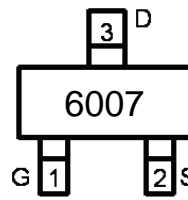


## Main Product Characteristics:

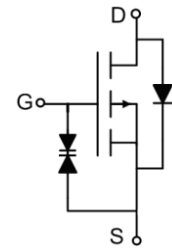
$V_{DSS}$	-50V
$R_{DS(on)}$	2.1ohm(typ.)
$I_D$	-130mA



SOT-23



Marking and pin Assignment



Schematic diagram

## Features and Benefits:

- Advanced MOSFET process technology
- Special designed for Line current interrupter in telephone sets, Relay, high speed and line transformer drivers and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery



## Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance. These features combine to make this design an extremely efficient and reliable device for use in line current interrupter in telephone sets and a wide variety of other applications

## Absolute max Rating:

Symbol	Parameter	Max.	Units
$I_D$ @ TC = 25°C	Continuous Drain Current, $V_{GS}$ @ -10V①	-130	mA
$I_D$ @ TC = 100°C	Continuous Drain Current, $V_{GS}$ @ -10V①	-100	
$I_{DM}$	Pulsed Drain Current②	-520	
$P_D$ @TC = 25°C	Power Dissipation③	230	mW
$V_{DS}$	Drain-Source Voltage	-50	V
$V_{GS}$	Gate-to-Source Voltage	± 20	V
ESD	ESD Rating (HBM module)	1	KV
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to + 150	°C


## Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient ( $t \leq 10s$ ) ④	—	556	°C/W
	Junction-to-Ambient (PCB mounted, steady-state) ④	—	540	°C/W

## Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-50	—	—	V	$V_{GS} = 0V, I_D = -10\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	2.1	7	$\Omega$	$V_{GS}=-10V, I_D = -130mA$
$V_{GS(th)}$	Gate threshold voltage	-0.8	—	-2	V	$V_{DS} = V_{GS}, I_D = -1mA$
$I_{DSS}$	Drain-to-Source leakage current	—	—	-0.1	$\mu A$	$V_{DS}=-40V, V_{GS} = 0V$
		—	—	-1		$V_{DS}=-50V, V_{GS} = 0V$
		—	—	-50		$T_J = 125^{\circ}\text{C}$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	10	$\mu A$	$V_{GS}=20V$
		—	—	-10		$V_{GS} = -20V$
$g_{fs}$	Forward Transconductance	50	—	—	S	$V_{DS} = -25V, I_D = -130mA$
$C_{iss}$	Input Capacitance	—	45	—	pF	$V_{GS} = 0;$ $V_{DS} = -5V;$ $f = 1\text{ MHz}$
$C_{oss}$	Output Capacitance	—	18	—		
$C_{rss}$	Reverse Transfer Capacitance	—	11	—		
$t_{d(on)}$	Turn-On Delay Time	—	3.1	—	ns	$V_{DD} = -15V;$ $I_D = -2.5A;$ $R_L = 50\text{ohm}$
$t_r$	Rise Time	—	1.3	—		
$t_{d(off)}$	Turn-Off Delay Time	—	18	—		
$t_f$	Fall Time	—	7.5	—		

## Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	130	mA	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	520	mA	
$V_{SD}$	Diode Forward Voltage	—	—	-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 PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^{\circ}\text{C}$

