



N-channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

The GP3400 is N-channel enhancement mode MOSFET designed by advanced trench process technology 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.

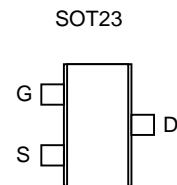
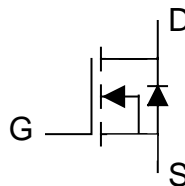
FEATURES

- 5.0A, 30V, $R_{DS(ON)} < 56m\Omega$ @ $V_{GS} = 2.5V$
- 5.0A, 30V, $R_{DS(ON)} < 37m\Omega$ @ $V_{GS} = 4.5V$
- 5.8A, 30V, $R_{DS(ON)} < 33m\Omega$ @ $V_{GS} = 10.0V$
- High performance trench technology for extremely low $R_{DS(ON)}$
- Low gate charge
- Fast switching speed

APPLICATIONS

- Load Switch
- DC-DC Converter

PACKAGE PIN OUT



MARKING INFORMATION

Part Number	Marking	Package
GP3400	xxww	SOT23

xx: Year ww: Production date code

ABSOLUTE MAXIMUM RATINGS (TA = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current I_D @ TA = 25°C	I_D	6.0	A
Pulsed Drain Current ¹ I_{DM}	I_{DM}	30	A
Total Power Dissipation P_D @ TA = 25°C	P_D	1.4	W
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	$R_{thj-amb}$	90	°C/W
Thermal Resistance, Junction-to-Case	R_{thj-c}	80	°C/W

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	GP3400			Units
			Min	Typ	Max	
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30			V
Static Drain-source On-Resistance	R _{DS(ON)}	V _{GS} =2.5V, I _D =5.0A		44	56	mΩ
		V _{GS} =4.5V, I _D =5.0A		28	37	mΩ
		V _{GS} =10V, I _D =5.8A		25	33	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.6	0.8		V
Forward Transconductance	g _{fs}	V _{DS} =15V, I _D =15A	7	13		S
Gate Resistance	R _g			0.6		Ω
Drain-Source Leakage Current (T _j =25°C)	I _{DSS}	V _{DS} =25V, V _{GS} =0V			1	μA
Gate-Source Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Total Gate Charge ²	Q _g	I _D =6.0A		5.0		nC
Gate-Source Charge	Q _{gs}	V _{DS} =10V		0.9		nC
Gate-Drain ("Miller") Charge	Q _{gd}	V _{GS} =6.8V		1.4		nC
Turn-On Delay Time ²	t _{d(on)}	V _{DS} =15V		8.0		ns
Turn-On Rise Time	t _r	I _D =1A		9.9		ns
Turn-Off Delay Time	t _{d(off)}	R _G =6Ω, V _{GS} =10V		21		ns
Turn-Off Fall Time	t _f	R _D =3.9Ω		5.4		ns
Input Capacitance	C _{iss}	V _{GS} =0V		555		pF
Output Capacitance	C _{oss}	V _{DS} =15V		102		pF
Reverse Transfer Capacitance	C _{rss}	f=1.0MHz		74		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			1.7	A
Pulsed Source Current (Body Diode)	I _{SM}				15	A
Forward On Voltage ²	V _{SD}	T _j =25°C, I _S =1.7A, V _{GS} =0V			1.2	V

Notes:

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

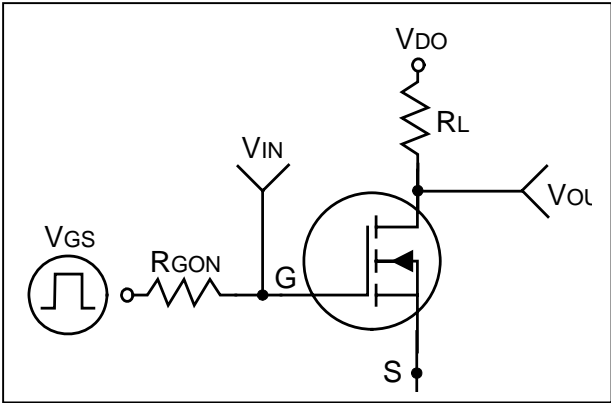


Fig 1. Switching Time Circuit

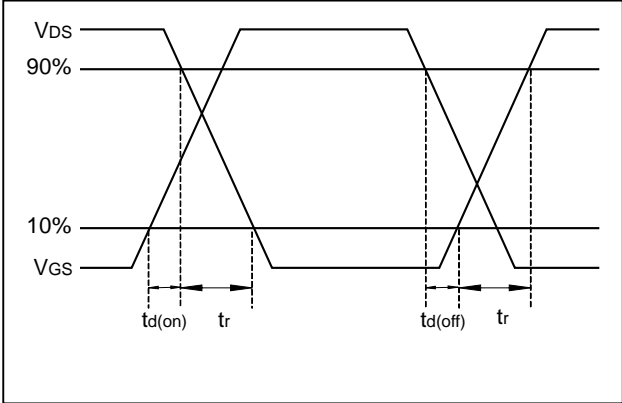


Fig 2. Switching Time Waveform

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°

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