General Description

The G1007. combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for power switching application and LED backlighting.
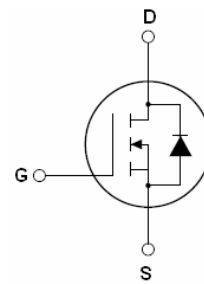
Features

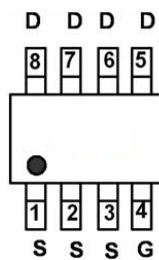| VDSS	RDS(ON) @10V (typ)	ID
100V	70mΩ	7A

● Ultra Low On-Resistance
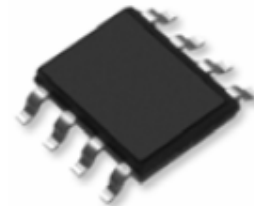● High UIS and UIS 100% Test

Application

● Power switching application
● LED backlighting

Schematic Diagram

Marking and pin Assignment

SOP-8

Table 1. Absolute Maximum Ratings (TA=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
$I_{D\,(DC)}$	Drain Current (DC) at Tc=25℃	7	A
$I_{D\,(DC)}$	Drain Current (DC) at Tc=100℃	8.5	A
$I_{DM\,(pluse)}$	Drain Current-Continuous@ Current-Pulsed [Note 1]	56	A
P_D	Maximum Power Dissipation(Tc=25℃)	28	W
E_{AS}	Single Pulse Avalanche Energy [Note 2]	16	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	℃

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature
2.E_{AS} condition:T_J=25℃,V_{DD}=50V,V_G=10V, R_G=25Ω

Table 2. Thermal Characteristic

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	3.3	℃/W

Table 3. Electrical Characteristics (TA=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(Tc=25℃)	V_{DS}=100V,V_{GS}=0V			1	μA
I_{DSS}	Zero Gate Voltage Drain Current(Tc=100℃)	V_{DS}=100V,V_{GS}=0V			5	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	1.5	2.0	2.6	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=4.5A		70	85	mΩ
Dynamic Characteristics						
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=4.5A	5			S
C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V f=1.0MHz		612		PF
C_{oss}	Output Capacitance			120		PF
C_{rss}	Reverse Transfer Capacitance			91		PF
Q_g	Total Gate Charge	V_{DS}=50V,I_D=4.5A V_{GS}=10V		11		nC
Q_{gs}	Gate-Source Charge			1.9		nC
Q_{gd}	Gate-Drain Charge			2.8		nC
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=50V,R_L=8.6Ω V_{GS}=10V,R_G=3Ω		8		nS
t_r	Turn-on Rise Time			3		nS
$t_{d(off)}$	Turn-Off Delay Time			17		nS
t_f	Turn-Off Fall Time			4.5		nS
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)			14		A
I_{SDM}	Pulsed Source-Drain Current(Body Diode)			56		A
V_{SD}	Forward On Voltage[Note 1]	T_J=25℃,I_{SD}=1A,V_{GS}=0V		0.74	1	V
t_{rr}	Reverse Recovery Time[Note 1]	T_J=25℃,I_F=4.5A di/dt=500A/μs		21		nS
Q_{rr}	Reverse Recovery Charge[Note 1]			97		nC
t_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Notes 1.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 1.5%, Starting T_J=25℃
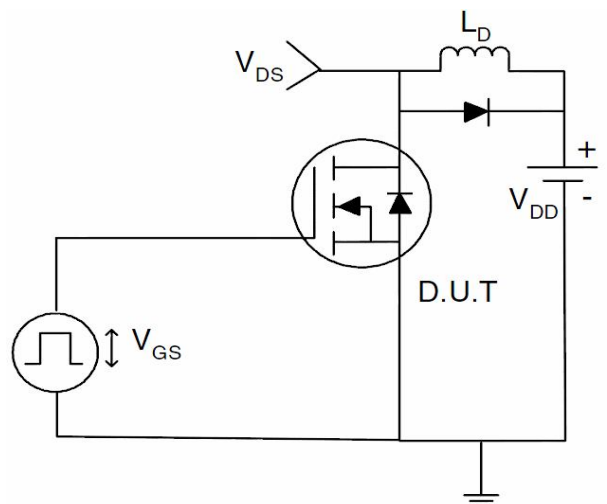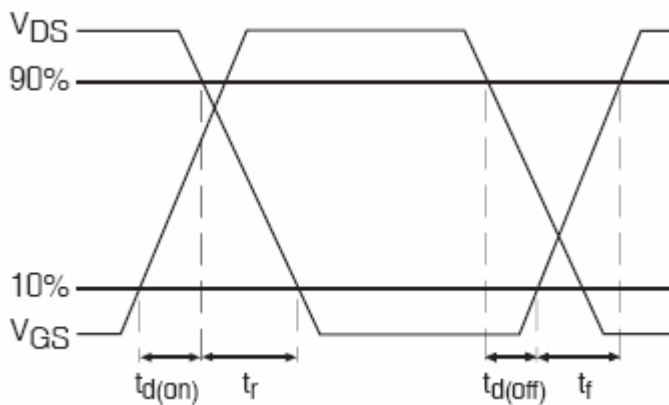
Test Circuit