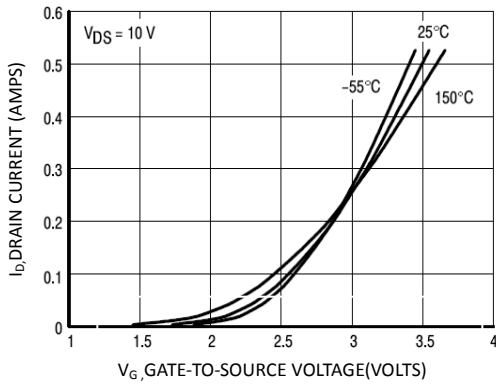


Fig 1: Transfer Characteristics

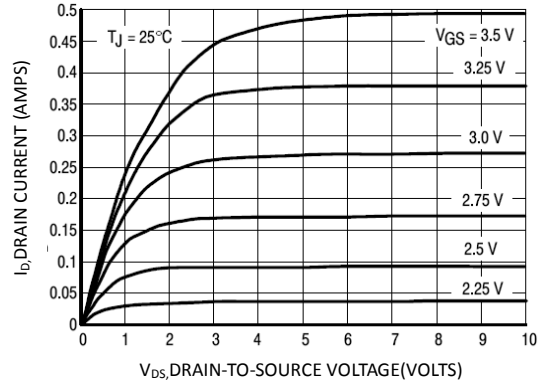


Fig 2: Output Curve

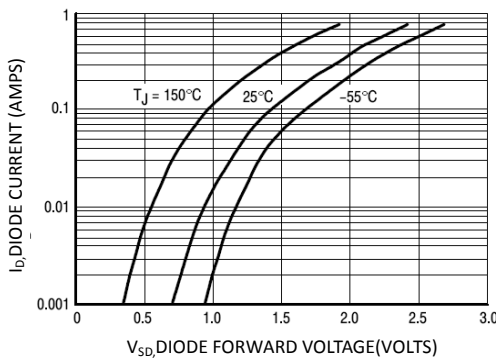


Fig 3: Body Diode Forward Curve

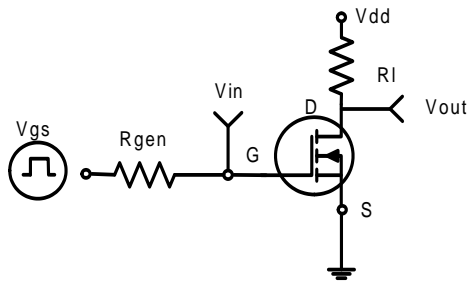


Fig 4: Switching Test Circuit

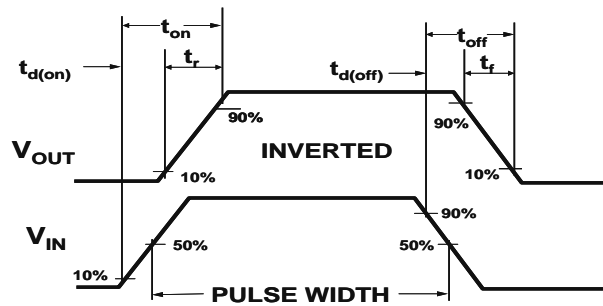
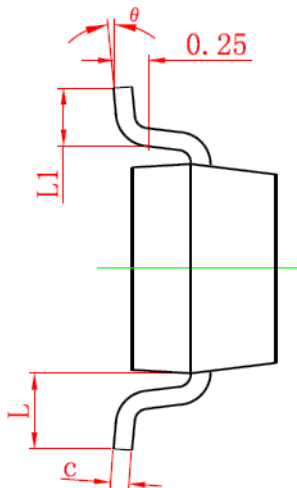
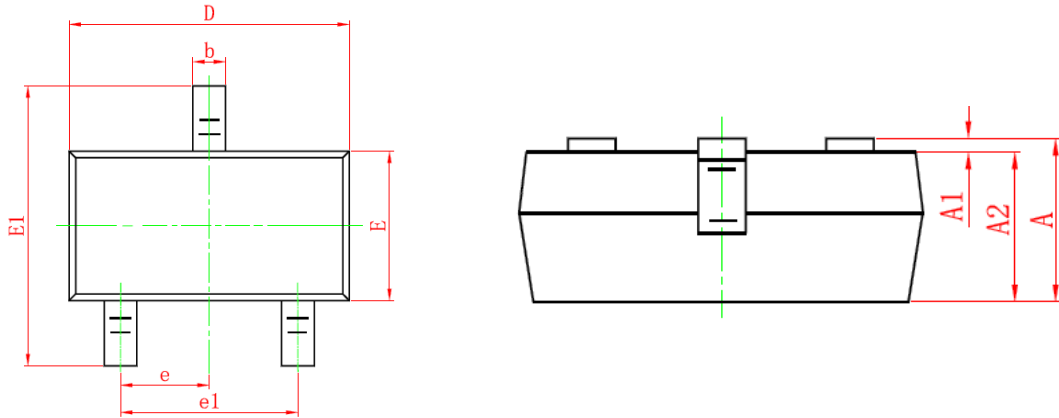


Fig 5: Switching Waveforms

**SOT-23 PACKAGE INFORMATION**  
Dimensions in Millimeters (UNIT:mm)



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

**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.

**Ordering and Marking Information**

**Device Marking: 6007**

Package (Available)  
SOT-23  
Operating Temperature Range  
C : -55 to 150 °C

**Devices per Unit**

Package Type	Units/ Tube	Tubes/ Inner Box	Units/ Inner Box	Inner Boxes/ Carton Box	Units/ Carton Box
SOT23	3000pcs	10pcs	30000pcs	4pcs	120000pcs

**Reliability Test Program**

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	T <sub>j</sub> = 150°C @ 80% of Max V <sub>DSS</sub> /V <sub>CES</sub> /VR	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	T <sub>j</sub> = 150°C @ 100% of Max V <sub>GSS</sub>	168 hours 500 hours 1000 hours	3 lots x 77 devices

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