

**P-channel Enhancement Mode MOSFET****GENERAL DESCRIPTION**

The GP3423 is P-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.

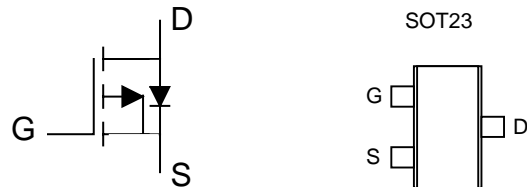
The SOT23 package is space saving surface mount for all commercial and industrial applications. It is suitable for low voltage, low loss and fast switching applications such as Li-ion battery pack applications.

**FEATURES**

- 2A, -20V,  $R_{DS(ON)} < 160m\Omega$  @  $V_{GS} = -2.5V$
- 2A, -20V,  $R_{DS(ON)} < 116m\Omega$  @  $V_{GS} = -4.5V$
- 2A, -20V,  $R_{DS(ON)} < 90m\Omega$  @  $V_{GS} = -10.0V$
- 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
GP3423	xxww	SOT23

xx: Year ww: Production date code

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current $I_D$ @ TA = 25°C	$I_D$	-2.0	A
Pulsed Drain Current <sup>1</sup> $I_{DM}$	$I_{DM}$	-8	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
<b>THERMAL CHARACTERISTICS</b>			
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	GP3423			Units
			Min	Typ	Max	
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20			V
Static Drain-source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-1.0A		110	145	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.0A		75	94	mΩ
		V <sub>GS</sub> =-10V, I <sub>D</sub> =-3.5A		58	74	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.7	-0.9		V
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =6.0A		7		S
Gate Resistance	R <sub>g</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1.0MHz		0.6		Ω
Drain-Source Leakage Current (T <sub>j</sub> =25°C)	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			1	μA
Gate-Source Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	I <sub>D</sub> =-2.0A		5.0		nC
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-10V		0.9		nC
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	V <sub>GS</sub> =-4.5V		1.4		nC
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	V <sub>DS</sub> =-10V		8.0		ns
Turn-On Rise Time	t <sub>r</sub>	I <sub>D</sub> =-1A		9.9		ns
Turn-Off Delay Time	t <sub>d(off)</sub>	R <sub>G</sub> =3Ω, V <sub>GS</sub> =-10V		21		ns
Turn-Off Fall Time	t <sub>f</sub>	R <sub>D</sub> =5Ω		5.4		ns
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V		560		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =-10V		105		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	f=1.0MHz		75		pF

**SOURCE-DRAIN DIODE**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Continuous Source Current (Body Diode)	I <sub>s</sub>	V <sub>D</sub> =V <sub>G</sub> =0V, V <sub>S</sub> =-1.2V			-1.8	A
Pulsed Source Current (Body Diode)	I <sub>SM</sub>				-8.0	A
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	T <sub>j</sub> =25°C, I <sub>s</sub> =1.7A, V <sub>GS</sub> =0V			-1.2	V

Notes:

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

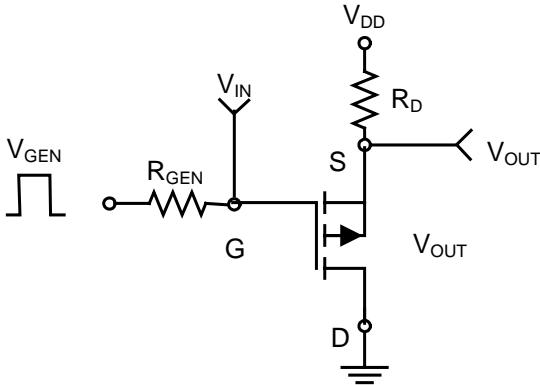


Fig 1. Switching Time Circuit

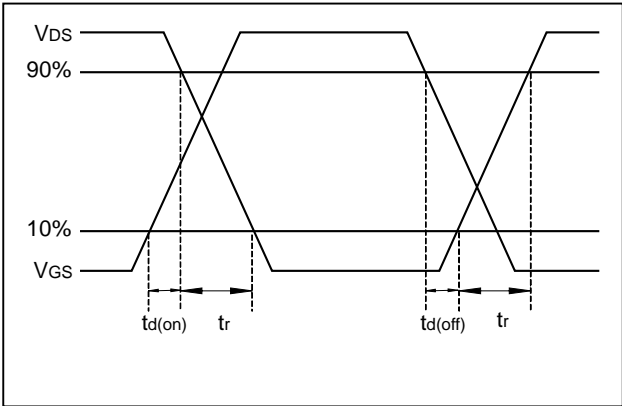


Fig 2. Switching Time Waveform

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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