

## 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

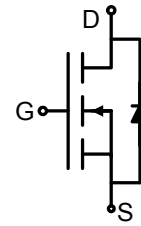
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$V_{DSS}$	$R_{DS(ON)}$ @10V (Typ)	$I_D$
100V	123m $\Omega$	5 A

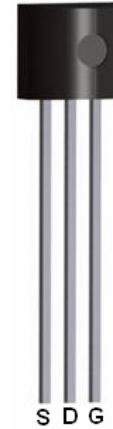
- High Power and current handling capability
- RoHS Compliant
- Surface Mount Package

## 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 ( $T_A=25^{\circ}\text{C}$ )

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source Voltage ( $V_{GS}=0V$ )	100	V
$V_{GS}$	Gate-Source Voltage ( $V_{DS}=0V$ )	$\pm 20$	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

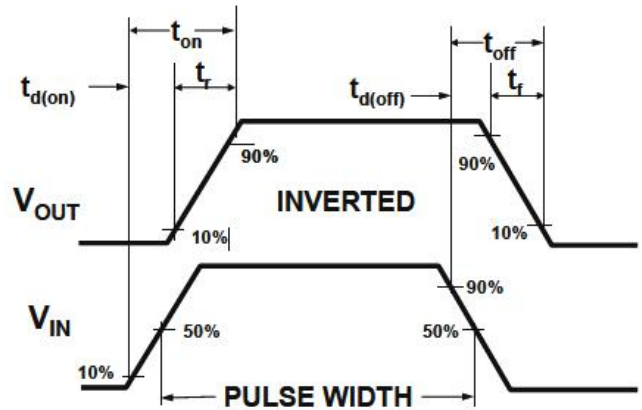
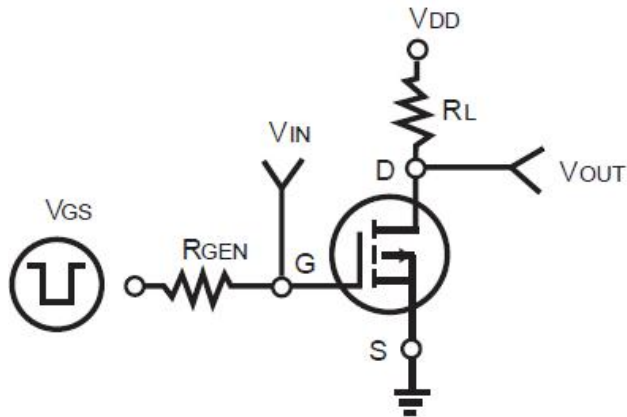
Symbol	Parameter	Typ	Value	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	13.5	$^{\circ}\text{C/W}$

Table 3. Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V I <sub>D</sub> =250μA	100			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			0.9	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.3	1.9	2.5	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> = 3A		123	180	mΩ
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz		690		pF
C <sub>oss</sub>	Output Capacitance			120		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			90		pF
<b>Switching Times</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =15V, I <sub>D</sub> =1A, R <sub>L</sub> =15Ω V <sub>GS</sub> =10V, R <sub>G</sub> =2.5Ω		11		nS
t <sub>r</sub>	Turn-on Rise Time			7.4		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			35		nS
t <sub>f</sub>	Turn-Off Fall Time			9.1		nS
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, I <sub>D</sub> =5A V <sub>GS</sub> =10V		15.5		nC
Q <sub>gs</sub>	Gate-Source Charge			3.2		nC
Q <sub>gd</sub>	Gate-Drain Charge			4.7		nC
<b>Source-Drain Diode Characteristics</b>						
I <sub>SD</sub>	Source-Drain Current(Body Diode)				5	A
V <sub>SD</sub>	Forward on Voltage(Notes 1)	V <sub>GS</sub> =0V, I <sub>S</sub> =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

