]	V_{SD}	V_{GS} =0V, I_S=1A			1.2	V

Notes:

1) Repetitive rating: Pulse width limited by junction temperature.
2) Surface mounted on FR4 board, t≤10S.
3) Pulse Test: Pulse Width≤80μs, Duty Cycle≤0.5%.
4) Guaranteed by design, not subject to production testing.

Typical Characteristics

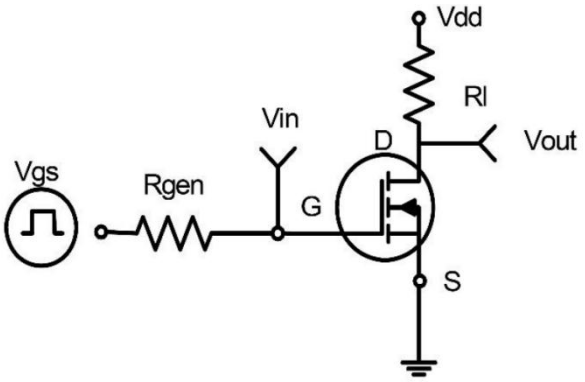


Figure 1:Switching Test Circuit

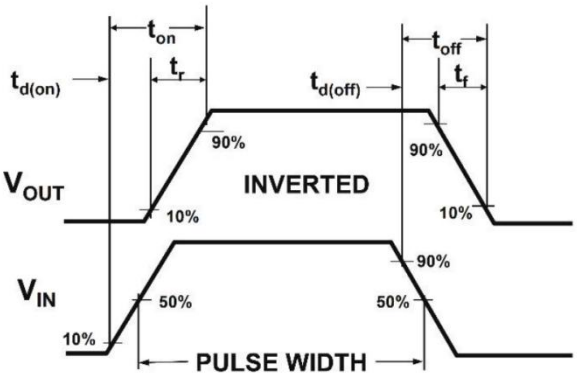


Figure 2:Switching Waveforms