1）E$_{AS}$ Test Circuits
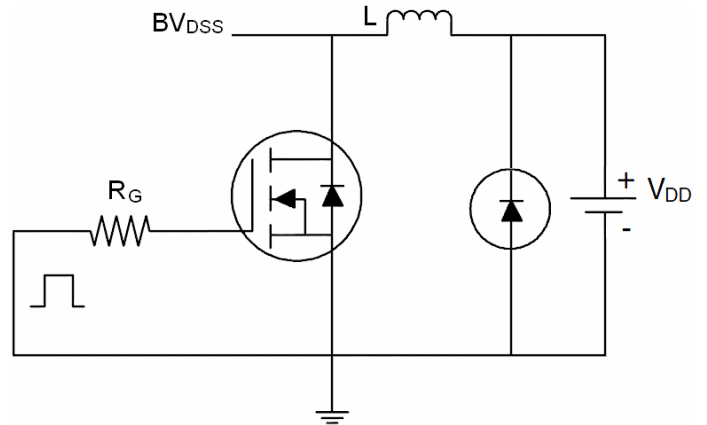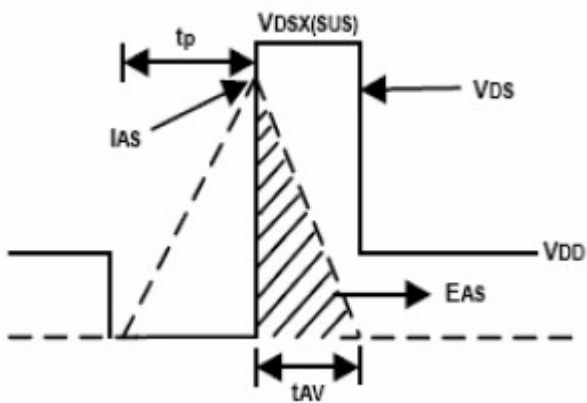
2）Gate Charge Test Circuit:
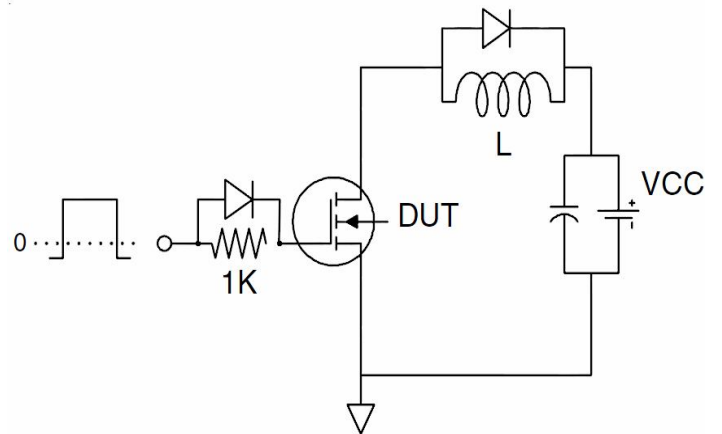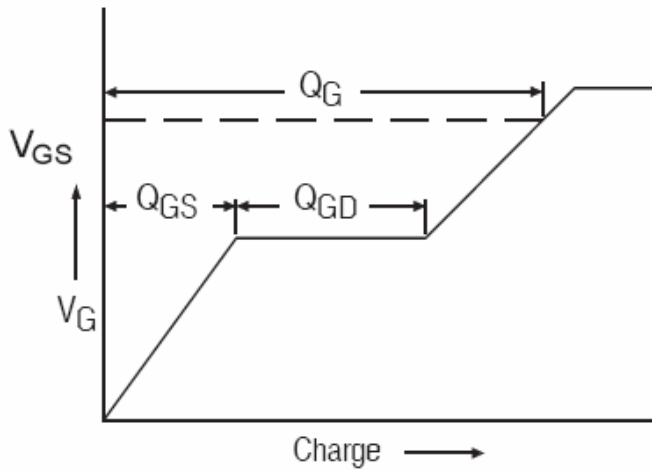
3）Switch Time Test Circuit：

