General Description

The G1003B uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a load switch or in PWM applications.

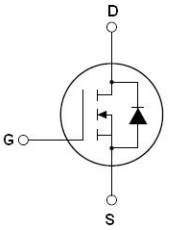
General Features

V_{DSS}	$R_{DS(ON)}$ @10V (Typ)	$R_{DS(ON)}$ @4.5V (Typ)	I_D
100V	135mΩ	145mΩ	5 A

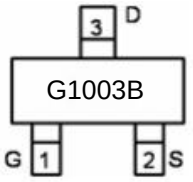
- High Power and current handing capability
- RoHS Compliant
- Surface Mount Package

Application

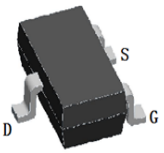
- PWM applications
- Load switch
- Power management



Schematic Diagram



Marking and pin Assignment



SOT-23

Ordering Information

Part Number	Marking	Case	Packaging
G1003B-23	G1003B	SOT-23-3L	3000pcs/Reel

Table 1. Absolute Maximum Ratings (T_A=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	100	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±25	V
I_D	Drain Current-Continuous(T_C=25℃)	5	A
	Drain Current-Continuous(T_C=100℃)	1.8	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	12	A
P_D	Maximum Power Dissipation	3.3	W
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

Table 2. Thermal Characteristic

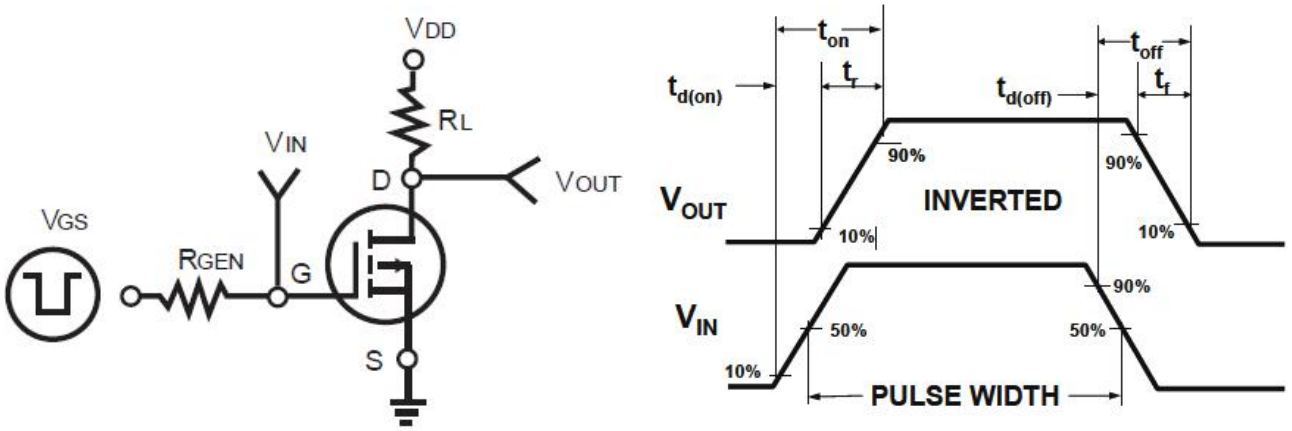
Symbol	Parameter	Typ	Value	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	37	℃/W

Table 3. Electrical Characteristics (T_A=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	100			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V,V_{GS}=0V			100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1	-	3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=-10A		135	170	mΩ
		V_{GS}=4.5V, I_D=-5A		145	180	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1.0MHz		570		pF
C_{oss}	Output Capacitance			25		pF
C_{rss}	Reverse Transfer Capacitance			20		pF
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V,I_D=1A,R_L=15Ω V_{GS}=10V,R_G=2.5Ω		2.2		nS
t_r	Turn-on Rise Time			3.9		nS
$t_{d(off)}$	Turn-Off Delay Time			5.8		nS
t_f	Turn-Off Fall Time			1.9		nS
Q_g	Total Gate Charge	V_{DS}=15V,I_D=10A V_{GS}=10V		30		nC
Q_{gs}	Gate-Source Charge			6		nC
Q_{gd}	Gate-Drain Charge			9		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)				12	A
V_{SD}	Forward on Voltage**(Note 1)**	V_{GS}=0V,I_S=2A			0.8	V

Notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

Switch Time Test Circuit and Switching Waveforms：



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

Figure1. Output Characteristics

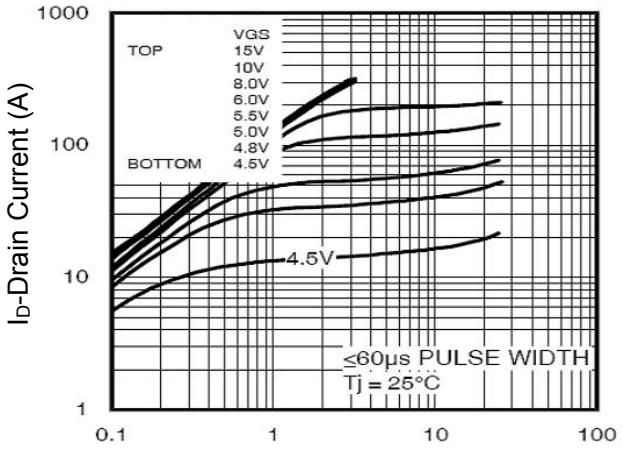


Figure2. Transfer Characteristics

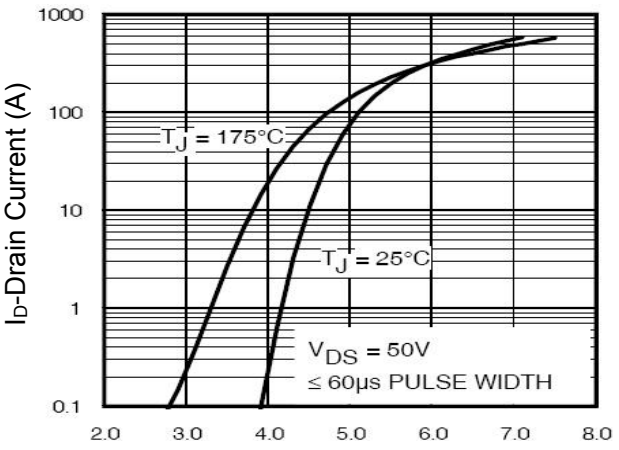


Figure3. BVDSS vs Junction Temperature

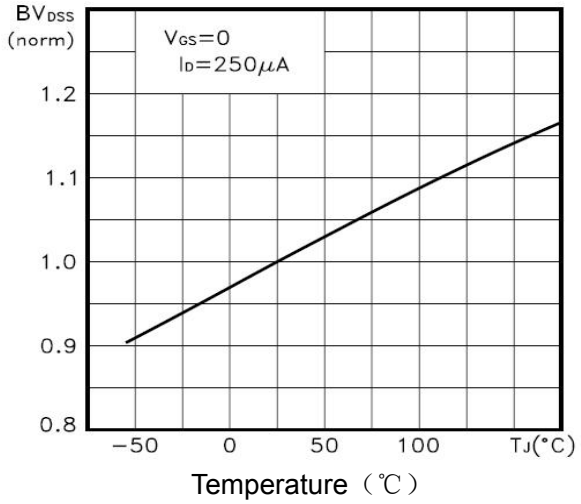


Figure4. ID vs Junction Temperature

