Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	70mΩ@4.5V	3A
	80mΩ@2.5V	

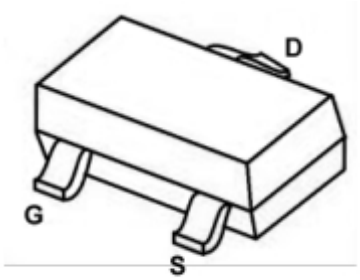
Feature

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

Applications

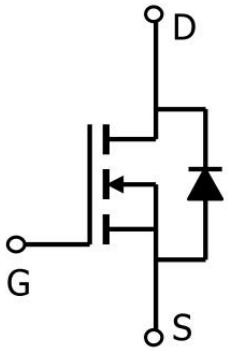
- Battery switch
- DC/DC converter

Package

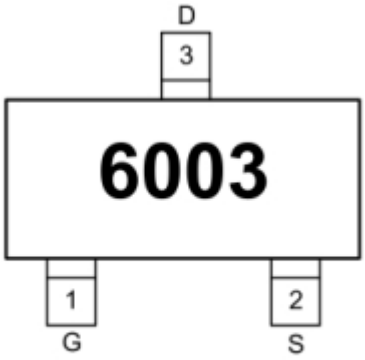


SOT-23-3L

Circuit diagram



Marking



6003 =Device Code

Absolute maximum ratings

(T_a=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 from Junction to Ambient[2)]	$R_{\theta JA}$	73.5	℃/W
Storage Temperature	T_J, 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	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60	67		V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V, V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
Gate threshold voltage (1)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =3A		70	90	mΩ
		V_{GS} =4.5V, I_D =2A		80	105	
Dynamic Characteristics4)						
Input capacitance2)	C_{iss}	V_{DS}=30V, V_{GS}=0V, f=1MHz		247		pF
Output capacitance2)	C_{oss}			34		
Reverse transfer capacitance2)	C_{rss}			19.5		
Switching Characteristics4)						
Turn-on Delay Time	$T_{d(on)}$	V_{GEN}=10V, V_{DD}=30V, R_{GEN}=1Ω, I_D=1.5A		6		nS
Turn-on Rise Time	T_r			15		
Turn-Off Delay Time	$T_{d(off)}$			15		
Turn-Off Fall Time	t_f			10		
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		
Source-Drain Diode Characteristics						
Body diode voltage	V_{SD}	I_S=1A, V_{GS}=0V			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 producting.

