

General Description

The G1005B 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

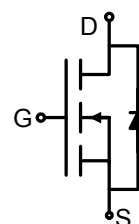


V_{DSS}	$R_{DS(ON)}$ @ 10V (Typ)	$R_{DS(ON)}$ @ 4.5V(Typ)	I_D
100V	130m Ω	140m Ω	5 A

- High Power and current handling capability
- Lead free product is required
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management



Schematic diagram



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
G1005B	G1005B	TO-92	--	--	--

Table 1. Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$)

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($T_c=25^{\circ}\text{C}$)	5	A
	Drain Current-Continuous($T_c=100^{\circ}\text{C}$)	3.1	A
I_{DM} (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	20	A
P_D	Maximum Power Dissipation	9.3	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^{\circ}\text{C}$

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

Table 2. Thermal Characteristic

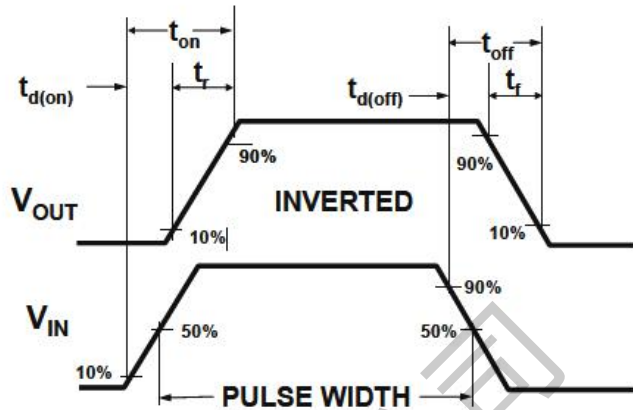
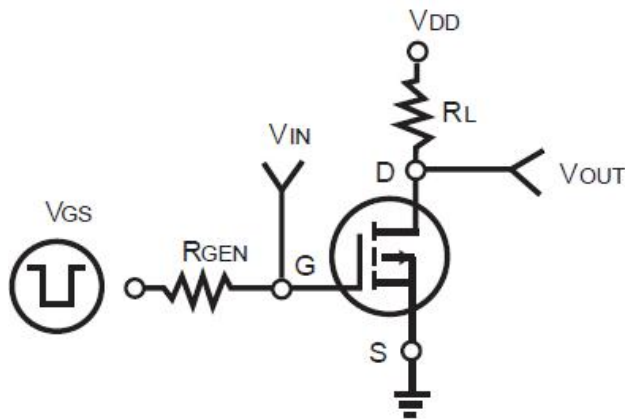
Symbol	Parameter	Typ	Value	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	13.5	$^{\circ}\text{C/W}$

Table 3. Electrical Characteristics (T_A=25°C 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	1.9	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =-10A		130	170	mΩ
		V _{GS} =4.5V, I _D =-5A		140	180	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		690		pF
C _{oss}	Output Capacitance			120		pF
C _{rss}	Reverse Transfer Capacitance			90		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		11		nS
t _r	Turn-on Rise Time			7.4		nS
t _{d(off)}	Turn-Off Delay Time			35		nS
t _f	Turn-Off Fall Time			9.1		nS
Q _g	Total Gate Charge	V _{DS} =15V, I _D =10A V _{GS} =10V		15.5		nC
Q _{gs}	Gate-Source Charge			3.2		nC
Q _{gd}	Gate-Drain Charge			4.7		nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)				20	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

