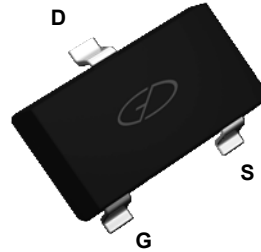
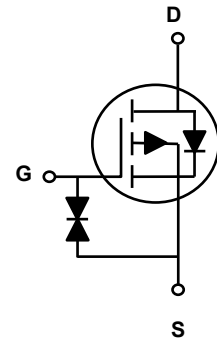


### Main Product Characteristics

$V_{DSS}$	-50V
$R_{DS(on)}$	2.1 $\Omega$ (Typ)
$I_D$	-130mA



SOT-23



Schematic Diagram

### Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



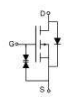
### Description

The SSF6007 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supplies and a wide variety of other applications.

### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	-50	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous, $V_{GS}$ @ -10V ( $T_C=25^\circ\text{C}$ ) <sup>1</sup>	$I_D$	-130	mA
Drain Current-Continuous, $V_{GS}$ @ -10V ( $T_C=100^\circ\text{C}$ ) <sup>1</sup>		-100	
Drain Current-Pulsed <sup>2</sup>	$I_{DM}$	-520	mA
Power Dissipation ( $T_C=25^\circ\text{C}$ ) <sup>3</sup>	$P_D$	230	mW
ESD Rating (HBM Module)	ESD	1	KV
Thermal Resistance, Junction-to-Ambient ( $t \leq 10\text{s}$ ) <sup>4</sup>	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) <sup>4</sup>		540	
Operating Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$

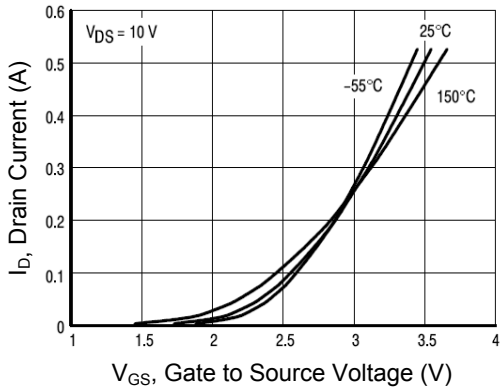
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-10\mu A$	-50	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-40V, V_{GS}=0V$	-	-	-0.1	$\mu A$
		$V_{DS}=-50V, V_{GS}=0V$	-	-	-1	$\mu A$
		$T_J=125^\circ\text{C}$	-	-	-50	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 10$	$\mu A$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-130mA$	-	2.1	7	$\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-1mA$	-0.8	-	-2	V
Forward Transconductance	$g_{fs}$	$V_{DS}=-25V, I_D=-130mA$	50	-	-	mS
<b>Dynamic and Switching Characteristics</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=50\Omega, I_D=-2.5A$	-	3.1	-	nS
Rise Time	$t_r$		-	1.3	-	
Turn-Off Delay Time	$t_{d(off)}$		-	18	-	
Fall Time	$t_f$		-	7.5	-	
Input Capacitance	$C_{iss}$	$V_{DS}=-30V, V_{GS}=0V, F=1MHz$	-	30	-	pF
Output Capacitance	$C_{oss}$		-	6	-	
Reverse Transfer Capacitance	$C_{rss}$		-	2.5	-	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction 	-	-	130	mA
Pulsed Source Current (Body Diode)	$I_{SM}$		-	-	520	mA
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-130mA$	-	-	-1.3	V

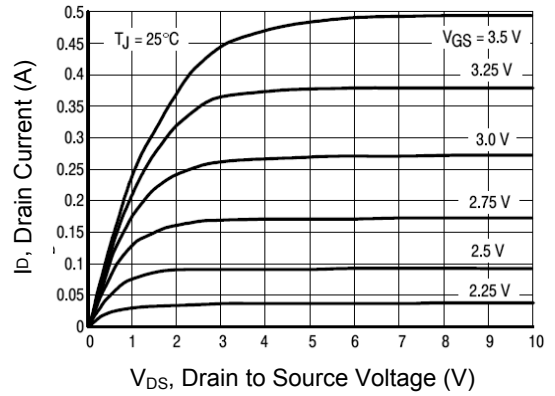
**Notes:**

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation  $P_D$  is based on max. junction temperature, using junction-to- ambient thermal resistance.
4. The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^\circ\text{C}$ .

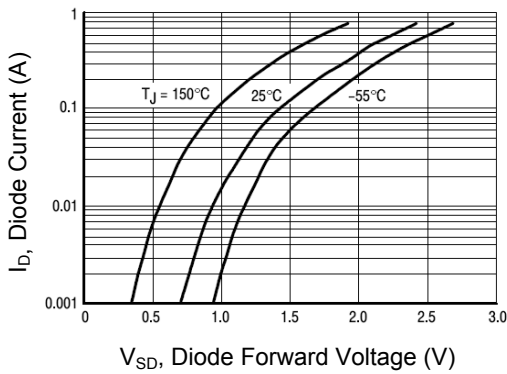
**Typical Electrical and Thermal Characteristic Curves**



