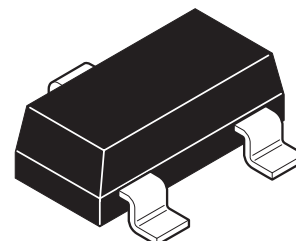


2N7002

60V SOT23 N-channel enhancement mode MOSFET

Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ (Ω)	I_D (A)
60	7.5 @ $V_{GS} = 10V$	0.5
	7.5 @ $V_{GS} = 5V$	0.05



Description

A small signal MOSFET for general purpose switching applications.

Features

- Fast switching speed
- Low gate drive capability
- SOT23 package

Applications

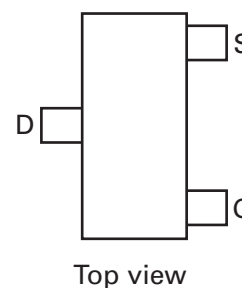
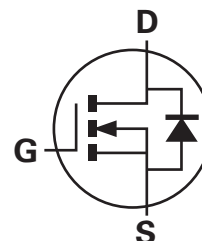
- General switching applications

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
2N7002	7	8	3,000

Device marking

702



Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	60	V
Continuous drain current at $T_{amb}=25^{\circ}C$	I_D	115	mA
Pulsed drain current	I_{DM}	800	mA
Gate-source voltage	V_{GS}	± 40	V
Power dissipation at $T_{amb} = 25^{\circ}C$	P_{tot}	330	mW
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	$^{\circ}C$

Electrical characteristics (at $T_{amb} = 25^{\circ}C$ unless otherwise stated)

Parameter	Symbol	Min.	Max.	Unit	Conditions
Drain-source breakdown voltage	BV_{DSS}	60		V	$I_D = 10\mu A, V_{GS}=0V$
Gate-source threshold voltage	$V_{GS(th)}$	1	2.5	V	$I_D = 250\mu A, V_{DS}=V_{GS}$
Gate-body leakage	I_{GSS}		10	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Zero gate voltage drain current	I_{DSS}		1 500	μA μA	$V_{DS}= 48V, V_{GS}=0V$ $V_{DS}= 48V, V_{GS}=0V, T=125^{\circ}C$
On-state drain current ^(a)	$I_{D(on)}$	500		mA	$V_{DS}= 25V, V_{GS}= 10V$
Static drain-source on-state voltage ^(a)	$V_{DS(on)}$		3.75 375	V mV	$V_{GS}= 10V, I_D= 500mA$ $V_{GS}= 5V, I_D= 50mA$
Static drain-source on-state resistance ^(a)	$R_{DS(on)}$		7.5 7.5	Ω Ω	$V_{GS}= 10V, I_D= 500mA$ $V_{GS}= 5V, I_D= 50mA$
Forward transconductance ^{(a)(b)}	g_{fs}	80		mS	$V_{DS}= 25V, I_D= 500mA$
Input capacitance ^(b)	C_{iss}		50	pF	$V_{DS}= 25V, V_{GS}=0V f=1MHz$
Common source output capacitance ^(b)	C_{oss}		25	pF	
Reverse transfer capacitance ^(b)	C_{rss}		5	pF	
Turn-on time ^{(b)(c)}	$t_{(on)}$		20	ns	$V_{DD}\approx 30V, I_D= 200mA,$ $R_g=25\Omega, R_L=150\Omega$
Turn-off time ^{(b)(c)}	$t_{(off)}$		20	ns	

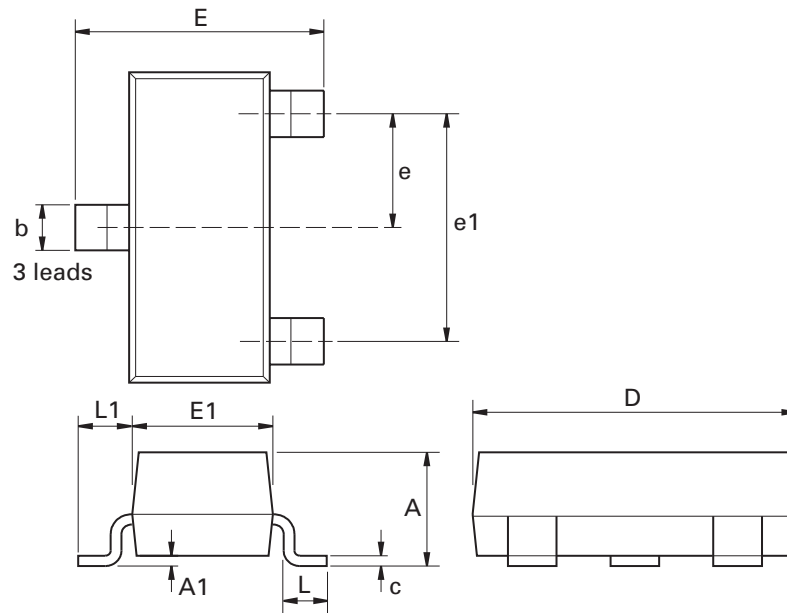
NOTES:

(a) Measured under pulsed conditions. Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

(b) Sample test.

(c) Switching times measured with 50Ω source impedance and $<5ns$ rise time on a pulse generator
Spice parameter data is available upon request for this device.

SOT23 Package outline



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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or

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"Active"	Product status recommended for new designs
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"Not recommended for new designs"	Device is still in production to support existing designs and production
"Obsolete"	Production has been discontinued

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Zetex sales offices

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-park Balanstraße 59 D-81541 München Germany Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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