Typical Characteristics

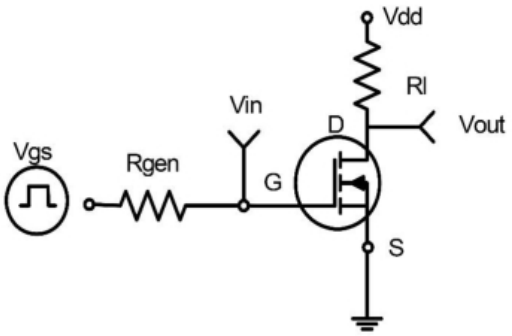


Figure 1:Switching Test Circuit

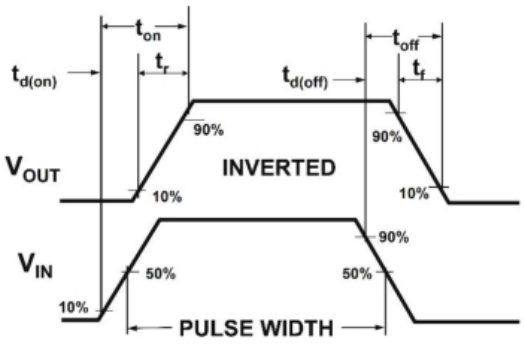


Figure 2:Switching Waveforms

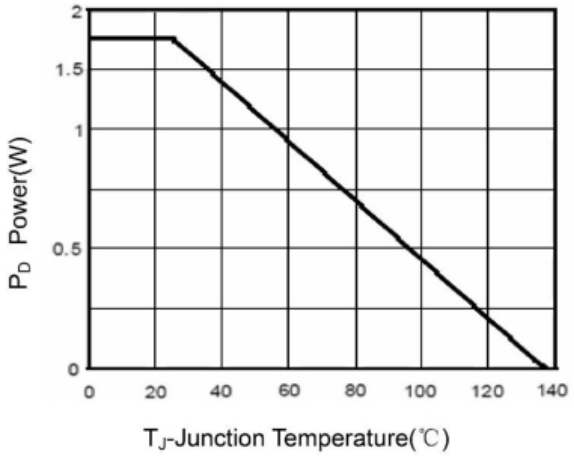


Figure 3 Power Dissipation

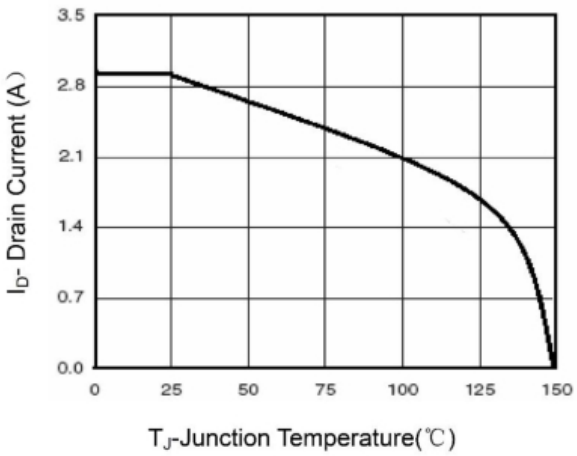


Figure 4 Drain Current

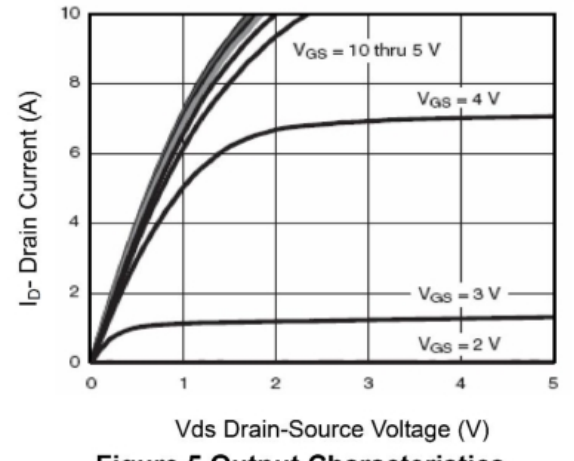


Figure 5 Output Characteristics

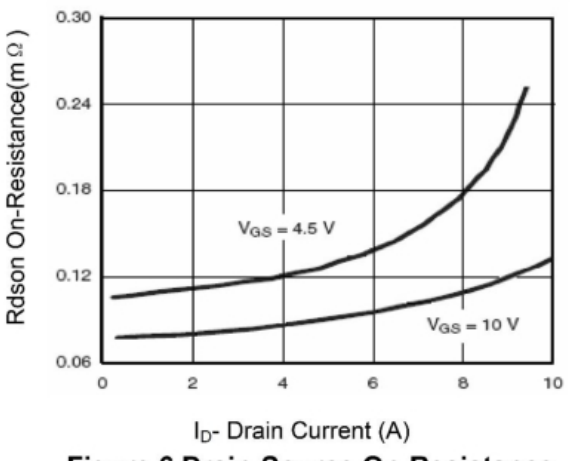