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)
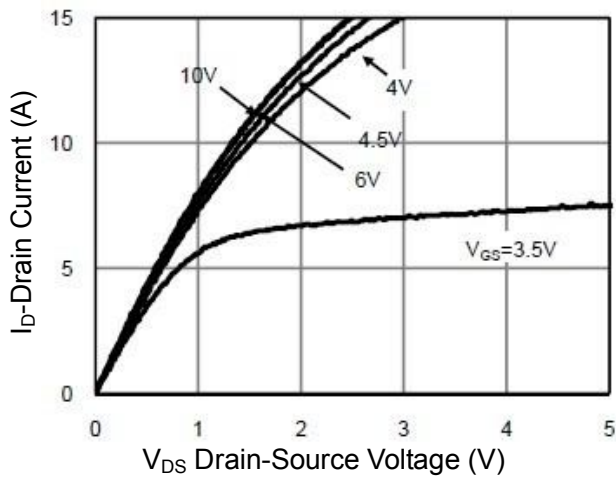
Figure1. On-Region Characteristics

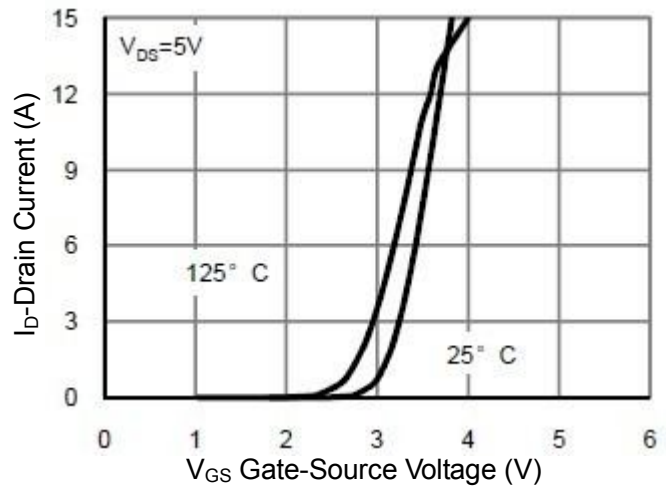**Figure 2: Transfer Characteristics**

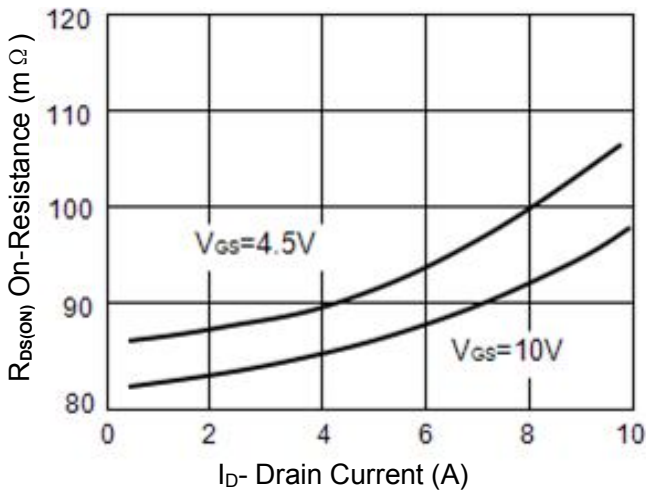**Figure3. On-Resistance vs. Drain Current and Gate Voltage**