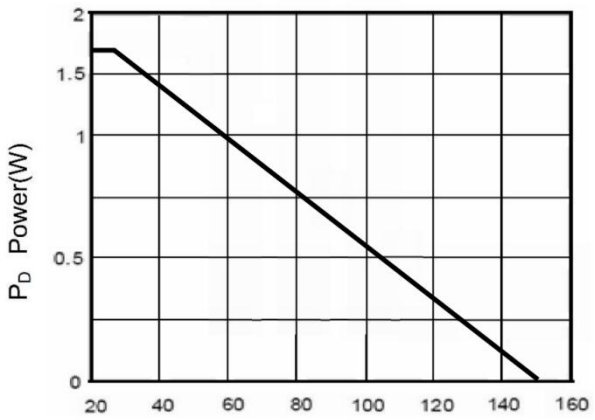


Figure 3 Power Dissipation

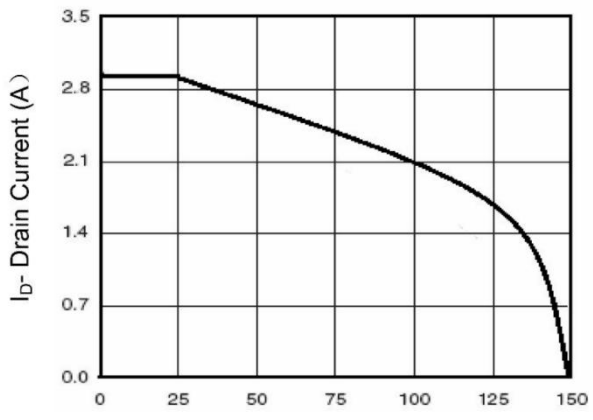


Figure 4 Drain Current

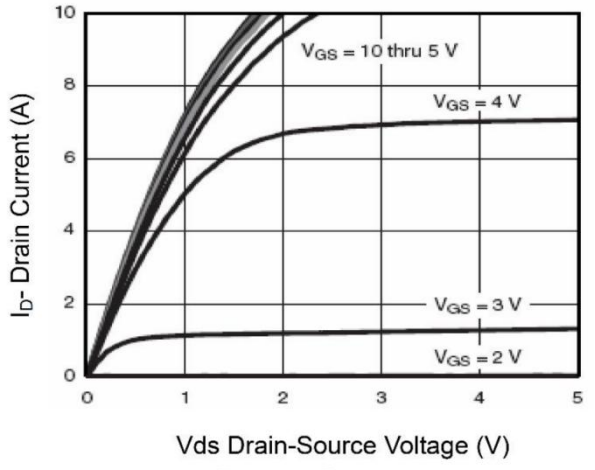


Figure 5 Output Characteristics

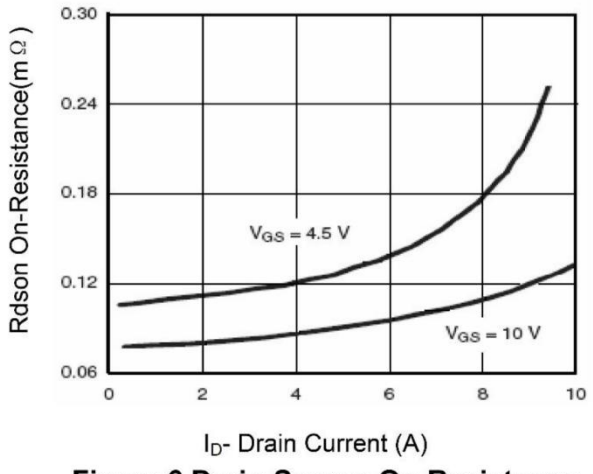


Figure 6 Drain-Source On-Resistance

Typical Characteristics

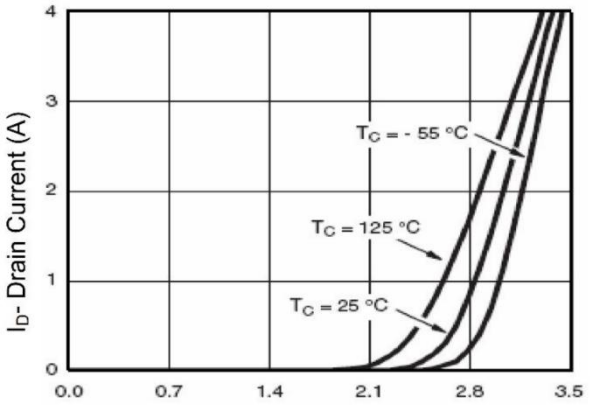


Figure 7 Transfer Characteristics

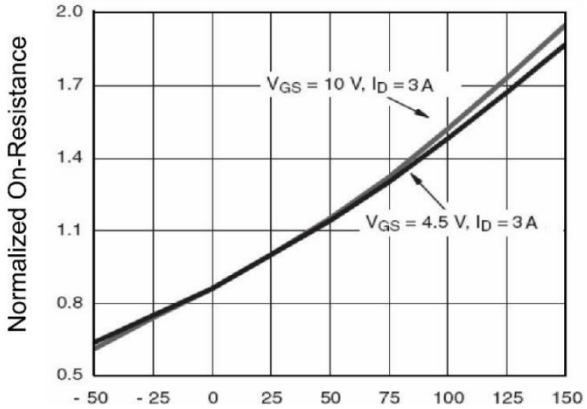


