2N7002BK

60V N-Channel Enhancement Mode MOSFET

Description

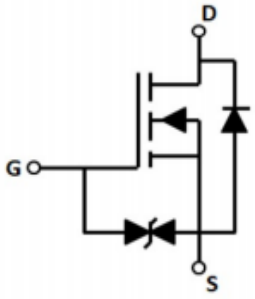
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage

Dimensions SOT-23

General Features

- V_{DS} 60V
- I_D 300mA
- $R_{DS(ON)}$(at V_{GS}=10V) ＜2.5ohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜3.0ohm
- ESD Protected Up to 2.0KV (HBM)

Pin Configuration



Application

- Battery operated systems
- Solid-state relays
- Direct logic-level interface：TTL/CMOS

Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
2N7002BK	72KC	SOT-23	Ø180mm	8 mm	3000 units

Absolute Maximum Ratings (TC=25℃unless otherwise noted)

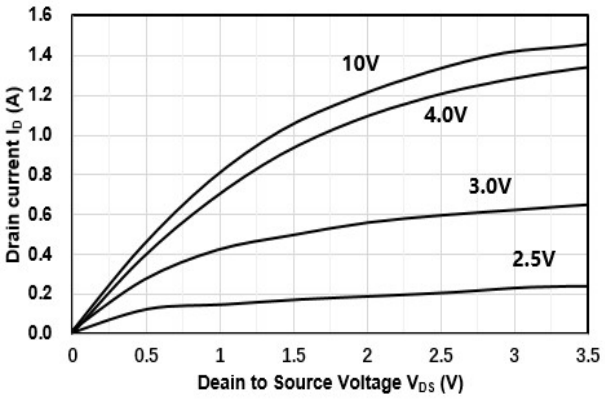
Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃ @ Steady State	I_D	300	mA
	T_A=70℃ @ Steady State		240	
Pulsed Drain Current [A]		I_{DM}	1.5	A
Total Power Dissipation @ T_A=25℃		P_D	300	mW
Thermal Resistance Junction-to-Ambient @ Steady State [B]		$R_{\theta JA}$	416	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

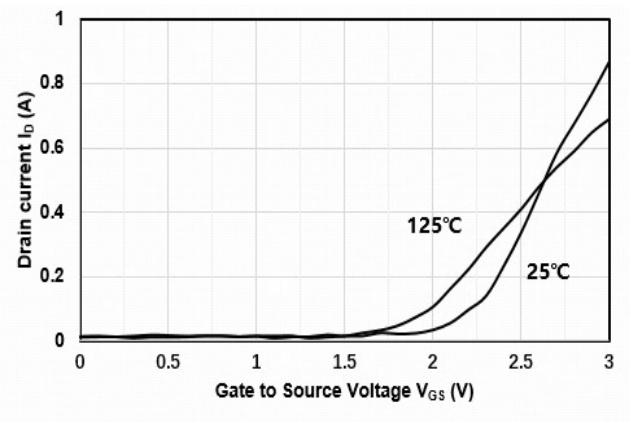
Electrical Characteristics (TJ=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V			±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=300mA		1.9	2.5	Ω
		V_{GS}= 4.5V, I_D=200mA		2.0	3.0	
Diode Forward Voltage	V_{SD}	I_S=300mA,V_{GS}=0V			1.2	V
Maximum Body-Diode Continuous Current	I_S				300	mA
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ		27		pF
Output Capacitance	C_{oss}			3		
Reverse Transfer Capacitance	C_{rss}			2		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=30V,I_D=0.3A		1.65	2.4	nC
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V,V_{DD}=30V, I_D=300mA, R_{GEN}=6Ω		6.5		ns
Turn-off Delay Time	$t_{D(off)}$			9.6		
Reverse recovery Time	t_{rr}	V_{GS}=0V,I_S=300mA,V_R=25V, di/dt=-100A/μs		24		ns