Figure4. On-Resistance vs. Junction Temperature
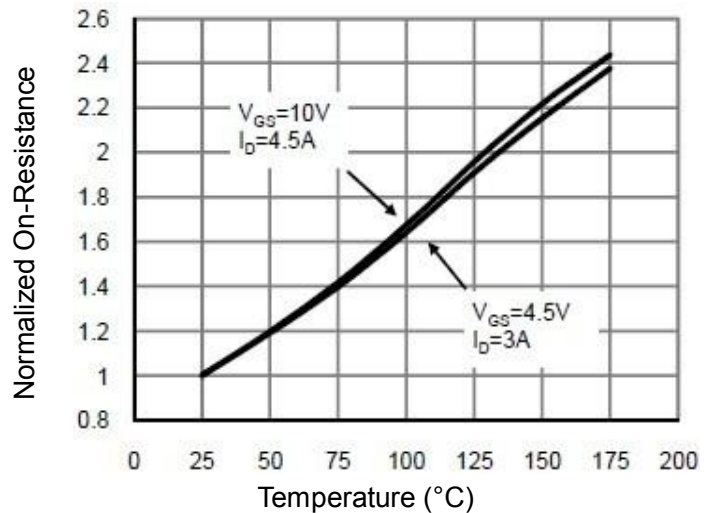

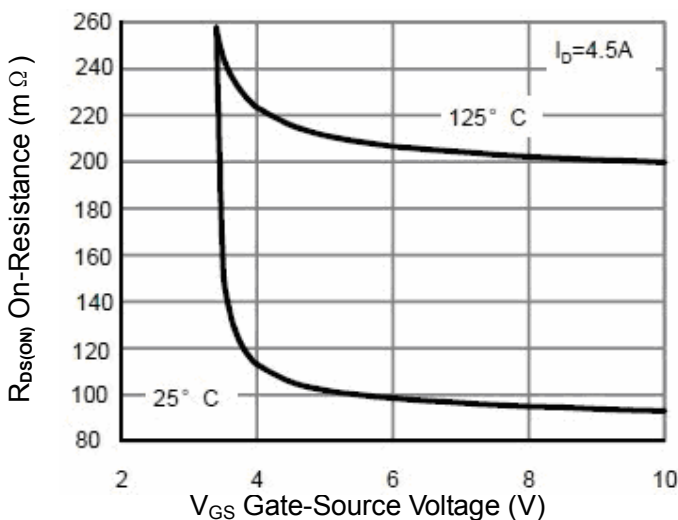**Figure5. On-Resistance vs. Gate-Source   Voltage**

