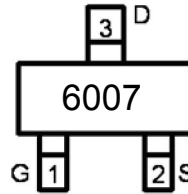


Main Product Characteristics

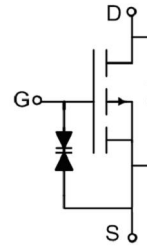
V_{DS}	-50V
$R_{DS(on)}$	2.1ohm(typ.)
I_D	-130mA



SOT-23



Marking and Pin Assignment



Schematic Diagram

Features and Benefits

- Advanced trench 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
- 150°C operating temperature
- Lead free product



Description

It utilizes the latest trench 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	Characteristics	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	556	°C/W
	Junction-to-Ambient (PCB mounted, steady-state) ④	—	540	°C/W

Electrical Characteristics @T_A=25°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 = -10μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	2.1	7	Ω	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	μA	V _{DS} = -40V, V _{GS} = 0V
		—	—	-1		V _{DS} = -50V, V _{GS} = 0V
		—	—	-50		T _J = 125°C
I _{GSS}	Gate-to-Source forward leakage	—	—	10	μA	V _{GS} = 20V
		-10	—	—		V _{GS} = -20V
g _{fs}	Forward Transconductance	50	—	—	S	V _{DS} = -25 V I _D = -130m A
C _{iss}	Input Capacitance	—	45	—	pF	V _{GS} = 0; V _{DS} = -5 V; f = 1 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 = -2.5 A; R _L = 50ohm
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	I _S = -130mA, V _{GS} = 0V

Notes:

- ① The maximum current rating is limited by bond-wires.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to- ambient thermal resistance.
- ④ The value of R_{θJA} is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C

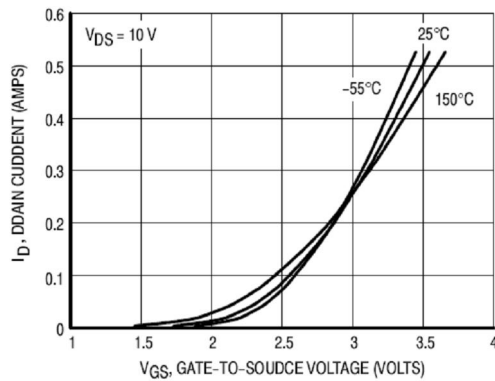


Fig 1: Transfer Characteristics

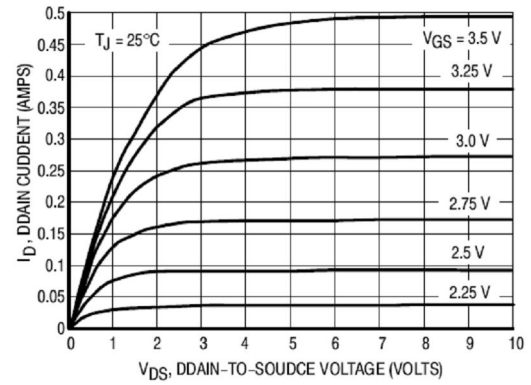


Fig 2: Out Put Curve

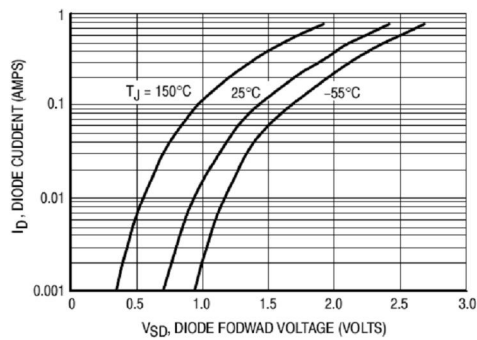


Fig 3: Body Diode Forward Curve

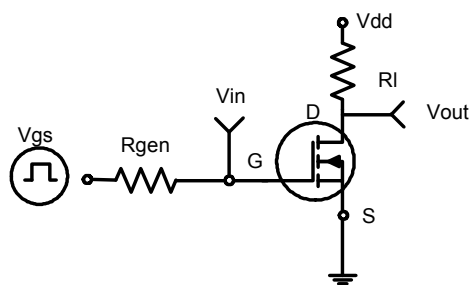


Fig 4: Switching Test Circuit

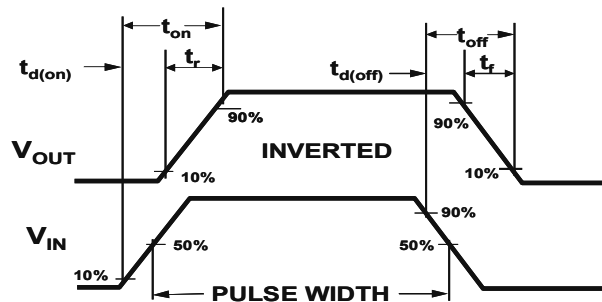
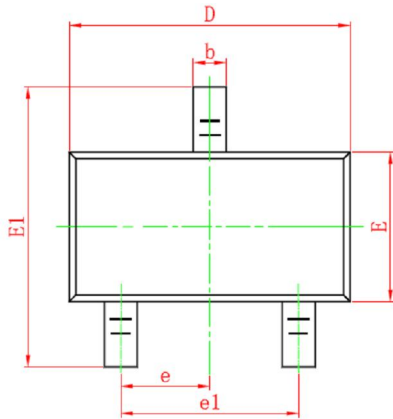
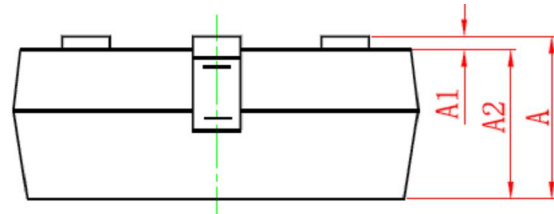
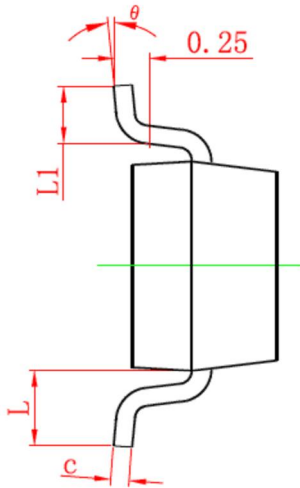


Fig 5: Switching Waveforms

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)	$T_j=125^{\circ}\text{C}$ or 150°C @ 80% of Max $V_{\text{DSS}}/V_{\text{CES}}/V_{\text{R}}$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	$T_j=125^{\circ}\text{C}$ or 150°C @ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices