General Description

The G1005 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.

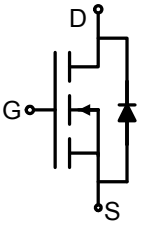
General Features

V_{DSS}	$R_{DS(ON)}$ @10V (Typ)	I_D
100V	123mΩ	5 A

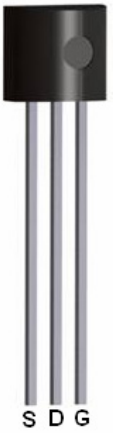
- High Power and current handing capability
- RoHS Compliant
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management



Schematic diagram



TO-92

Ordering Information

Part Number	Marking	Case	Packaging
G1005	G1005	TO-92	1000pcs/Carton

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)	±20	V
I_D	Drain Current-Continuous(T_C=25℃)	5	A
	Drain Current-Continuous(T_C=100℃)	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	℃

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

Table 2. Thermal Characteristic

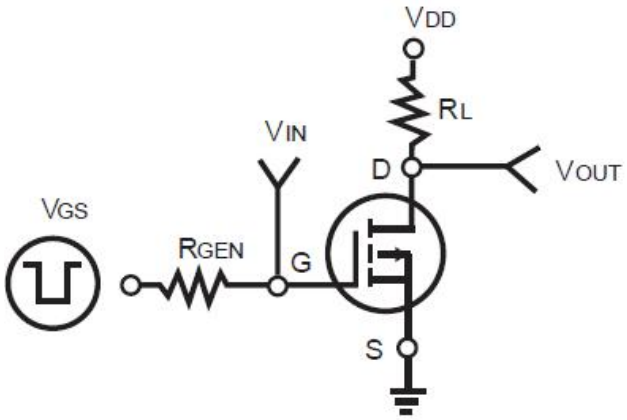
Symbol	Parameter	Typ	Value	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	13.5	℃/W

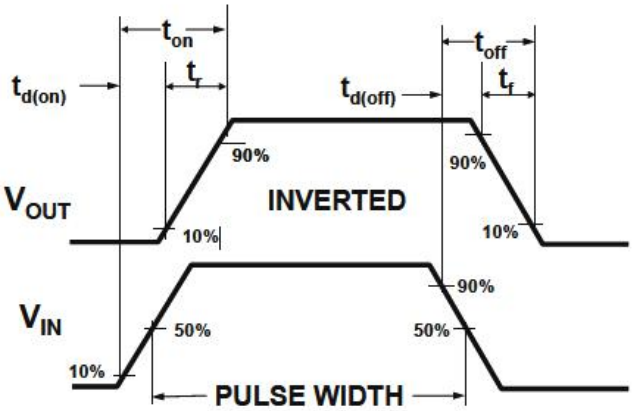
Table 3. Electrical Characteristics (T_A=25℃unless otherwise noted)

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			0.9	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	1.9	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D= 3A		123	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=5A 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)				5	A
V_{SD}	Forward on Voltage**(Note 1)**	V_{GS}=0V,I_S=3A			1	V

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

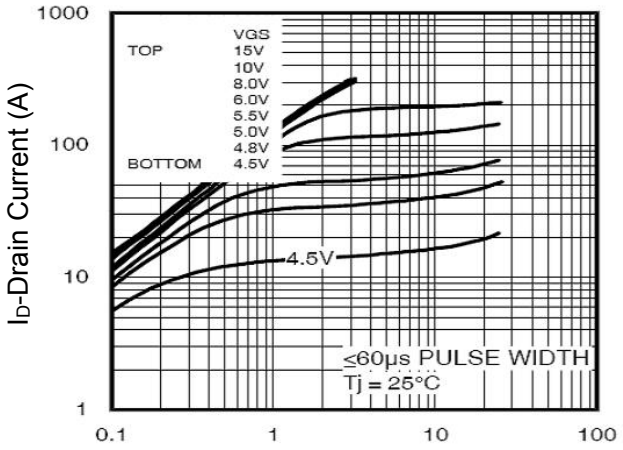
Switch Time Test Circuit and Switching Waveforms：





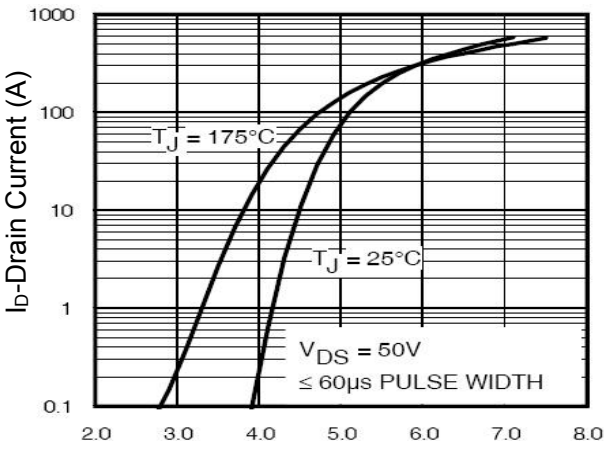
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

Figure1. Output Characteristics



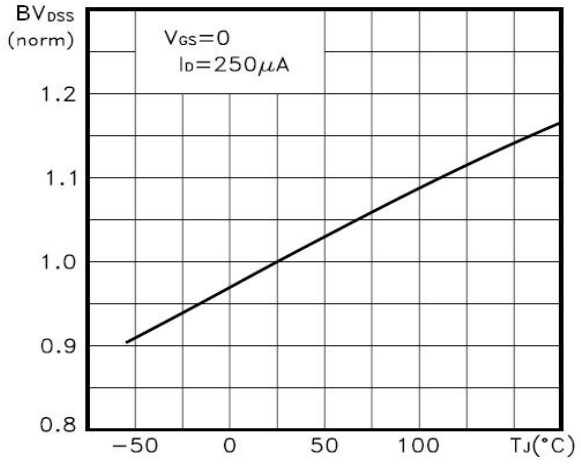
VDS Drain-Source Voltage (V)

Figure2. Transfer Characteristics



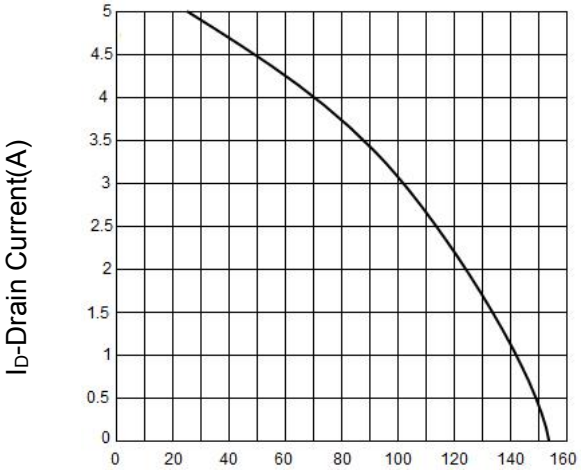
VDS Drain-Source Voltage (V)