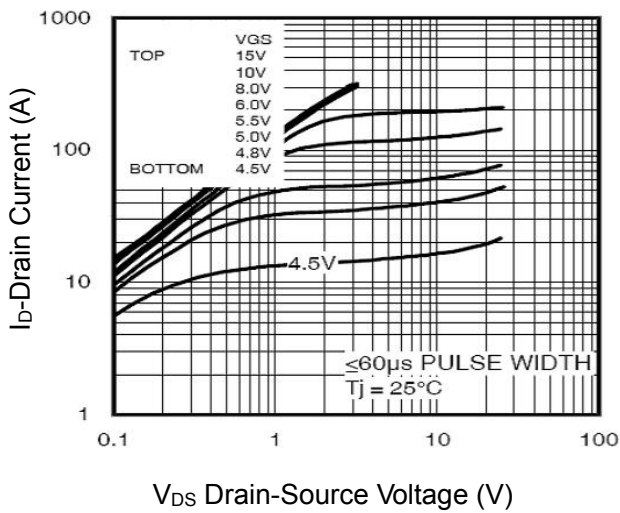


Figure2. Transfer Characteristics

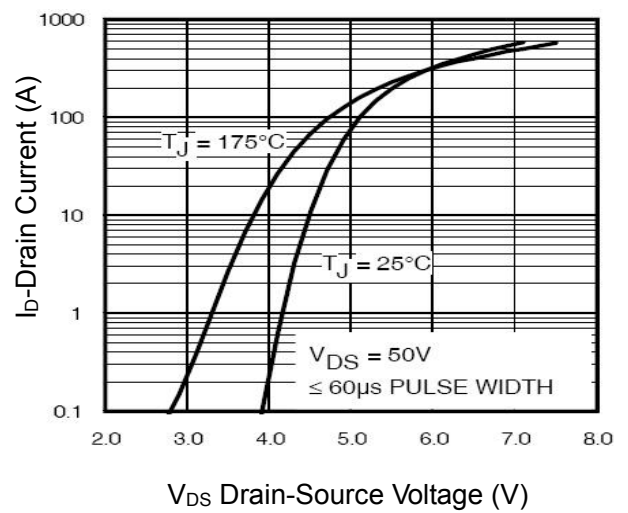


Figure3. BV<sub>DSS</sub> vs Junction Temperature

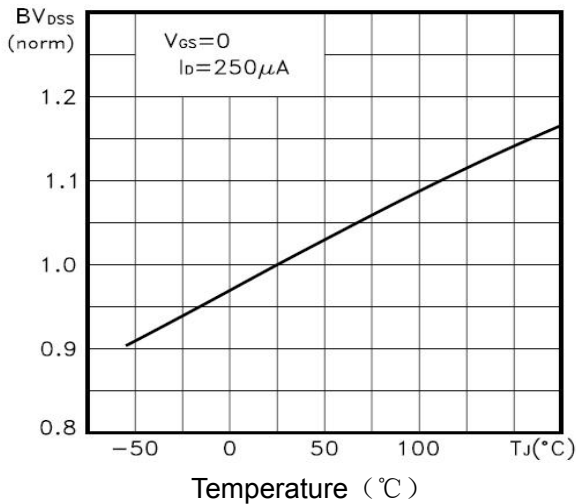


Figure4. ID vs Junction Temperature

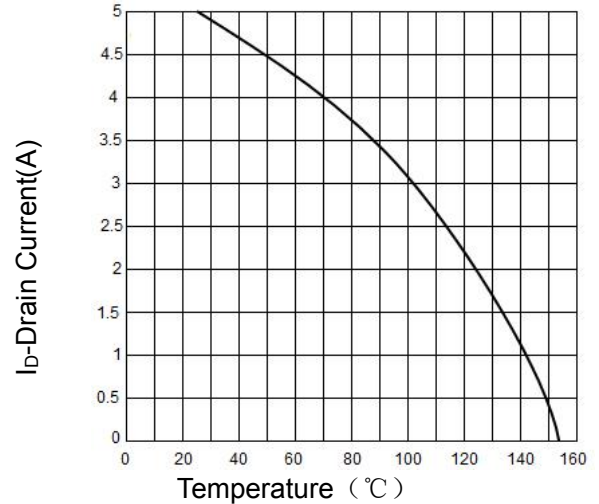


Figure5. VGS(th) vs Junction Temperature

