SN7002N

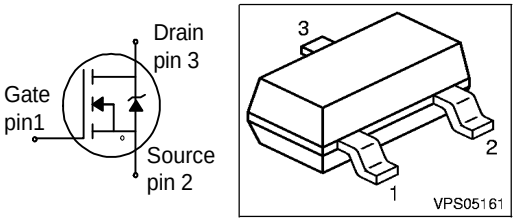
Feature

- N-Channel
- Enhancement mode
- Logic Level
- d*v*/d*t* rated

Product Summary

V_{DS}	60	V
$R_{DS(on)}$	5	Ω
I_D	0.2	A

SOT-23



Type	Package	Ordering Code	Tape and Reel Information	Marking
SN7002N	SOT-23	Q67042-S4185	E6327: 3000 pcs/reel	sSN
SN7002N	SOT-23	Q67042-S4192	E6433: 10000 pcs/reel	sSN

Maximum Ratings, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current T_A=25°C T_A=70°C	I_D	 0.2 0.16	A
Pulsed drain current T_A=25°C	$I_{D\ puls}$	0.8	
Reverse diode d*v*/d*t* I_S=0.2A, V_{DS}=48V, d*i*/d*t*=200A/µs, T_{jmax}=150°C	d*v*/d*t*	6	kV/µs
Gate source voltage	V_{GS}	±20	V
ESD Sensitivity (HBM) as per MIL-STD 883		Class 1	
Power dissipation T_A=25°C	P_{tot}	0.36	W
Operating and storage temperature	T_j , T_{stg}	-55... +150	°C
IEC climatic category; DIN IEC 68-1		55/150/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - ambient at minimal footprint	R_{thJA}	-	-	350	K/W

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain-source breakdown voltage V_{GS}=0, I_D=250μA	$V_{(BR)DSS}$	60	-	-	V
Gate threshold voltage, V_{GS} = V_{DS} I_D=26μA	$V_{GS(th)}$	0.8	1.4	1.8	
Zero gate voltage drain current V_{DS}=60V, V_{GS}=0, T_j=25°C V_{DS}=60V, V_{GS}=0, T_j=150°C	I_{DSS}	 - -	 - -	 0.1 5	μA
Gate-source leakage current V_{GS}=20V, V_{DS}=0	I_{GSS}	-	-	10	nA
Drain-source on-state resistance V_{GS}=4.5V, I_D=0.17A	$R_{DS(on)}$	-	3.9	7.5	Ω
Drain-source on-state resistance V_{GS}=10V, I_D=0.5A	$R_{DS(on)}$	-	2.5	5	

Electrical Characteristics, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Transconductance	g_{fs}	$V_{DS}\geq 2*I_D*R_{DS(on)max}$, I_D=0.16A	0.09	0.17	-	S
Input capacitance	C_{iss}	V_{GS}=0, V_{DS}=25V, f=1MHz	-	34	45	pF
Output capacitance	C_{oss}		-	7.2	9.6	
Reverse transfer capacitance	C_{rss}		-	2.8	4.2	
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, V_{GS}=10V, I_D=0.5A, R_G=6Ω	-	2.4	3.6	ns
Rise time	t_r		-	3.2	4.8	
Turn-off delay time	$t_{d(off)}$		-	5.3	8	
Fall time	t_f		-	3.6	5.4	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=48V, I_D=0.5A	-	0.14	0.21	nC
Gate to drain charge	Q_{gd}		-	0.42	0.63	
Gate charge total	Q_g	V_{DD}=48V, I_D=0.5A, V_{GS}=0 to 10V	-	1	1.5	
Gate plateau voltage	$V_{(plateau)}$	V_{DD}=48V, I_D = 0.5 A	-	4.5	-	V
Reverse Diode						
Inverse diode continuous forward current	I_S	T_A=25°C	-	-	0.2	A
Inv. diode direct current, pulsed	I_{SM}		-	-	0.8	
Inverse diode forward voltage	V_{SD}	V_{GS}=0, I_F = I_S	-	0.83	1.2	V
Reverse recovery time	t_{rr}	V_R=30V, I_F=I_S, di_F/dt=100A/µs	-	14.2	21.3	ns
Reverse recovery charge	Q_{rr}		-	5.9	8.8	nC