Figure 8 Drain-Source On-Resistance

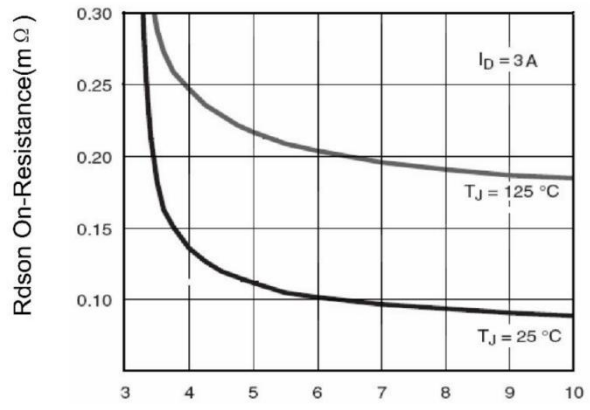


Figure 9 Rdson vs Vgs

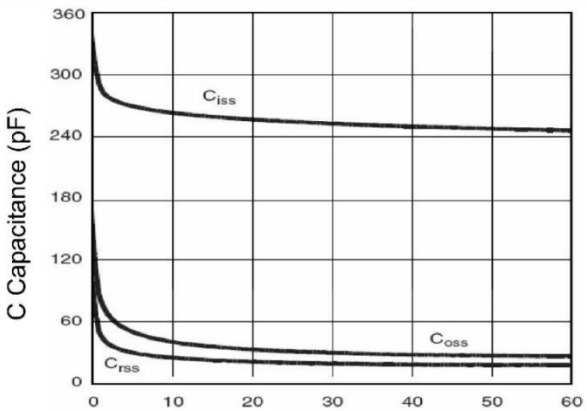


Figure 10 Capacitance vs Vds

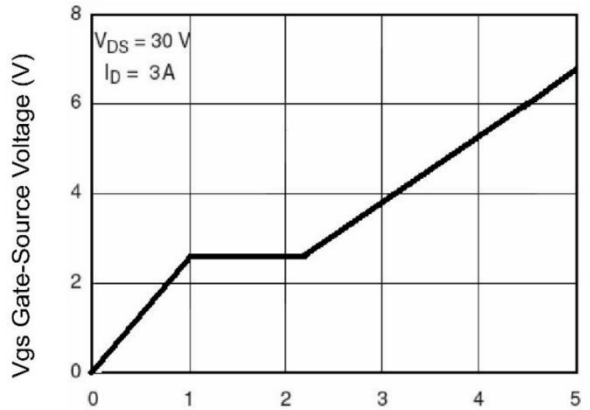


Figure 11 Gate Charge

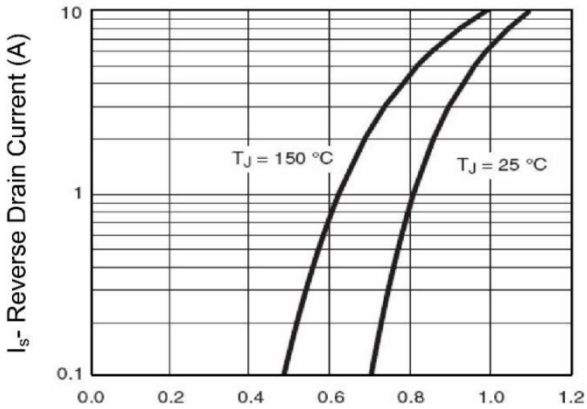


Figure 12 Source- Drain Diode Forward

Typical Characteristics

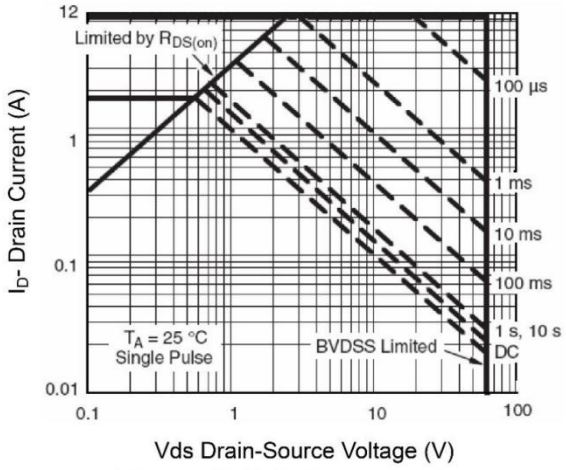


Figure 13 Safe Operation Area

