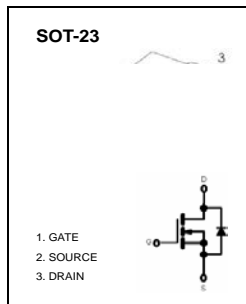


20V P-Channel MOSFET

General Description

The 3423 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch applications.

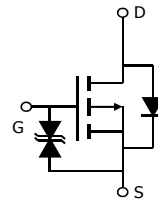


Product Summary

V_{DS}	-20V
I_D (at $V_{GS} = -10V$)	-2A
$R_{DS(ON)}$ (at $V_{GS} = -10V$)	< 92mΩ
$R_{DS(ON)}$ (at $V_{GS} = -4.5V$)	< 118mΩ
$R_{DS(ON)}$ (at $V_{GS} = -2.5V$)	< 166mΩ

Typical ESD protection

HBM Class 2



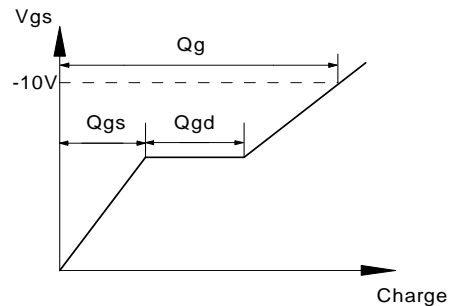
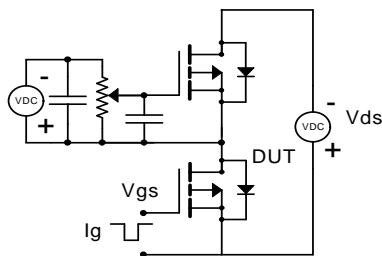
Absolute Maximum Ratings $T_A = 25^\circ C$ unless otherwise noted

Parameter	Symbol	Maximum	Units
D	V	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-2	A
$T_A = 25^\circ C$		-2	
$T_A = 70^\circ C$			
Pulsed Drain Current ^C	I_{DM}	-17	A
Power Dissipation ^B	P_D	1.4	W
$T_A = 25^\circ C$		0.9	
$T_A = 70^\circ C$			
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$

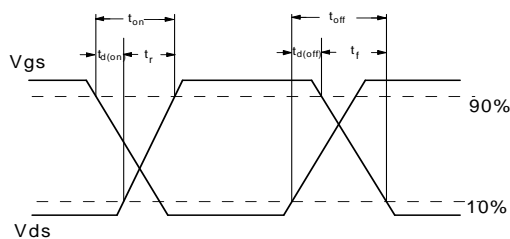
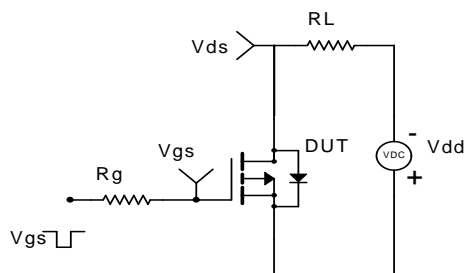
Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	65	90	$^\circ C/W$
$t \leq 10s$				
Maximum Junction-to-Ambient ^D		85	125	$^\circ C/W$
Steady-State				
Maximum Junction-to-Lead	$R_{\theta JL}$	43	60	$^\circ C/W$
Steady-State				

Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



CB3423 20V P-Channel MOSFET

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V T _J =55°C			-1 -5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±12V			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.85	-1.2	V
I _{D(ON)}	On state drain current	V _{GS} =-4.5V, V _{DS} =-5V	-17			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-2A T _J =125°C		76 99	92 119	mΩ
		V _{GS} =-4.5V, I _D =-2A		94	118	mΩ
		V _{GS} =-2.5V, I _D =-1A		128	166	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-2A		6.8		S
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.76	-1	V
I _S	Maximum Body-Diode Continuous Current				-1.5	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, f=1MHz	250	325	400	pF
C _{oss}	Output Capacitance		40	63	85	pF
C _{rss}	Reverse Transfer Capacitance		22	37	52	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		11.2	17	Ω
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-2A		3.2	4.5	nC
Q _{gs}	Gate Source Charge			0.6		nC
Q _{gd}	Gate Drain Charge			0.9		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-10V, V _{DS} =-10V, R _L =5Ω, R _{GEN} =3Ω		11		ns
t _r	Turn-On Rise Time			5.5		ns
t _{D(off)}	Turn-Off DelayTime			22		ns
t _f	Turn-Off Fall Time			8		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-2A, dI/dt=100A/μs		6.1		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-2A, dI/dt=100A/μs		1.4		nC

A. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on T_{J(MAX)}=150° C, using ≤ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150° C. Ratings are based on low frequency and duty cycles to keep initial T_J=25° C.

D. The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T_{J(MAX)}=150° C. The SOA curve provides a single pulse rating.

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