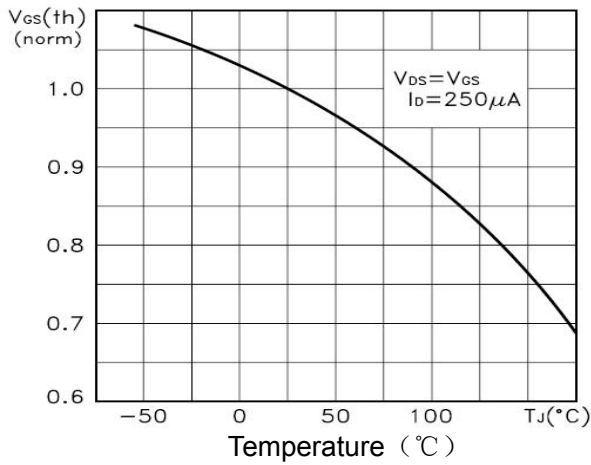


Figure6. Rds(on) Vs Junction Temperature

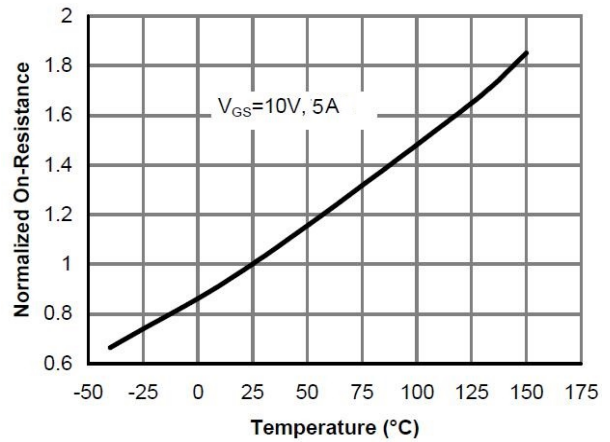


Figure7. Gate Charge

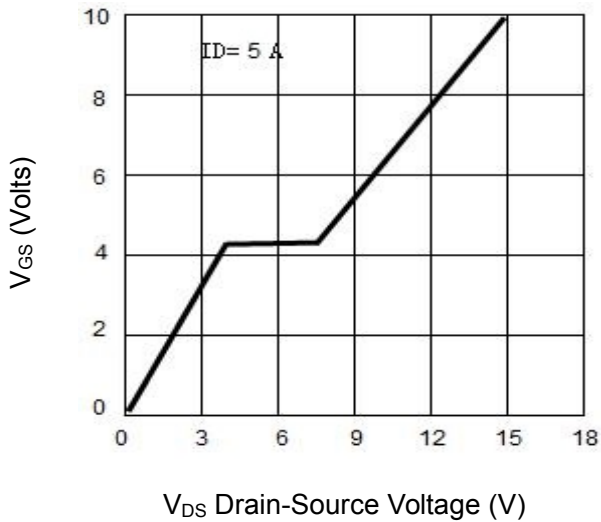


Figure8. Capacitance vs Vds

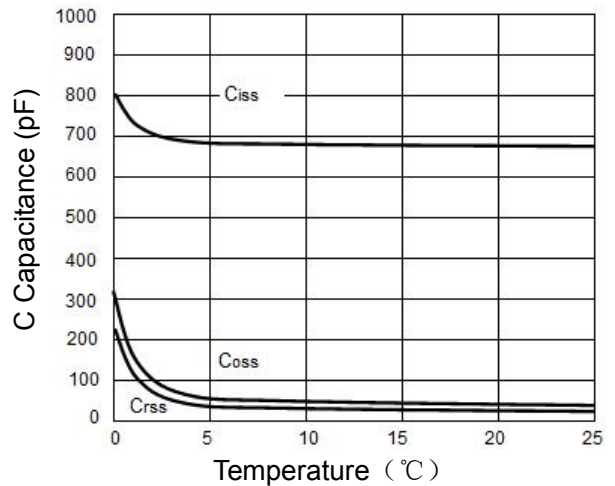


Figure9. Source- Drain Diode Forward

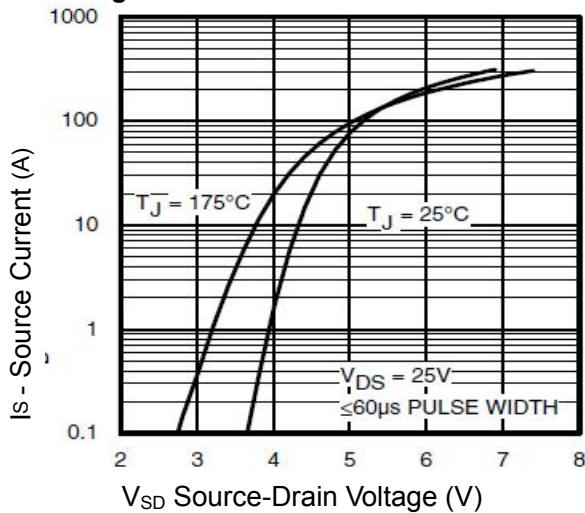


Figure10. Safe Operation Area

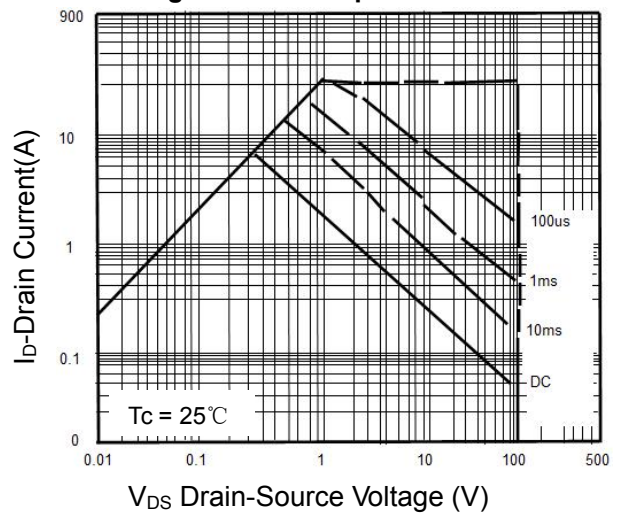
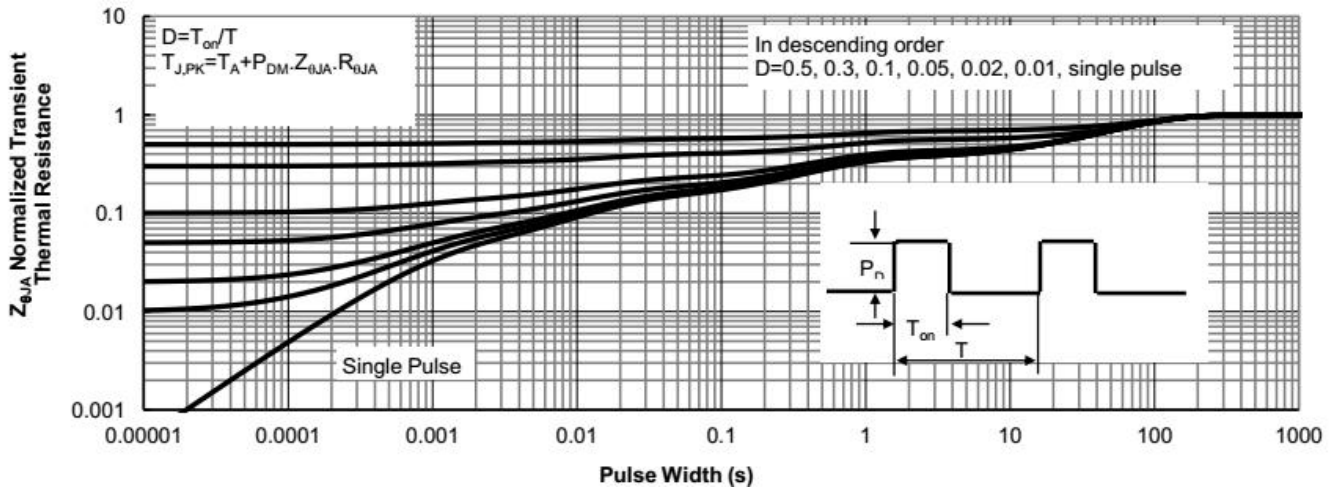
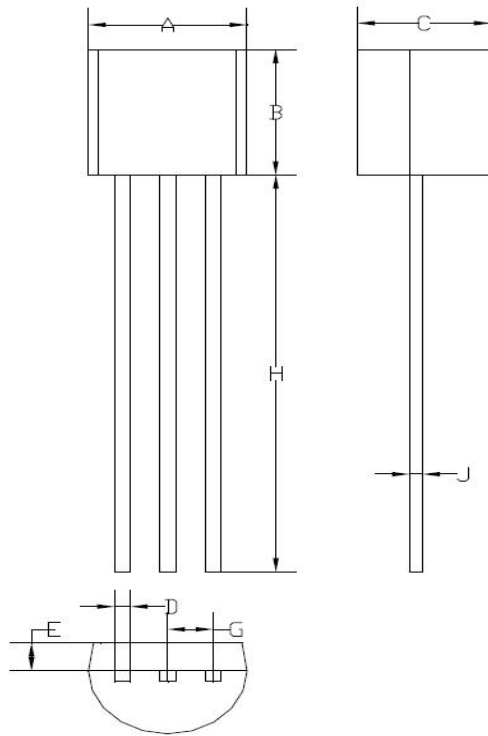


Figure11. Normalized Maximum Transient Thermal Impedance



**TO-92 Package information**



TO-92			
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			

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