

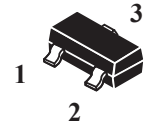
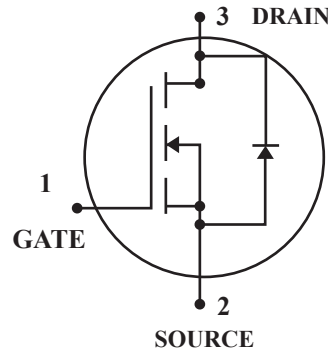
Small Signal MOSFET

N-Channel

(Pb) Lead(Pb)-Free

Features:

- *Low On-Resistance : 3Ω
- *Low Input Capacitance: 25PF
- *Low Out put Capacitance : 6PF
- *Low Threshole : $1.5V(TYE)$
- *Fast Switching Speed : 7.5ns



SOT-23

Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (TA=25°C)	I_D	250	mA
Pulsed Drain Current ⁽¹⁾	I_{DM}	1300	mA
Power Dissipation (TA=25°C)	P_D	350	mW
Maximax Junction-to-Ambient	$R_{\theta JA}$	357	°C/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C

Device Marking

2N7002=7002

Note 1:

Pulse Width Limited by Maximum Junction Temperature

Electrical Characteristics (T_A=25 °C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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Static

Drain-Source Breakdown Voltage V _{GS} =0V, I _D =10 uA	V _{(BR)DSS}	60	70		V
Gate-Threshold Voltage V _{DS} =V _{GS} , I _D =250 uA	V _{GS(th)}	1	1.5	2.5	V
Gate-body Leakage V _{DS} =0V, V _{GS} =15V	I _{GSS}	-	-	100	nA
Zero Gate Voltage Drain Current V _{DS} =60V, V _{GS} =0V V _{DS} =60V, V _{GS} =0V, T _j =125 °C	I _{DSS}	-	-	1 500	uA
On-State Drain Current (2) V _{GS} =10V, V _{DS} =7.5V V _{GS} =4.5V, V _{DS} =10V	I _{D(on)}	800 500	1300 700	- -	mA
Drain-Source On-Resistance (2) V _{GS} =10V, I _D =250mA V _{GS} =4.5V, I _D =200mA	r _{DS(on)}	- -	1.5 2.0	3 4	Ω
Forward Transconductance (2) V _{DS} =15V, I _D =200mA	g _{fs}	-	300	-	mS
Diode Forward Voltage I _S =200mA, V _{GS} =0V	V _{SD}	-	0.85	1.2	V

Dynamic(1)

Total Gate Charge V _{DS} =30V, V _{GS} =10V, I _D =250mA	Q _g	-	0.6	1.0	nC
Gate-Source Charge V _{DS} =30V, V _{GS} =10V, I _D =250mA	Q _{gs}	-	0.06	-	
Gate-Drain Charge V _{DS} =30V, V _{GS} =10V, I _D =250mA	Q _{gd}	-	0.06	-	
Input Capacitance V _{DS} =25V, V _{GS} =0V, f=1MHZ	C _{iss}	-	25	-	PF
Output Capacitance V _{DS} =25V, V _{GS} =0V, f=1MHZ	C _{oss}	-	6	-	
Reverse Transfer Capacitance V _{DS} =25V, V _{GS} =0V, f=1MHZ	C _{rss}	-	1.2	-	