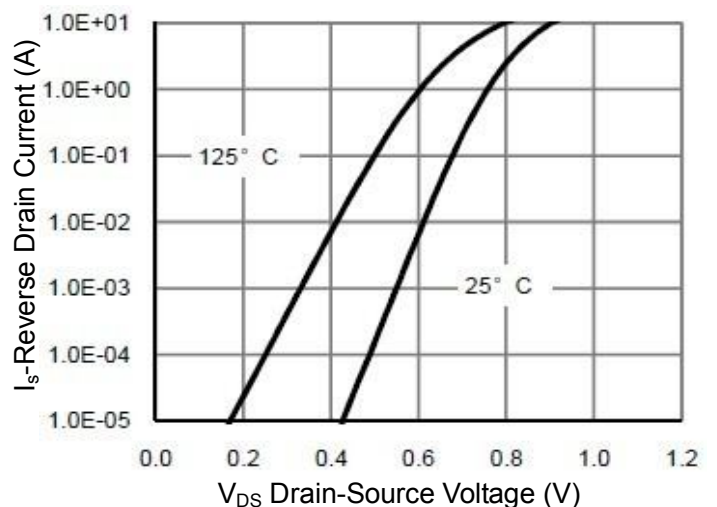**Figure6. Body-Diode Characteristics**

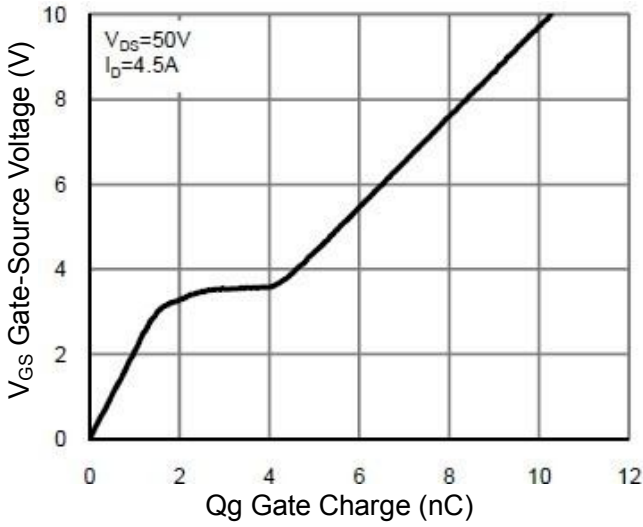**Figure7. Gate-Charge Characteristics**

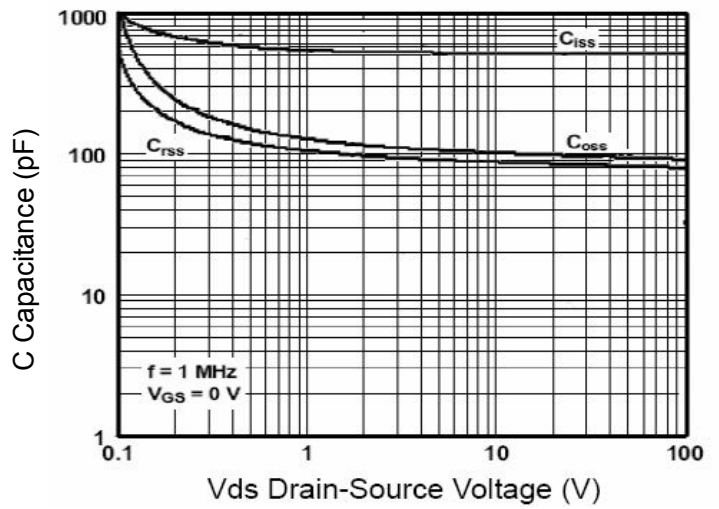**Figure 8. Capacitance Characteristics**

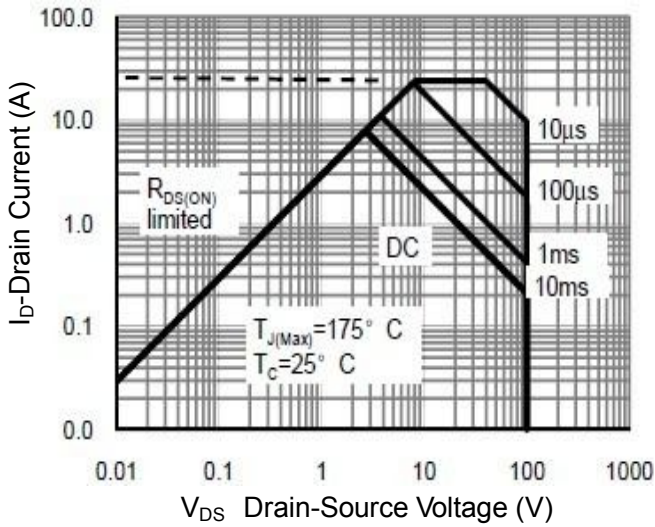**Figure 9. Maximum Forward Biased Safe Operating Area**
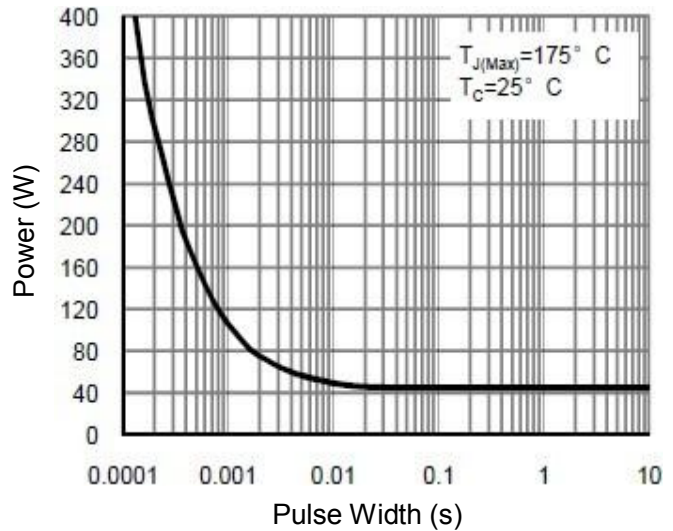

Figure10. Single Pulse Power Rating Junction-to-Case

Figure11. Normalized Maximum Transient Thermal Impedance

Ri (°C/W)	τι (sec)
0.018756	0.000373
0.159425	0.000734
0.320725	0.005665
0.101282	0.115865

Notes:
1. Duty Factor D = t1/t2
2. Peak Tj = P dm x Zthjc + Tc