**Figure 1. Transfer Characteristics**



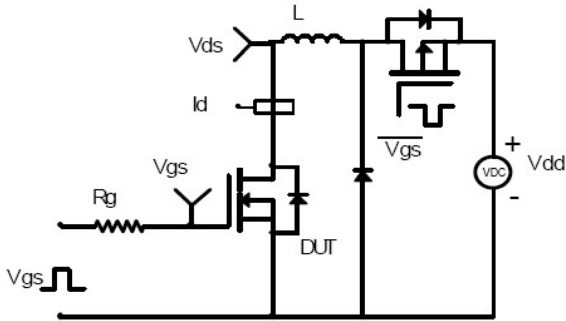
**Figure 2. Output Curve**



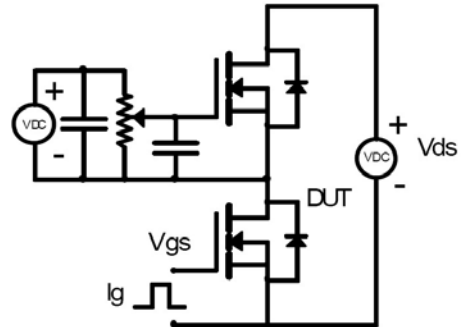
**Figure 3. Body Diode Forward Curve**

## Test Circuits and Waveforms

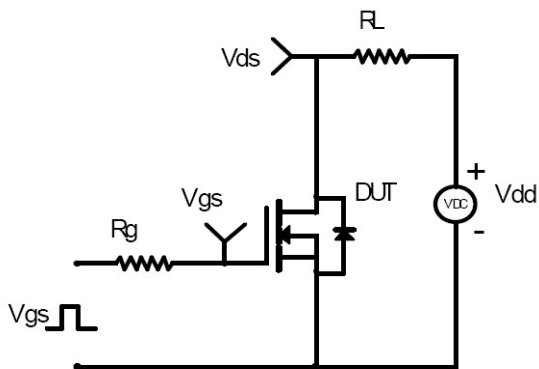
**EAS Test Circuit:**



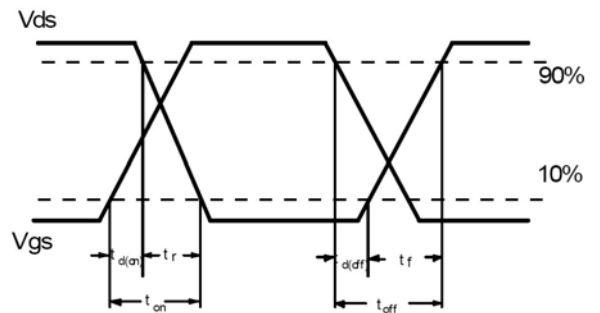
**Gate Charge Test Circuit:**



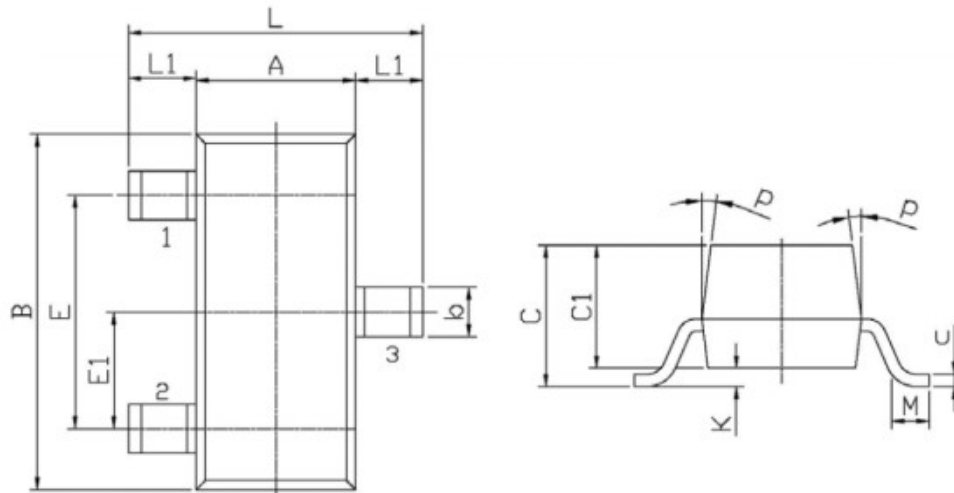
**Switching Time Test Circuit:**



**Switching Waveforms:**



**Package Outline Dimensions (SOT-23)**



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
L	2.200	2.700	0.087	0.106
L1	0.450	0.650	0.018	0.026
A	1.150	1.500	0.045	0.059
B	2.700	3.100	0.106	0.122
E	1.700	2.100	0.067	0.083
E1	0.850	1.050	0.033	0.041
b	0.350	0.550	0.014	0.022
C	-	1.300	-	0.051
C1	0.900	1.200	0.035	0.047
c	0.050	0.200	0.002	0.008
K	0.000	0.100	0.000	0.004
M	0.200	-	0.008	-
P	7°		7°	

**NOTES**

1. All dimensions are in millimeters.
2. Tolerance  $\pm 0.10\text{mm}$  (4 mil) unless otherwise specified.
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.