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Characteristics





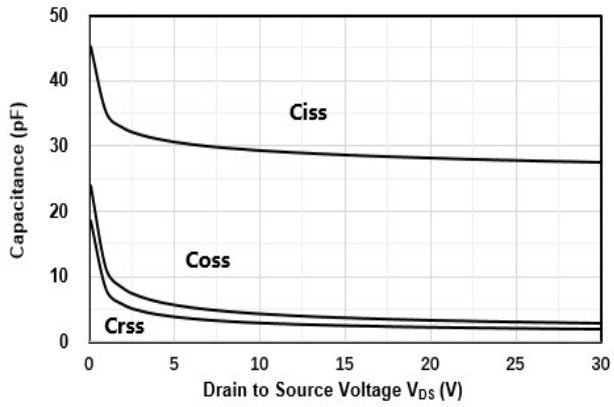


Figure3. Capacitance Characteristics

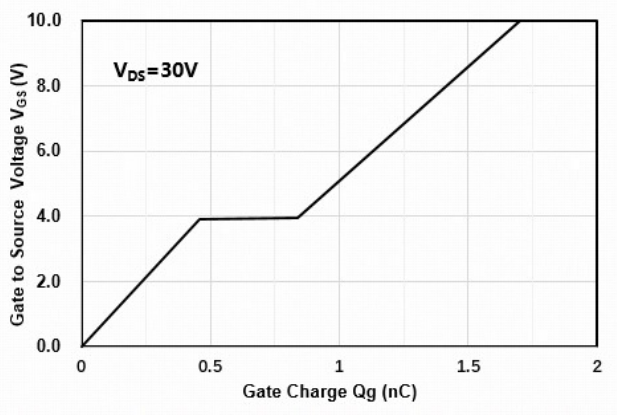


Figure4. Gate Charge

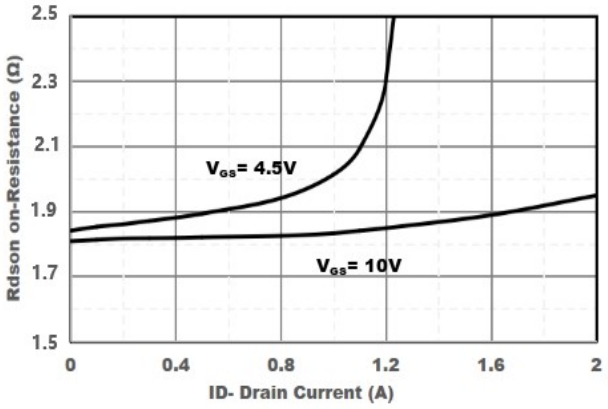


Figure5. Drain-Source on Resistance

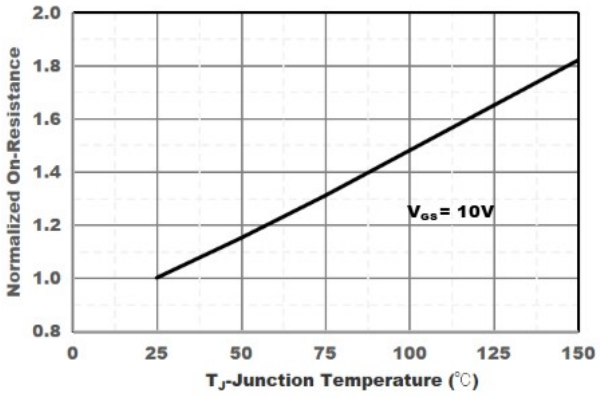
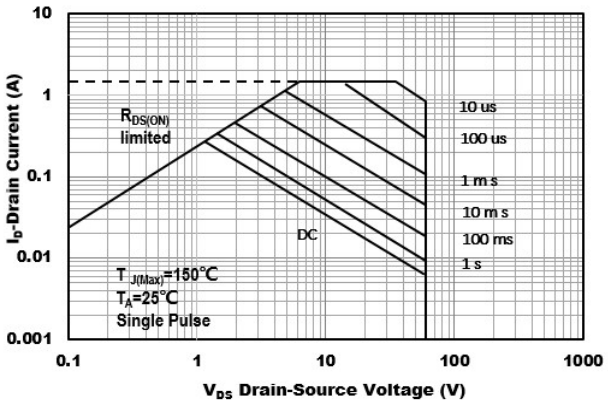
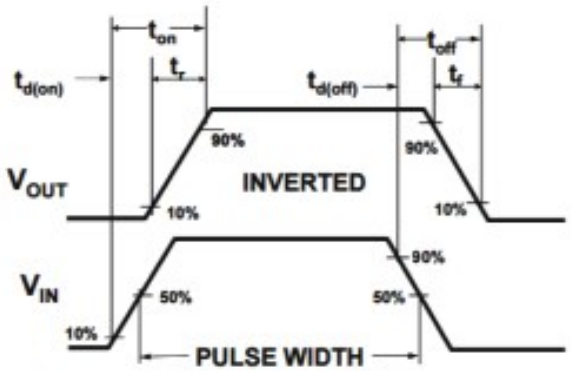
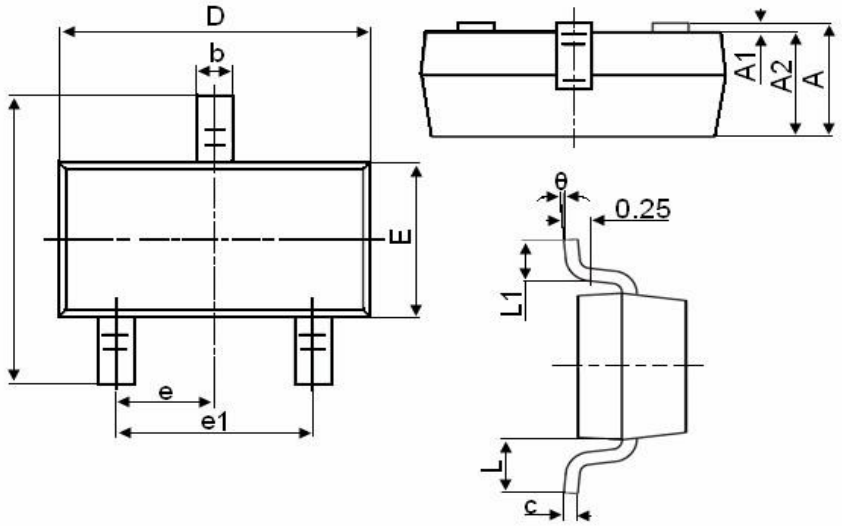


Figure6. Drain-Source on Resistance


10
1
0.1
0.01
0.001
0.1
1
10
100
1000
I_D-Drain Current (A)
V_{DS} Drain-Source Voltage (V)
$R_{DS(ON)}$ limited
10 us
100 us
1 m s
10 m s
100 ms
1 s
DC
$T_{J(Max)}$=150°C
T_A=25°C
Single Pulse


t_{on}
$t_{d(on)}$
t_r
$t_{d(off)}$
t_{off}
t_f
90%
90%
V_{OUT}
INVERTED
10%
10%
90%
V_{IN}
50%
50%
10%
PULSE WIDTH

Package Mechanical Data:SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Shanghai Leiditech Electronic Co.,Ltd
Email: sale1@leiditech.com
Tel : +86- 021 50828806
Fax : +86- 021 50477059

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by Leiditech ***manufacturer:***

Other Similar products are found below :

614233C 648584F IRFD120 IRFF430 JANTX2N5237 2N7000 FCA20N60_F109 FDZ595PZ AOD464 2SK2267(Q) 2SK2545(Q,T) 405094E 423220D MIC4420CM-TR VN1206L 614234A 715780A SSM6J414TU,LF(T 751625C PSMN4R2-30MLD TK31J60W5,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG FCAB21350L1 P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 NTE2969 NTE6400A DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 SSM6P54TU,LF DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 STU5N65M6 C3M0021120D DMN13M9UCA6-7 BSS340NWH6327XTSA1 MCM3400A-TP DMTH10H4M6SPS-13 IRF40SC240ARMA1 IPS60R1K0PFD7SAKMA1 IPS60R360PFD7SAKMA1 IPS60R600PFD7SAKMA1