Figure3. BVDSS vs Junction Temperature



Temperature（℃）

Figure4. ID vs Junction Temperature



Temperature（℃）

Figure5. VGS(th) vs Junction Temperature

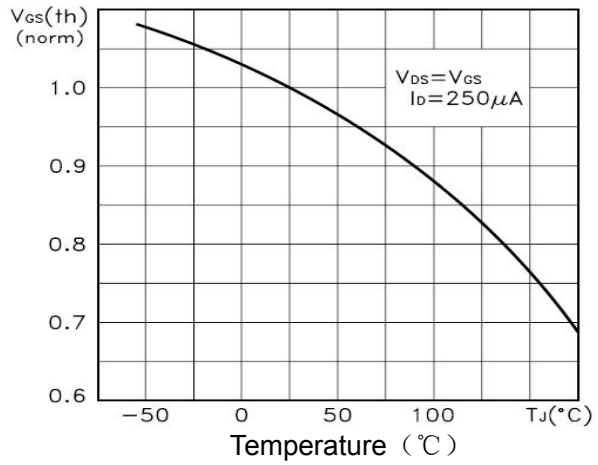


Figure6. Rdson Vs Junction Temperature

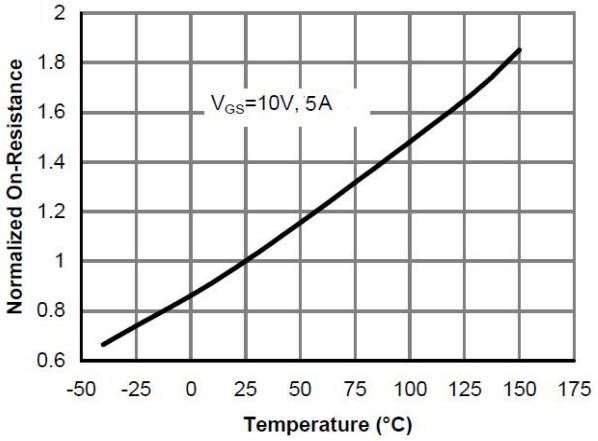


Figure7. Gate Charge

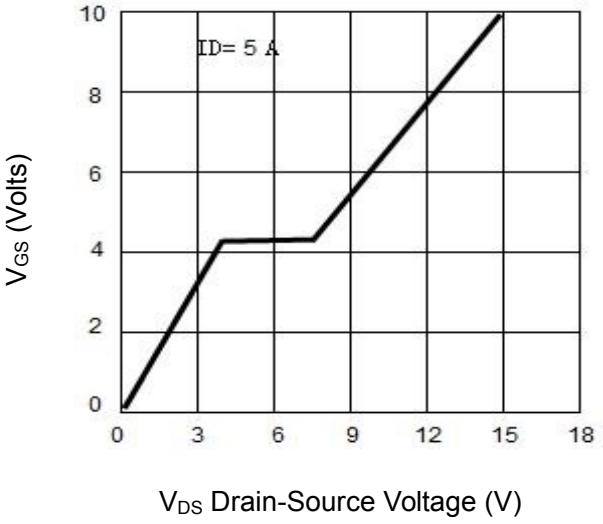


Figure8. Capacitance vs Vds

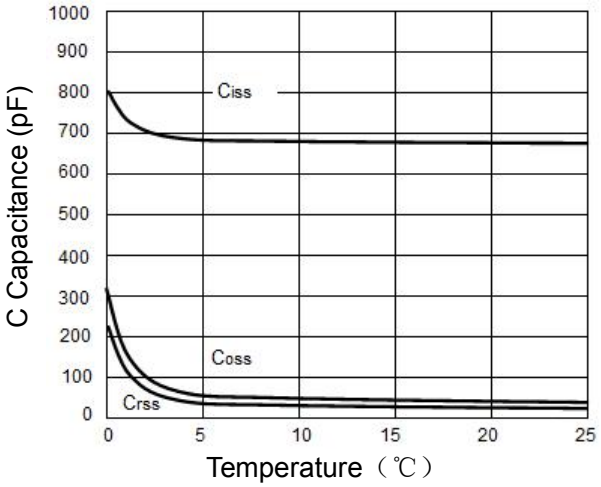


Figure9. Source- Drain Diode Forward

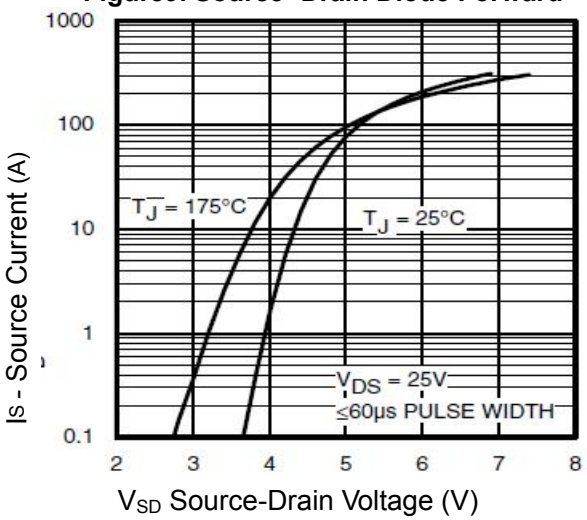


