

SOT-23 Plastic-Encapsulate MOSFETS

N-Channel MOSFET

DESCRIPTION

The BC3402 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltage as low as 2.5V. This device is suitable for use as a load switch or in PWM application.

FEATURES

- Lead free product is acquired
- Surface mount package

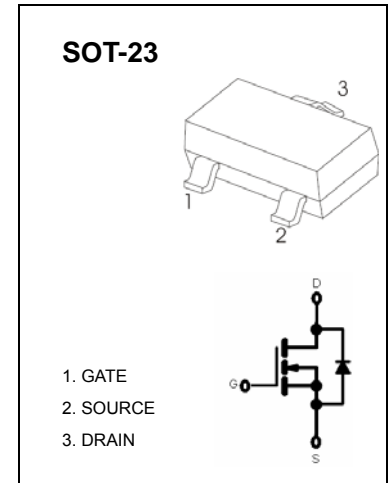
APPLICATION

- Load Switch and in PWM applications

MARKING: 3402

Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	4	A
Pulsed Drain Current (note 1)	I_{DM}	15	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	357	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^\circ\text{C}$



Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			100	nA
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.6	1	1.4	V
Drain-source on-resistance (note 3)	R _{DS(on)}	V _{GS} = 10V, I _D = 4A		45	55	mΩ
		V _{GS} = 4.5V, I _D = 3A		55	70	mΩ
		V _{GS} = 2.5V, I _D = 2A		83	110	mΩ
Forward transconductance (note 3)	g _{FS}	V _{DS} = 15V, I _D = 4A		8		S
Diode forward voltage (note 3)	V _{SD}	I _S = 1A, V _{GS} = 0V		0.8	1	V
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	C _{iSS}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		390		pF
Output capacitance	C _{oSS}			54.5		pF
Reverse transfer capacitance	C _{rSS}			41		Pf
Gate resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		3		Ω
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	t _{d(on)}	V _{GS} = 10V, V _{DS} = 15V, R _L = 3.75Ω, R _{GEN} = 6Ω		3.3		ns
Turn-on rise time	t _r			1		ns
Turn-off delay time	t _{d(off)}			21.7		ns
Turn-off fall time	t _f			2.1		ns
Total gate charge	Q _g	V _{DS} = 15V, V _{GS} = 4.5V, I _D = 4A		4.34		nC
Gate-source Charge	Q _{gs}			0.6		nC
Gate-drain Charge	Q _{gd}			1.38		nC
Body diode reverse recovery time	t	I _F = 4A, dI/dt = 100A/μs		1.2		ns
Body diode reverse recovery charge	Q _{rr}			6.3		nC

Notes :

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t_s ≤ 10s.
3. Pulse Test : Pulse Width ≤ 80μs, Duty Cycles ≤ 0.5%.
4. Guaranteed by design, not subject to producing.