

Features and benefits

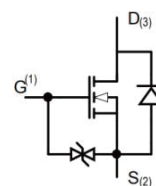
- $V_{DS}=60V, I_D=200mA$
 $R_{DS(on)} TYP=2.0\Omega @10V$
 $R_{DS(on)} TYP=2.5\Omega @4.5V$
- 60V Trench DMOS technology
- Low on-state resistance
- Fast switching
- Improved dv/dt capability
- ESD Rating: 1000V HBM



DFN1006-3L

Application information

- Load switch
- Power management
- Battery operated systems
- Level Shift Circuits
- DC-DC Converter



Equivalent Circuit

Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
2N7002KN	DFN1006-3L	2N7002KN 产品名称 product name	72	10000

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous drain current ¹	200	mA
I_{DM}	Pulsed Drain Current ($t_p=10-s$)	800	mA
P_D	Power Dissipation ¹	150	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient ¹	1250	$^{\circ}C/W$
T_J	Junction temperature	125	$^{\circ}C$
T_{stg}	Storage temperature	-50 to +150	$^{\circ}C$

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

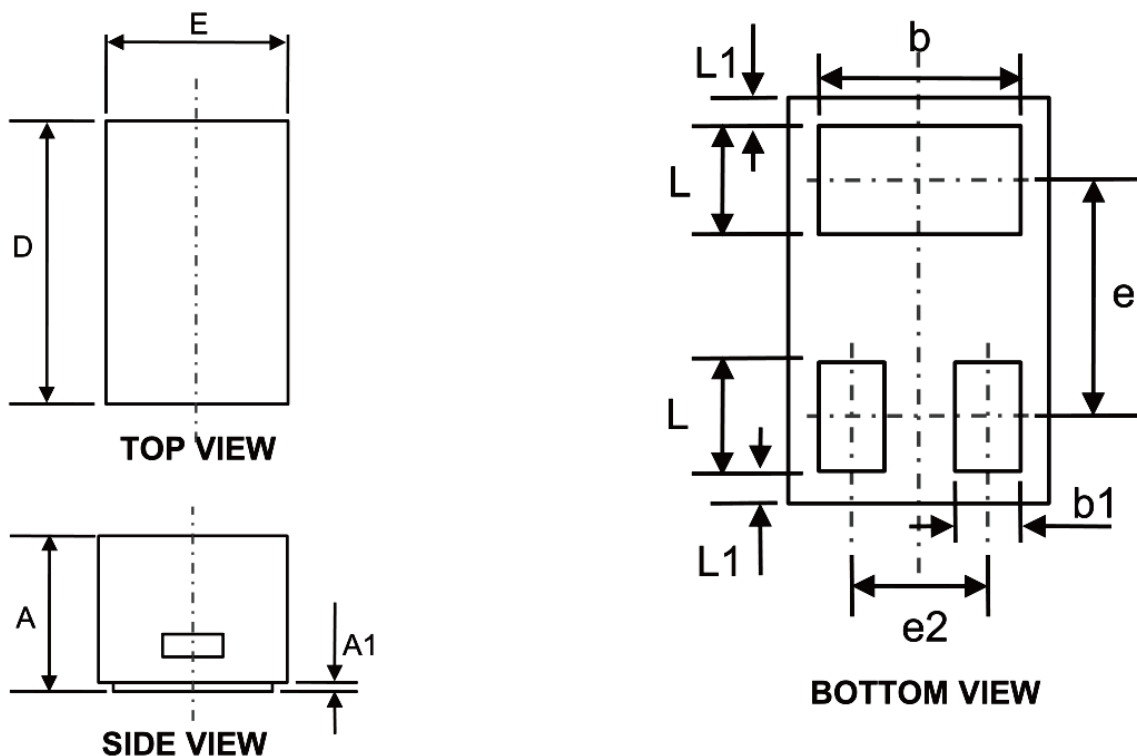
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
STATIC CHARACTERISTICE						
V _{(BR)DSS}	Drain-source breakdown voltage	V _{GS} =0V,I _D =250uA	60	---	---	V
I _{DSS}	Zero gate voltage drain current	V _D =48V,V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-body leakage current	V _{GS} =±20V,V _D =0V	---	---	±10	μA
V _{GS(th)}	Gate threshold voltage ²	V _D =V _{GS} ,I _D =250μA	1.2	1.5	2.0	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V,I _D =0.5A	---	2.0	3.0	Ω
		V _{GS} =4.5V,I _D =0.5A	---	2.5	3.5	
I _S	Maximum Continuous Drain to Source Diode Forward Current	---	---	---	0.15	A
g _{fs}	Forward tranconductance	V _D =-5.0V,I _D =-0.2A	---	0.3	---	S
V _{SD}	Diode forward voltage	I _S =0.3A,V _{GS} =0V	---	0.9	1.0	V
DYNAMIC CHARACTERISTICS ³						
C _{iss}	Input Capacitance	V _D =10V,V _{GS} =0V,f=1MHz	---	17	---	pF
C _{oss}	Output Capacitance		---	2.9	---	
C _{rss}	Reverse Transfer Capacitance		---	0.8	---	
R _g	Gate resistance	V _D =0V,V _{GS} =0V,f=1MHz	---	16	---	Ω
SWITCHING CHARACTERISTICS ³						
T _{d(on)}	Turn-on delay time	V _{GS} =10V,V _D =30V, R _L =100Ω	---	1.8	---	ns
T _r	Rise time		---	2.6	---	
T _{d(off)}	Turn-off delay time		---	7.1	---	
T _f	Fall time		---	2.7	---	
GATE-SOURCE ZENER DIODE						
B _{VGS0}	Gate-Source Breakdown Voltage	I _{GS} =±1mA (Open Drain)	±20	---	±30	V

Note:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300μs, Duty Cycle=2%.
3. These parameters have no way to verify.



DFN1006-3L Package Outline Dimensions



Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.400	0.500	0.016	0.020
A1	0.000	0.050	0.000	0.002
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
b	0.450	0.550	0.018	0.022
e	0.650 REF.		0.026 REF.	
e2	0.350 REF.		0.014 REF.	
L1	0.050 REF.		0.002 REF.	
L	0.200	0.300	0.008	0.012
b1	0.100	0.200	0.004	0.008