N-Channel MOSFET

Primary characteristics			
Symbol	**Parameter**	**Value**	**Unit**
I_D	Continuous drain current	115	mA
V_{DS}	Drain source voltage	60	V
R_{DSON}	Static drain-source on-resistance	7.5	Ω

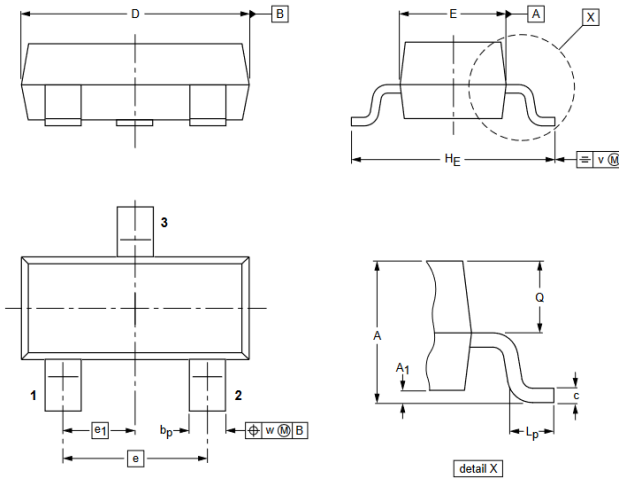
Features

- **SOT-23** case for easy automatic insertion
- Pb-free and **RoHS** compliant
- High power and current handing capability

Application

- Load switch
- Power management
- Battery protection

Case dimensions



1 – Gate; 2 – Source; 3 - Drain

SOT-23 (TO-236AB)

Unit	A	A_1max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.0 ±0.1	0.1	0.43 ±0.05	0.12 ±0.03	2.9 ±0.1	1.3 ±0.1	1.9	0.95	2.3 ±0.2	0.3 ±0.15	0.5 ±0.05	0.2	0.1

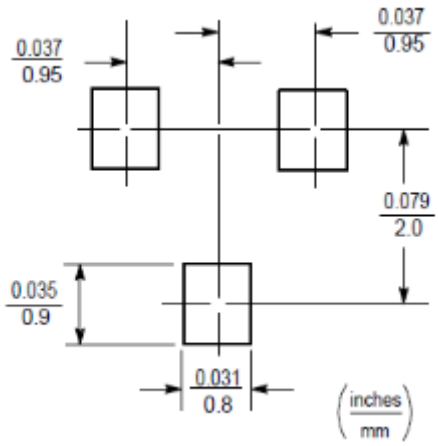
Absolute maximum ratings (T_A = 25°C unless otherwise noted)			
Characteristic	**Symbol**	**Value**	**Unit**
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	I_D	115	mA
Pulsed drain current [1]	I_{DM}	800	mA
Power Dissipation [2]	P_D	225	mW
Operating junction temperature range	T_J, T_{STG}	-55 ~ 150	°C
Thermal resistance junction-ambient [2]	$R_{\theta JA}$	417	°C/W

Electrical characteristics (T_A = 25°C)						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Drain-source breakdown voltage	V_{GS}=0V, I_D=250μA	$V_{(BR)DSS}$	60	-	-	V
Drain-source ON voltage	I_D=50mA, V_{GS}=5.0V	$V_{DS(ON)}$	-	-	0.375	V
	I_D=500mA, V_{GS}=10V		-	-	3.75	
Zero gate voltage drain current	V_{DS}=60V, V_{GS}=0V	I_{DSS}	-	-	1.0	μA
	V_{DS}=48V, V_{GS}=0V, T_A=125°C		-	-	500	
Gate body leakage current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate threshold voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(TH)}$	1.0	-	2.5	V
Static drain-source on-state resistance	V_{GS}=5.0V, I_D=50mA	$R_{DS(ON)}$	-	-	7.5	Ω
	V_{GS}=10V, I_D=500mA		-	-	7.5	Ω
Diode forward voltage drop	I_{SD}=200mA, V_{GS}=0V	V_{SD}	-	-	1.5	V

Dynamic electrical characteristics						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Input capacitance	V_{DS}=25V V_{GS}=0V f=1.0MHz	C_{iss}	-	-	50	pF
Common source output capacitance		C_{oss}	-	-	25	pF

Switching characteristics						
Characteristic	**Test condition**	**Symbol**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Turn ON time	V_{DS}=30V I_D=200mA R_{GEN}=25Ω	$t_{(on)}$	-	-	20	ns
Turn OFF time		$t_{(off)}$	-	-	40	ns
Reverse recovery time	I_{SD}=800mA, V_{GS}=0V	t_{rr}	-	400	-	ns

Notes:
1) FR-5: 1.0 x 0.75 x 0.062in;
2) Aluminium: 0.4 x 0.3 x 0.024in; 99.5% aluminium
3) Pulse width ≤300μs; duty cycle ≤2.0%

Suggested soldering pad layout

SOT-23

Ordering information			
Part Number	**Package**	**Shipping Quantity**	**Dimensions**
2N7002	SOT-23	**3000 pcs / reel**	---

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