Figure 6 Drain-Source On-Resistance

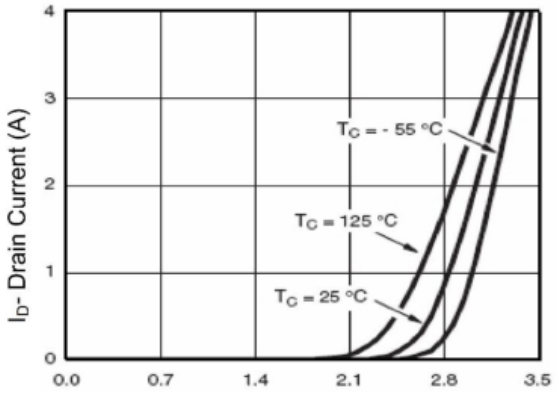


Figure 7 Transfer Characteristics

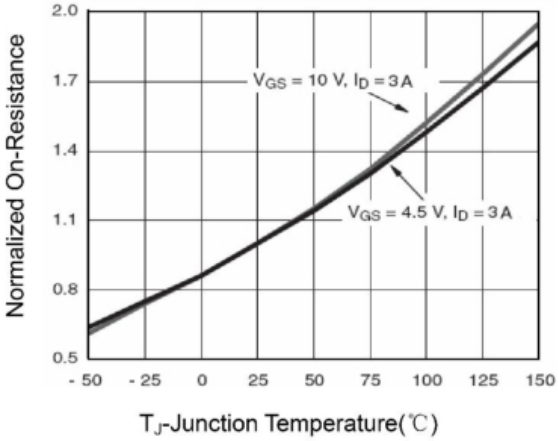


Figure 8 Drain-Source On-Resistance

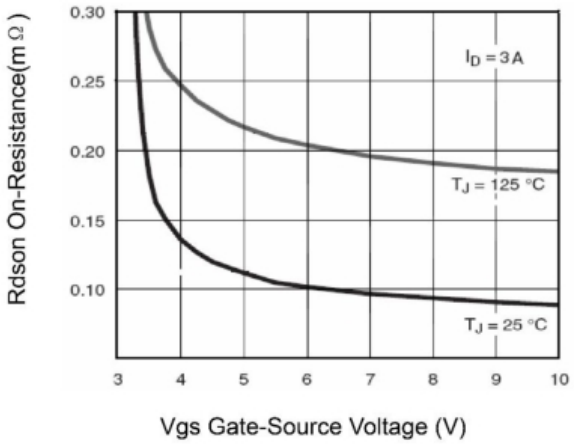


Figure 9 Rdson vs Vgs

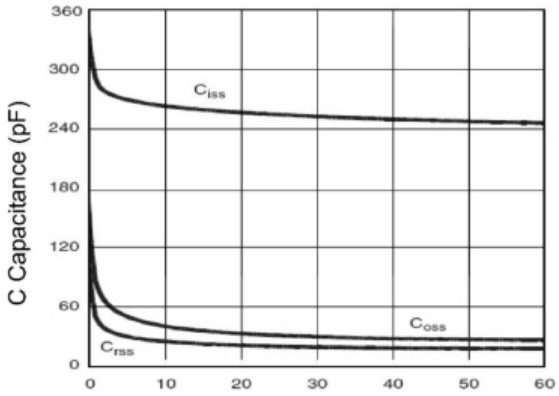


Figure 10 Capacitance vs Vds

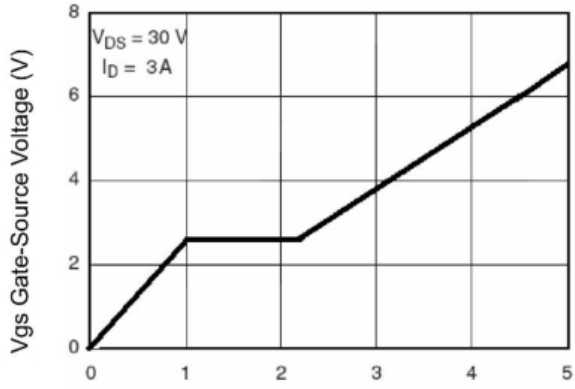


Figure 11 Gate Charge

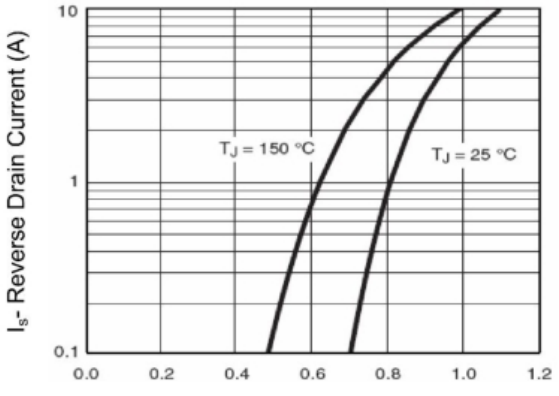