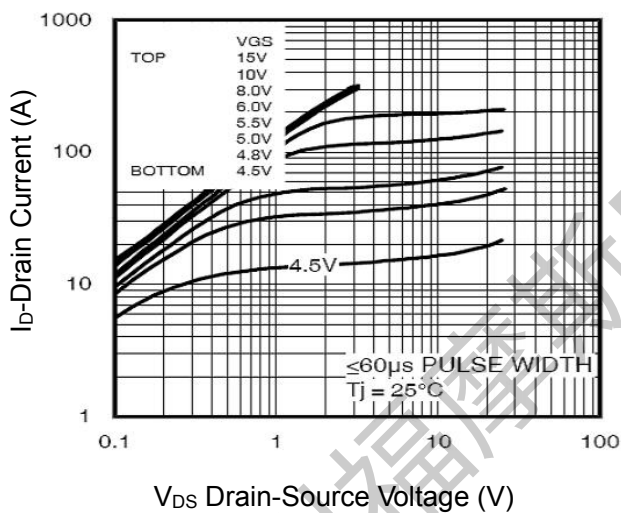


Figure2. Transfer Characteristics

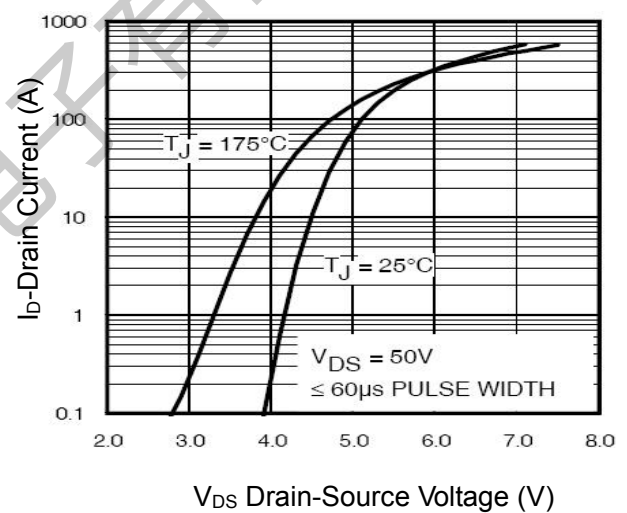


Figure3. BVDSS vs Junction Temperature

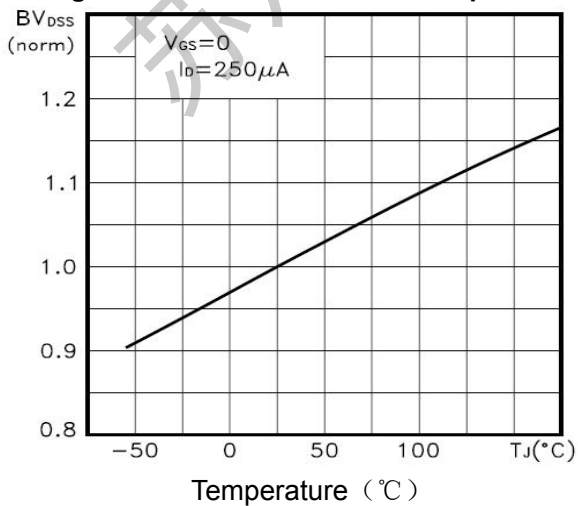


Figure4. I_D vs Junction Temperature

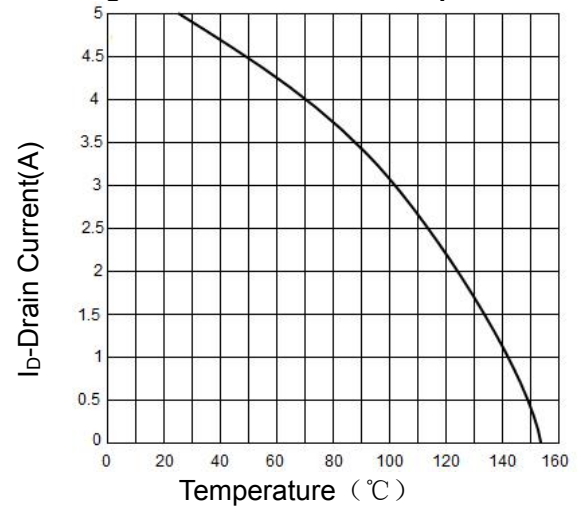