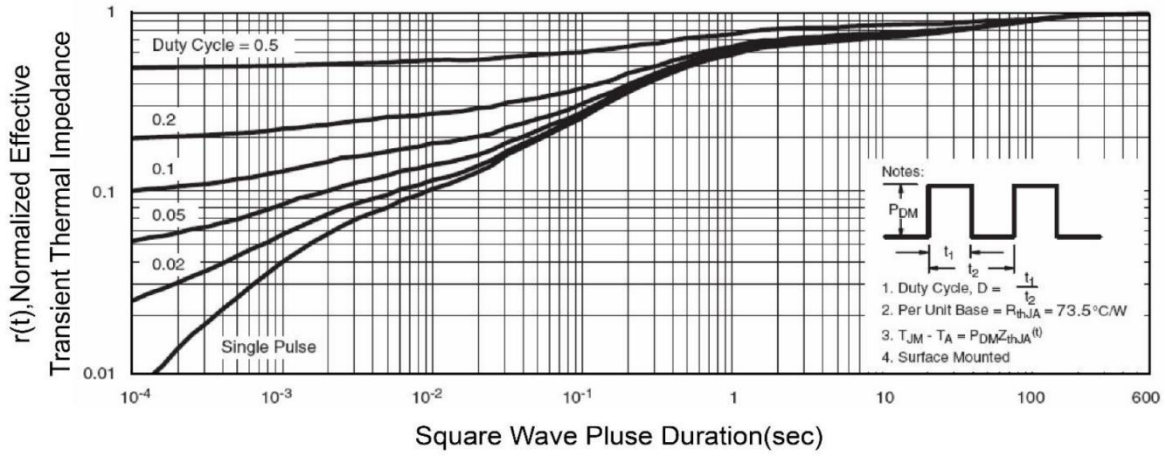
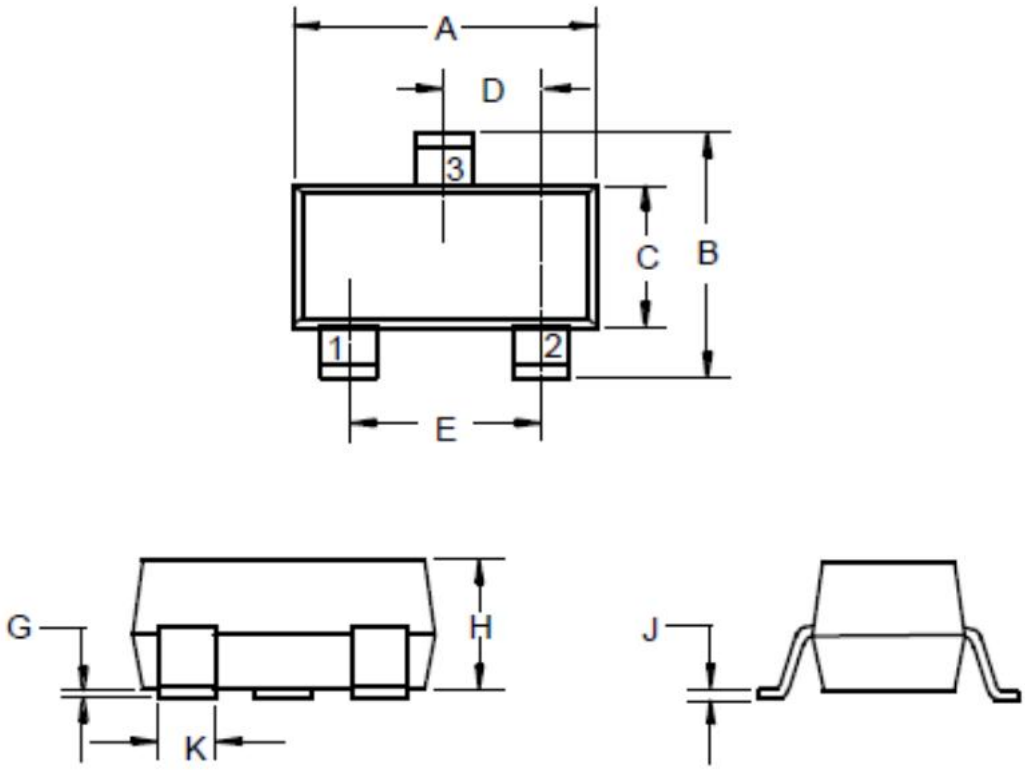


Figure 14 Normalized Maximum Transient Thermal Impedance

SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.820	3.020	0.111	0.119
B	2.650	2.950	0.104	0.116
C	1.500	1.700	0.059	0.067
D	0.950 TYP.		0.037 TYP.	
E	1.800	2.000	0.071	0.079
G	0.000	0.200	0.000	0.008
H	1.050	1.250	0.041	0.049
J	0.100	0.200	0.004	0.008
K	0.300	0.500	0.012	0.020