Figure 12 Source- Drain Diode Forward

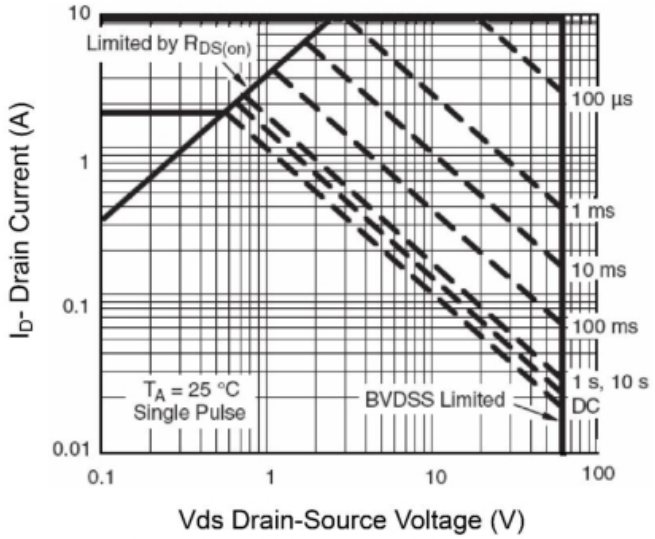


Figure 13 Safe Operation Area

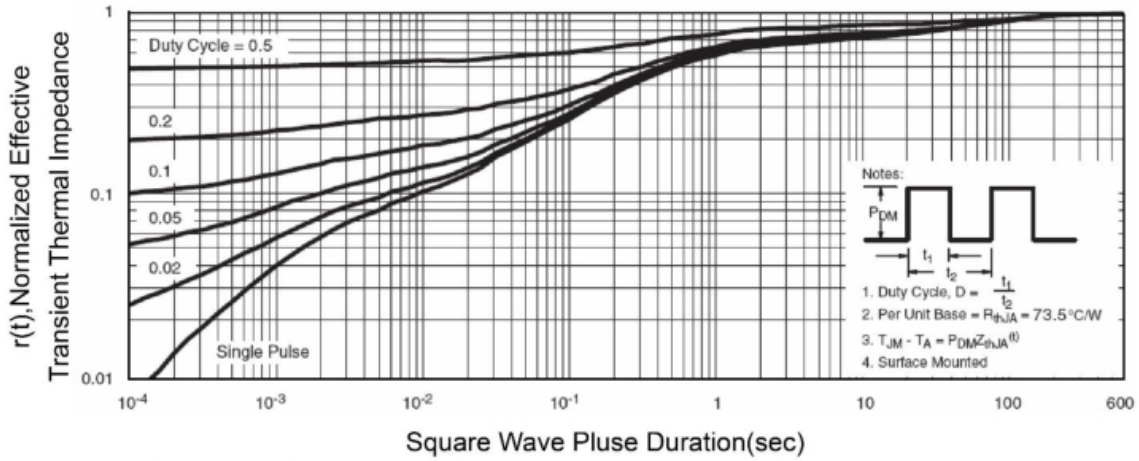
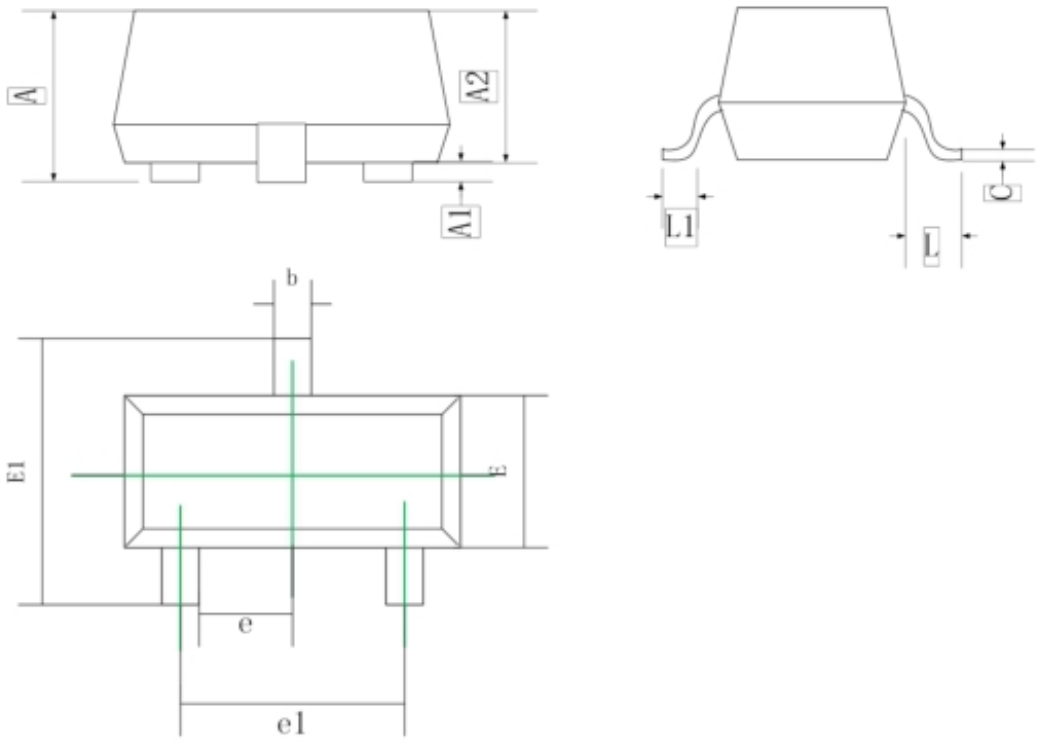


Figure 14 Normalized Maximum Transient Thermal Impedance

SOT-23-3L Package Information



Symbol	Dimensions in millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950 Typ.	
e1	1.800	2.000
L	0.300	0.600
θ	0°	8°