Figure5. VGS(th) vs Junction Temperature

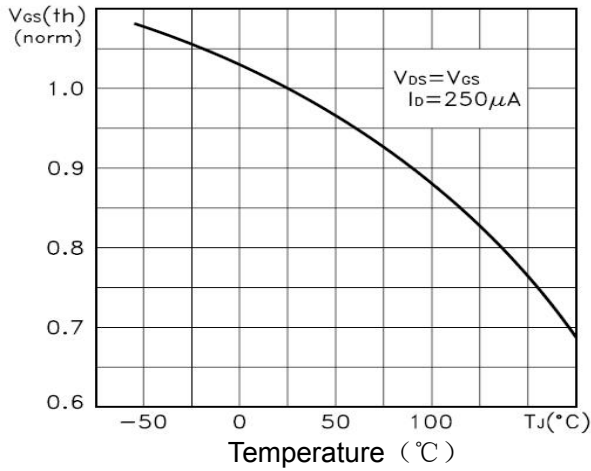


Figure6. Rdson Vs Junction Temperature

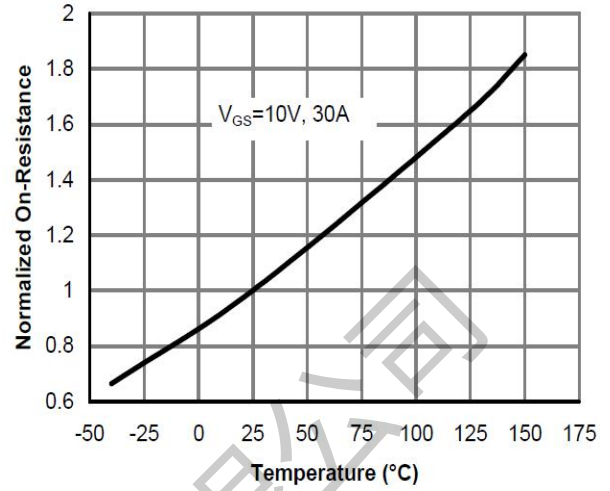


Figure7. Gate Charge

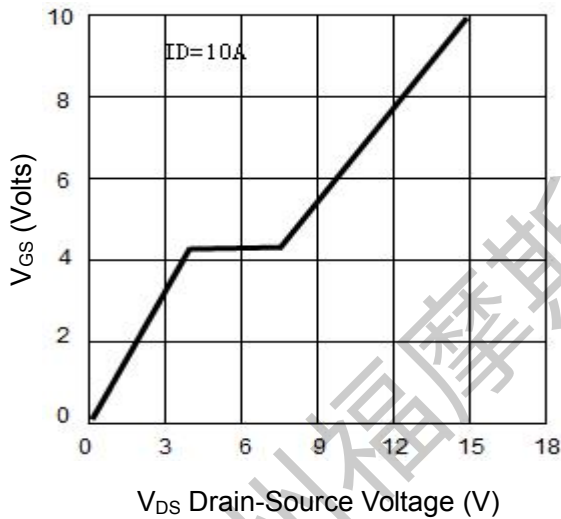


Figure8. Capacitance vs Vds

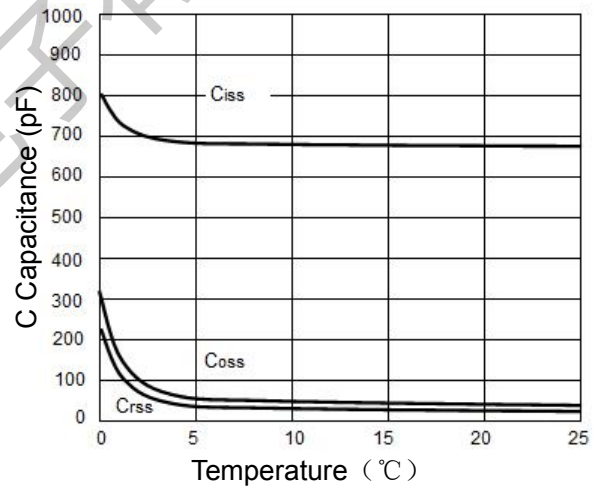