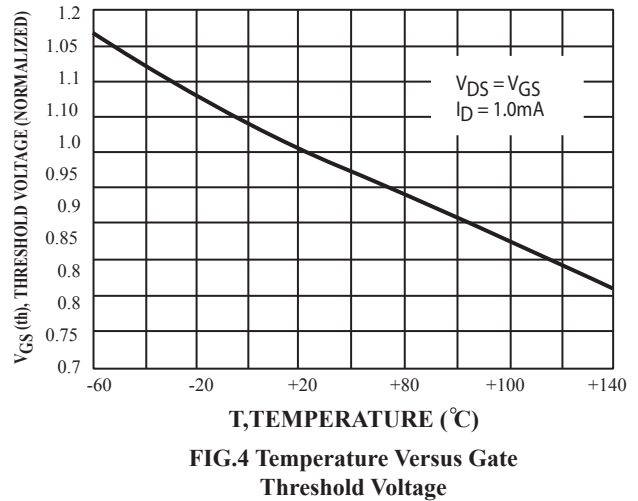
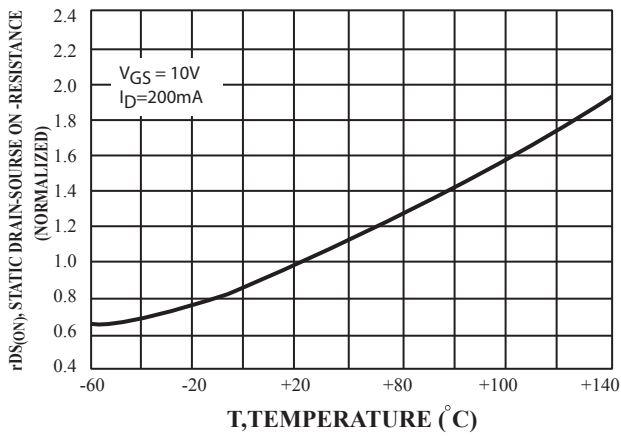
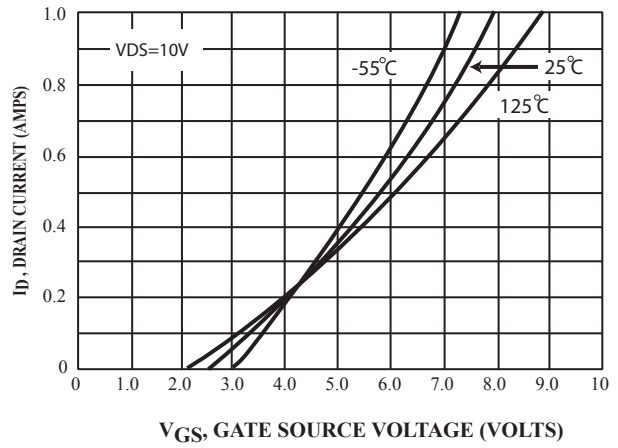
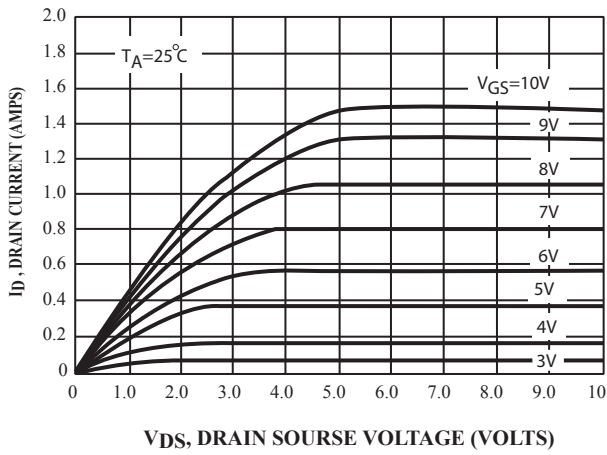
Switching (1) (3)

Turn-On Time V _{DD} =30V, R _L =200Ω, I _D =100mA V _{GEN} =10V, R _G =10Ω	t _{d(on)}	-	7.5	20	nS
	t _r	-	6.0	-	
Turn-Off Time V _{DD} =30V, R _L =200Ω, I _D =100mA V _{GEN} =10V, R _G =10Ω	t _{d(off)}	-	7.5	20	nS
	t _f	-	3.0	-	

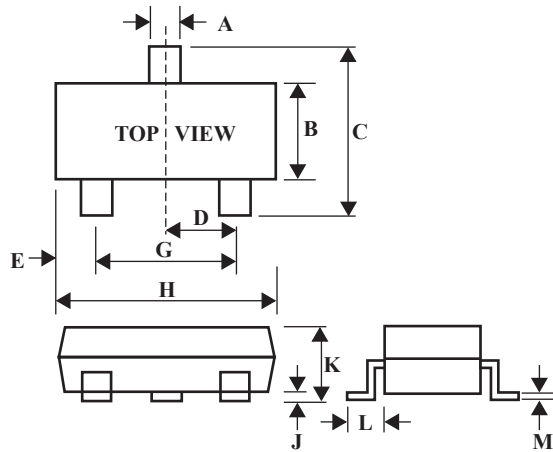
Note: 1. For Design Aid Only not Subject to Production Testing.

2. Pulse Test : PW ≤ 300μs, Duty Cycle ≤ 2%

3. Switching Time is Essentially Independent of Operating Temperature .



SOT-23 Outline Dimension



SOT-23		
Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25