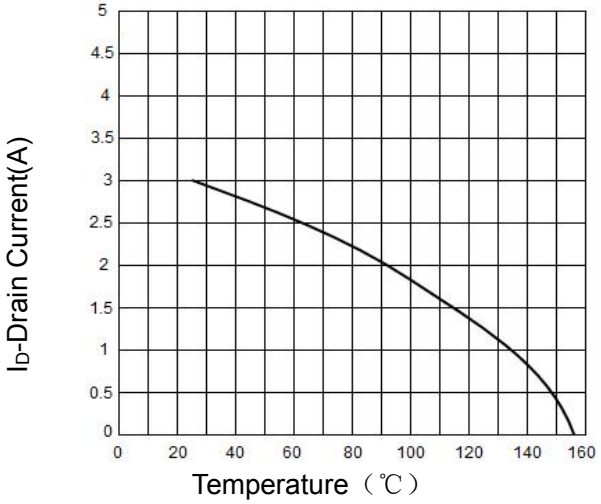


Figure5. VGS(th) vs Junction Temperature

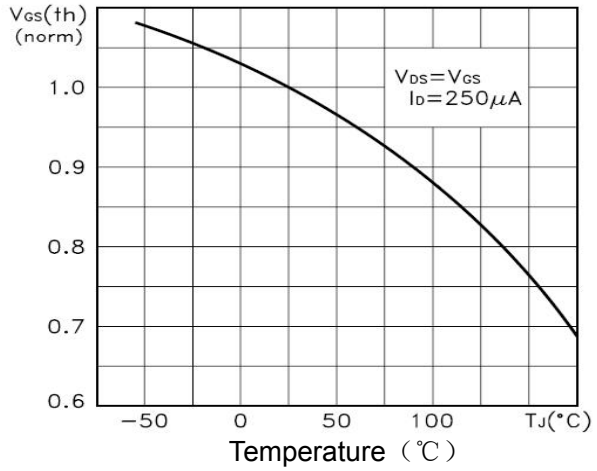


Figure6. Rdson Vs Junction Temperature

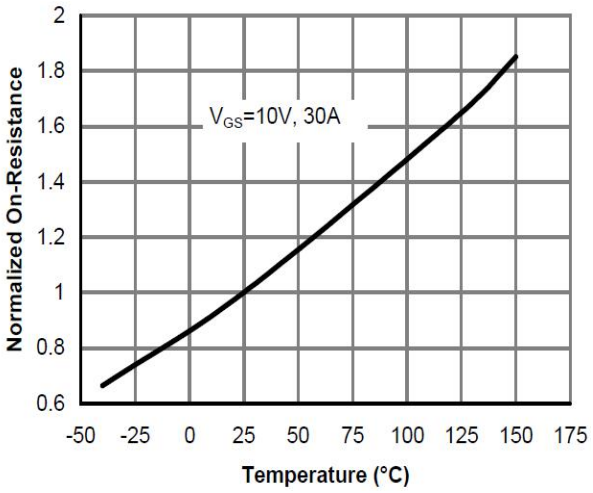


Figure7. Gate Charge

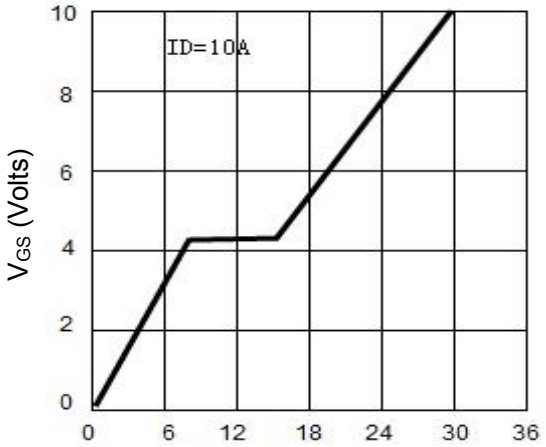


Figure8. Capacitance vs Vds

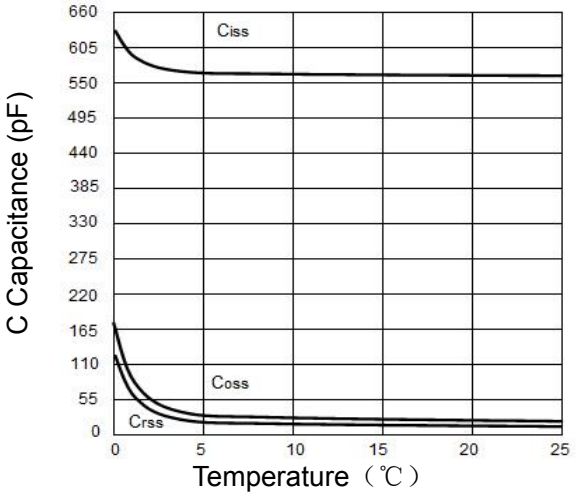


Figure9. Source- Drain Diode Forward

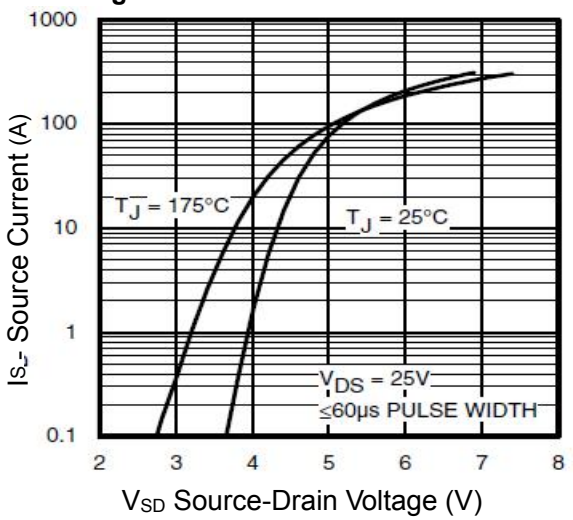


Figure10. Safe Operation Area

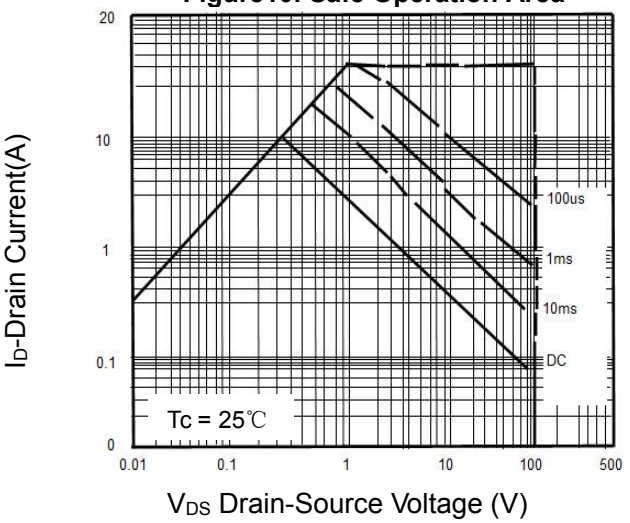
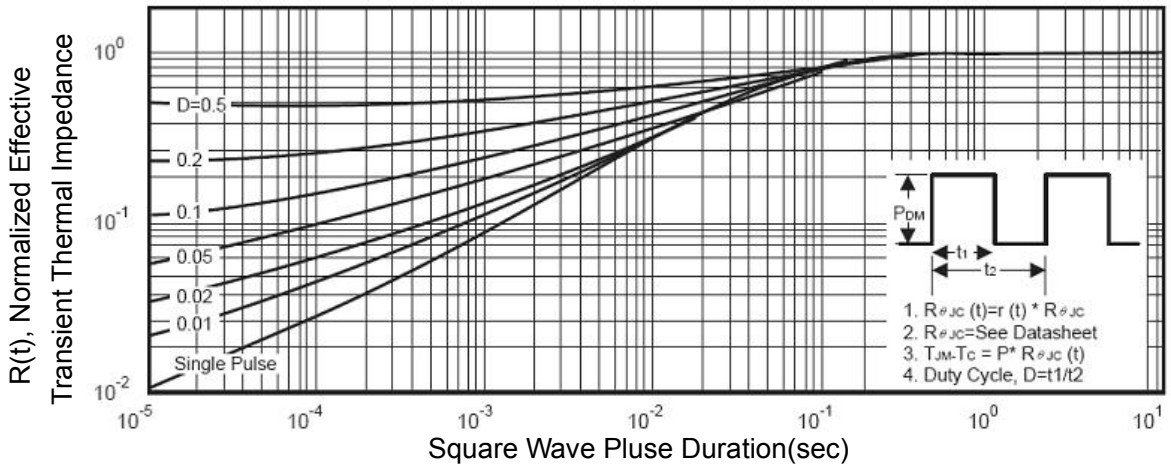
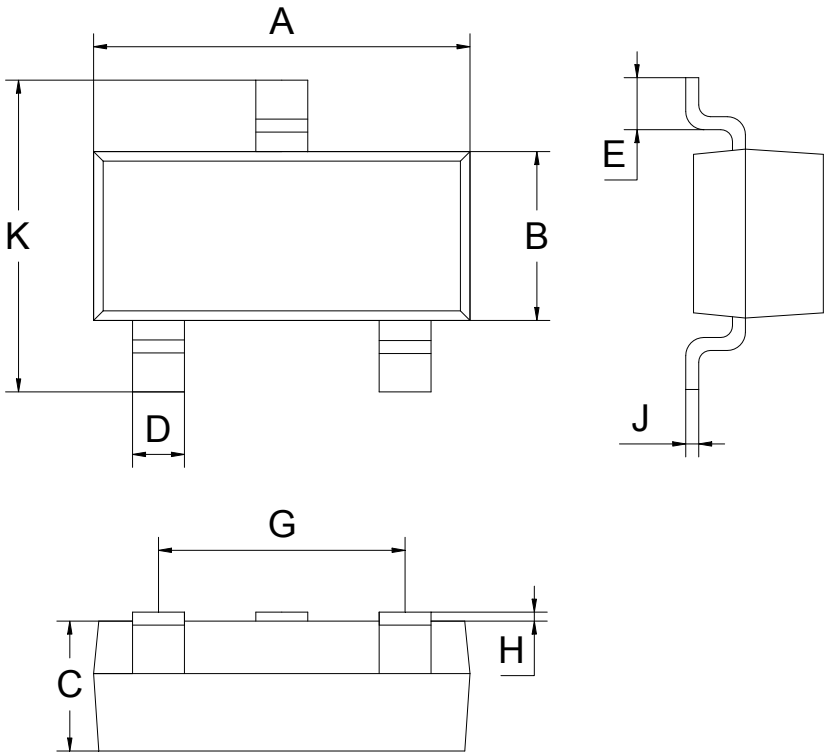


Figure11. Normalized Maximum Transient Thermal Impedance



SOT-23 Package information



SOT-23-3L			
Dim	MIN	NOM	MAX
A	2.80	2.90	3.00
B	1.50	1.60	1.70
C	1.00	1.10	1.20
D	0.30	0.40	0.50
E	0.25	0.40	0.55
G		1.90	
H	0.00	-	0.10
J	0.047	0.127	0.207
K	2.60	2.80	3.00
All Dimensions in mm			