Figure9. Source- Drain Diode Forward

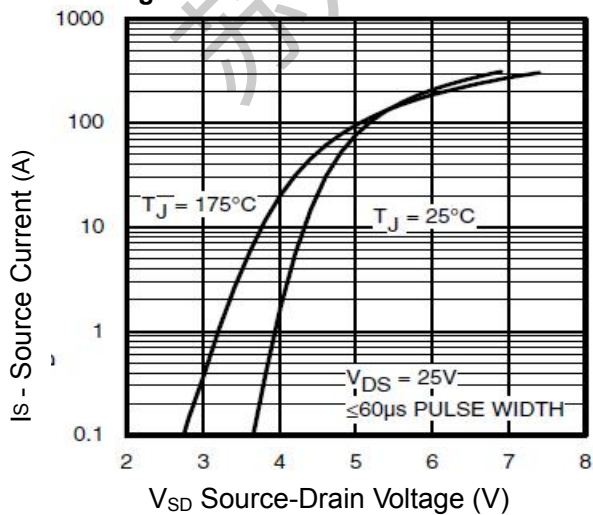


Figure10. Safe Operation Area

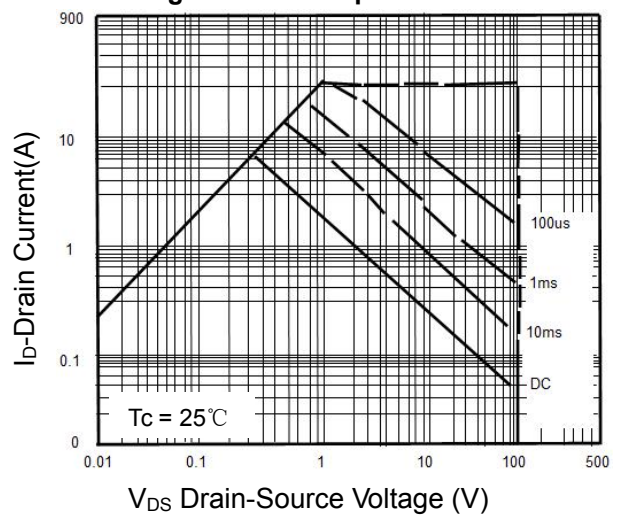
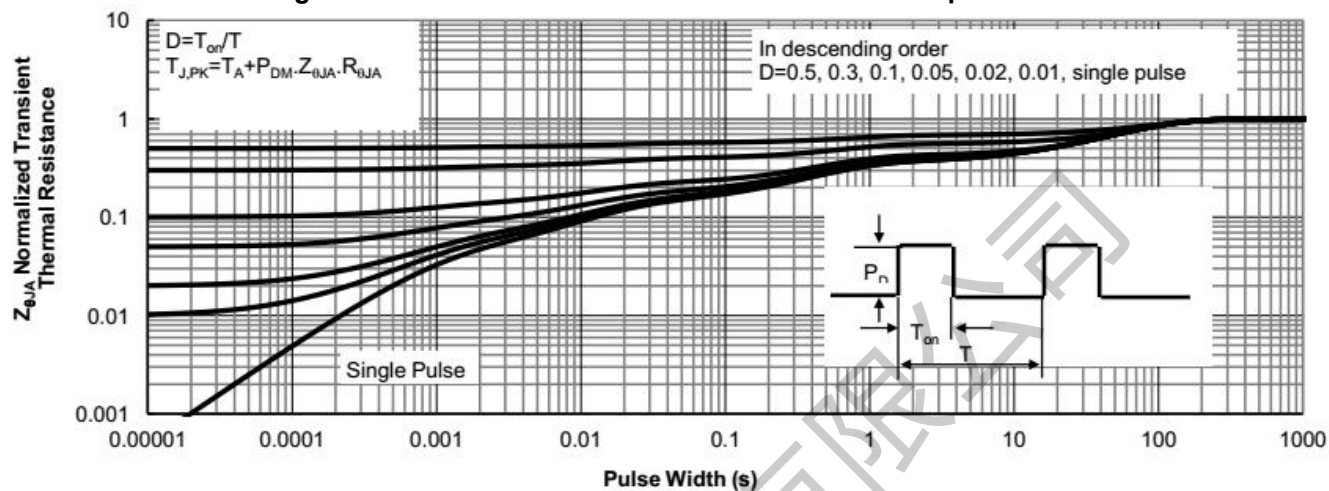


Figure11. Normalized Maximum Transient Thermal Impedance



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