Figure10. Safe Operation Area

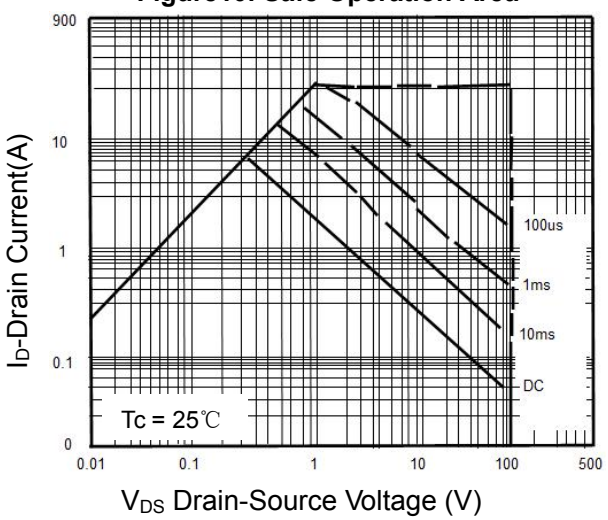
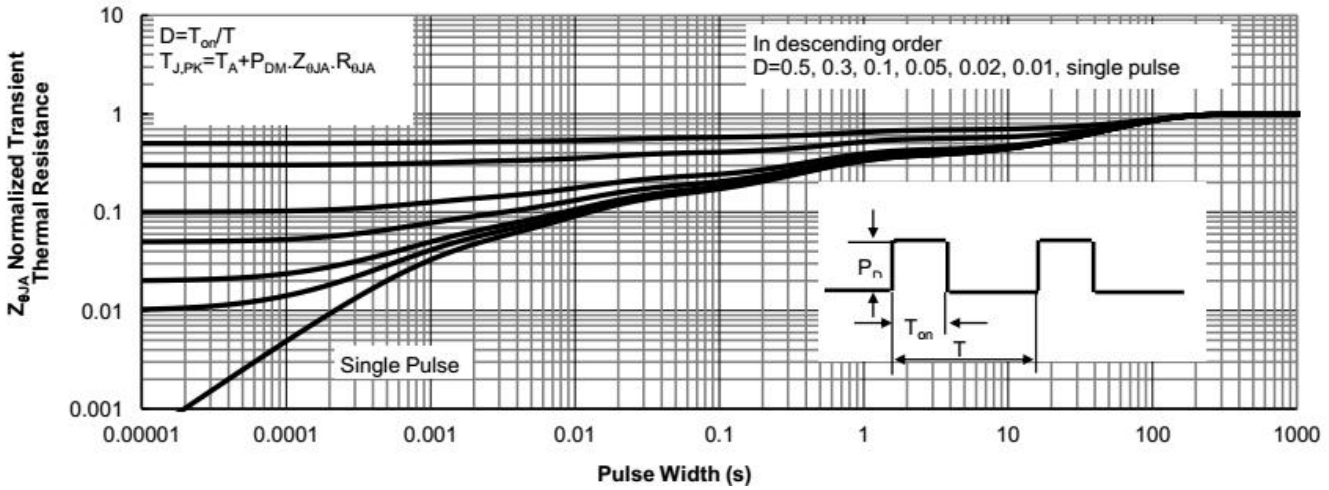
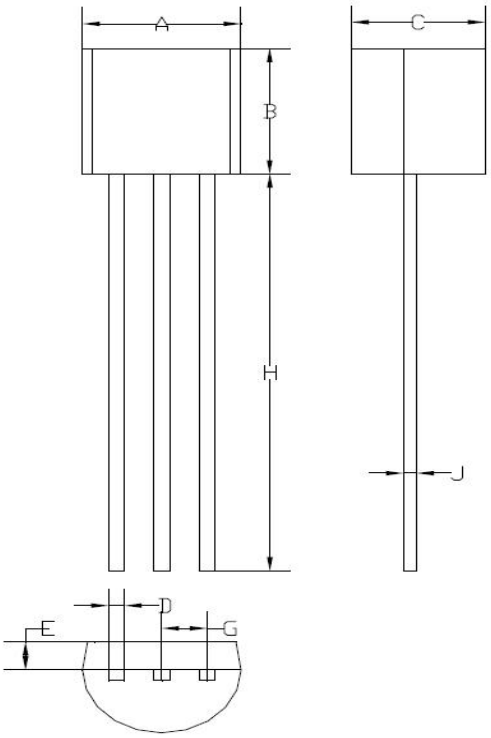


Figure11. Normalized Maximum Transient Thermal Impedance



TO-92 Package information



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Dim	MIN	NOM	MAX
A	4.59	4.60	-
B	4.58	4.60	4.62
C	3.50	3.55	3.60
D	2.50	2.55	2.60
E	-	1.25	1.30
G	1.24	1.27	1.30
H	14.28	14.30	14.32
J	0.38		
All Dimensions in mm			