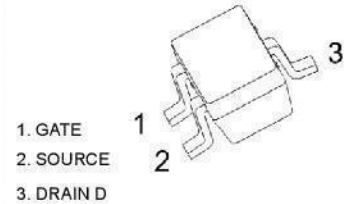
H3402 N-Channel Enhancement Mode Field Effect Transistor

$V_{(BR)DSS}$	$R_{DS(on)}MAX$	I_D
30V	53mΩ@10V	4.2A
	68mΩ@4.5V	
	90mΩ@2.5V	

SOT-23



1. GATE
2. SOURCE
3. DRAIN D

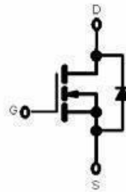
FEATURE

- High dense cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability

APPLICATION

- Load/Power Switching
- Interfacing Switching

Equivalent Circuit



Solid dot = Green molding compound device,
if none,the normal device.

Maximum ratings (T_a=25℃ unless otherwise noted)

Absolute Maximum Ratings T_A=25°C unless otherwise noted				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [A]	T_A=25°C	I_D	4.2	A
	T_A=70°C		3.4	
Pulsed Drain Current [B]		I_{DM}	15	
Power Dissipation [A]	T_A=25°C	P_D	1.4	W
	T_A=70°C		1	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

30V N-Channel Enhancement Mode 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		30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V				1	µA
			T_J=55°C			5	
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}=±12V				100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=250µA		0.6	1	1.4	V
$I_{D(ON)}$	On state drain current	V_{GS}=4.5V, V_{DS}=5V		10			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=4A			45	55	mΩ
			T_J=125°C		66	80	
		V_{GS}=4.5V, I_D=3A			55	70	mΩ
		V_{GS}=2.5V, I_D=2A			83	110	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=4A			8		S
V_{SD}	Diode Forward Voltage	I_S=1A,V_{GS}=0V			0.8	1	V
I_S	Maximum Body-Diode Continuous Current					2.5	A
DYNAMIC PARAMETERS							
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz			390		pF
C_{oss}	Output Capacitance				54.5		pF
C_{rss}	Reverse Transfer Capacitance				41		pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz			3		Ω
SWITCHING PARAMETERS							
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=15V, I_D=4A			4.34		nC
Q_{gs}	Gate Source Charge				0.6		nC
Q_{gd}	Gate Drain Charge				1.38		nC
$t_{D(on)}$	Turn-On DelayTime	V_{GS}=10V, V_{DS}=15V, R_L=3.75Ω, R_{GEN}=6Ω			3.3		ns
t_r	Turn-On Rise Time				1		ns
$t_{D(off)}$	Turn-Off DelayTime				21.7		ns
t_f	Turn-Off Fall Time				2.1		ns
t_{rr}	Body Diode Reverse Recovery Time	I_F=4A, dI/dt=100A/µs			12		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=4A, dI/dt=100A/µs			6.3		nC

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

D. The static characteristics in Figures 1 to 6,12,14 are obtained using 80µs pulses, duty cycle 0.5% max.

E. These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t<5 sec.
3. Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%.
4. Guaranteed by design, not subject to production testing.

Typical characteristics