N–channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

The GP7002 is N-channel enhancement mode MOSFET provides the designer with the best combination of fast switching response, low on-resistance, and low cost.

The SOT23 package is space saving surface mount for all commercial and industrial applications. It is suitable for low voltage, low loss and fast switching applications such as Li-ion battery pack applications.

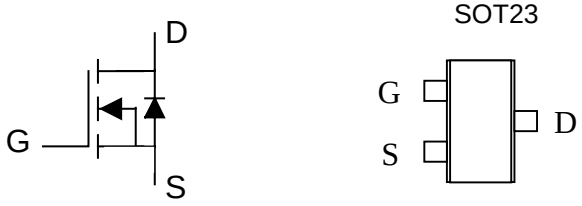
FEATURES

- **0.25A, 60V, $R_{DS(ON)}$ = 3.0Ω @ V_{GS} = 10V**
- **0.25A, 60V, $R_{DS(ON)}$ = 4.0Ω @ V_{GS} = 5.0V**
- **Low gate charge**
- **Fast switching speed**
- High Power and Current handling capability

APPLICATIONS

- Load Switch

PACKAGE PIN OUT



MARKING INFORMATION

Part Number	Marking	Package
GP7002	xxww	SOT23

xx: Year ww: Production date code

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current I_D@ T_A = 25°C	I_D	250	mA
Pulsed Drain Current [1] I_{DM}	I_{DM}	1	A
Total Power Dissipation P_D@ T_A = 25°C	P_D	200	mW
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operation Junction Temperature Range	T_J	-55 to +150	°C
THERMAL CHARACTERISTICS			
Thermal Resistance, Junction-to-Ambient	Rthj-amb	90	°C/W
Thermal Resistance, Junction-to-Case	Rthj-c	80	°C/W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)						
Parameter	Symbol	Test Conditions	GP7002			Units
			Min	Typ	Max	
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-10μA	60			V
Static Drain-source On=Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=250mA			3	Ω
		V_{GS}=5.0V, I_D=50mA			4	Ω
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	2	2.5	V
Forward Transconductance	g_{fs}	V_{DS}=7V, I_D=200mA	78			mS
Drain-Source Leakage Current (Tj=25°C)	I_{DSS}	V_{DS}=60V, V_{GS} =0V			1	μA
Gate-Source Leakage	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Turn-On Delay Time [2]	$t_{d(on)}$	V_{DS}=30V		7.7	19	ns
Turn-On Rise Time	t_r	I_D=100mA		5.5		ns
Turn-Off Delay Time	$t_{d(off)}$	R_G=10Ω, V_{GS}=10V		7.8	20	ns
Turn-Off Fall Time	t_f	R_D=10Ω		2.9		ns
Input Capacitance	C_{iss}	V_{GS}=0V		20	50	pF
Output Capacitance	C_{oss}	V_{DS}=25V		11	25	pF
Reverse Transfer Capacitance	C_{rss}	f=1.0MHz		2.5	5	pF

SOURCE-DRAIN DIODE						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Continuous Source Current (Body Diode)	I_S	V_D=V_G=0V, V_S=1.2V			250	mA
Pulsed Source Current (Body Diode)	I_{SM}				450	mA
Forward On Voltage [2]	V_{SD}	Tj=25°C, I_S=1.7A, V_{GS}=0V		0.75	1.5	V

Notes:
1. Pulse width limited by safe operating area.
2. Pulse width ≦300μs, duty cycle ≦2%.

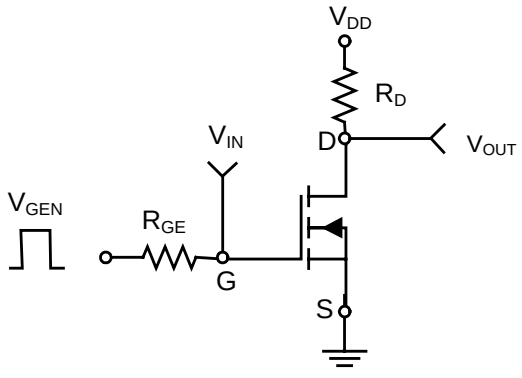


Fig 1. Switching Time Circuit

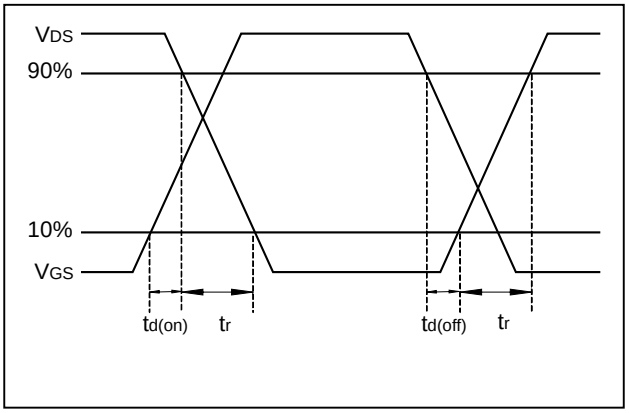
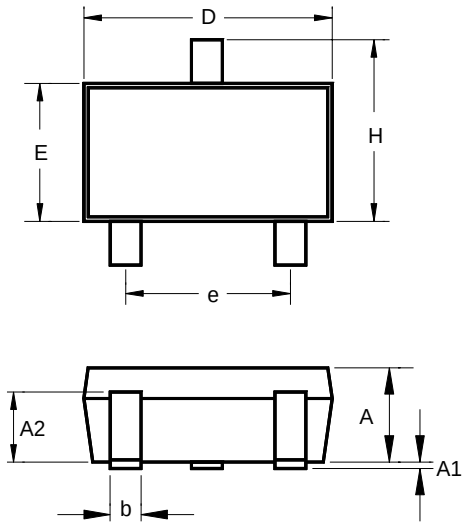


Fig 2. Switching Time Waveform

Package Information

Surface Mount SOT-23



	INCHES			MILLIMETERS		
	MIN	TYP	MAX	MIN	TYP	MAX
A	0.039	0.043	0.051	1.00	1.10	1.30
A1	0.000	-	0.004	0.00	-	0.10
A2	0.028	0.032	0.035	0.70	0.80	0.90
b	0.014	0.016	0.020	0.35	0.40	0.50
C	0.004	0.005	0.010	0.10	0.15	0.25
D	0.106	0.114	0.122	2.70	2.90	3.10
E	0.055	0.063	0.071	1.40	1.60	1.80
e	0.075 TYP.			1.90 TYP.		
H	0.102	0.110	0.118	2.60	2.80	3.00
L	0.015	-	-	0.37	-	-
M	1°	5°	9°	1°	5°	9°