

N-Channel Power MOSFET – ESD

GENERAL DESCRIPTION

The LT2N7002E is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching, and low in-line power loss are needed in a very small outline surface mount package.

FEATURES

- Simple Drive Requirement
- Small Package Outline
- ROHS Compliant
- ESD Rating = 2000V HBM

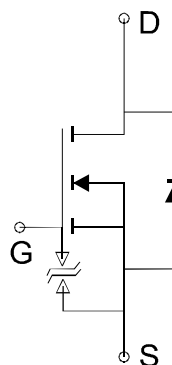
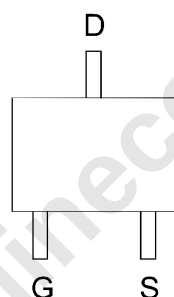
Mechanical data

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switching.
- Rugged and reliable.
- High saturation current capability.
- High-speed switching.
- Not thermal runaway.
- The soldering temperature and time shall not exceed 260°C for more than 10 seconds.

PIN CONFIGURATION

(SOT-23)

Top View



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	300	mA
Pulsed Drain Current (Note 1)	I_{DM}	2000	mA
Maximum Power Dissipation	$P_D @ T_A=25^\circ\text{C}$	0.35	W
	$P_D @ T_A=75^\circ\text{C}$	0.21	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~ 150	$^\circ\text{C}$
Junction-to-Ambient Thermal Resistance (PCB mounted) (Note 2)	$R_{\theta JA}$	357	$^\circ\text{C/W}$

Notes : 1. Maximum DC current limited by the package

2. Surface mounted on FR4 board, $t \leq 5\text{sec.}$

N-Channel Power MOSFET – ESD
Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0, I_D=10\mu\text{A}$	60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1.0	-	2.5	V
g_{fs}	Forward Transconductance	$V_{DS}=15\text{V}, I_D=250\text{mA}$	100	-	-	mS
I_{GSS}	Gate Body Leakage	$V_{GS} = \pm 20\text{V}, V_{DS}=0\text{V}$	-	-	± 10	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60\text{V}, V_{GS}=0\text{V}$	-	-	1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=10\text{V}, I_D=500\text{mA}$	-	-	3	Ω
		$V_{GS}=4.5\text{V}, I_D=200\text{mA}$	-	-	4	

Dynamic

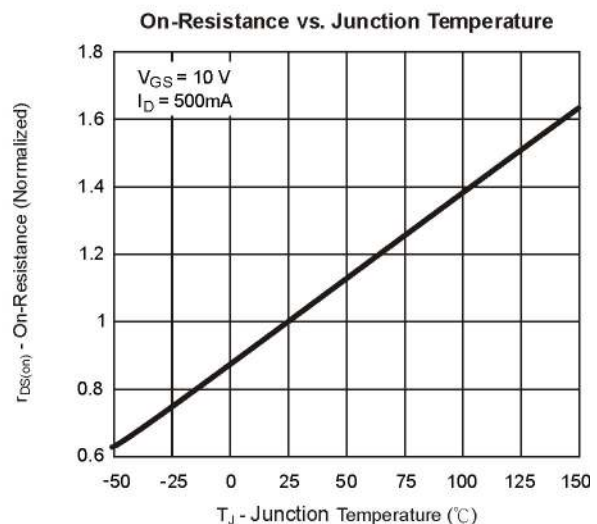
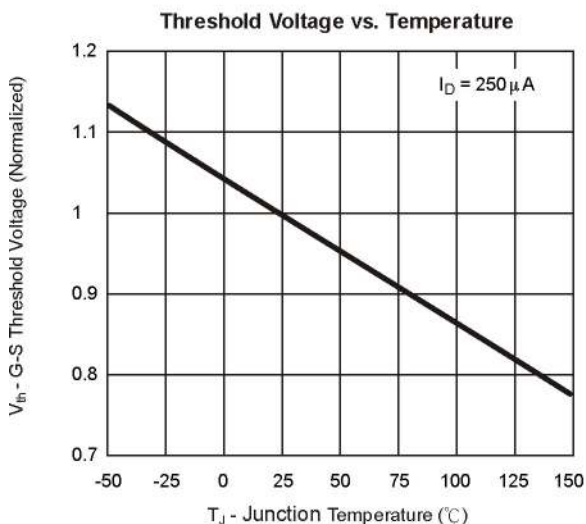
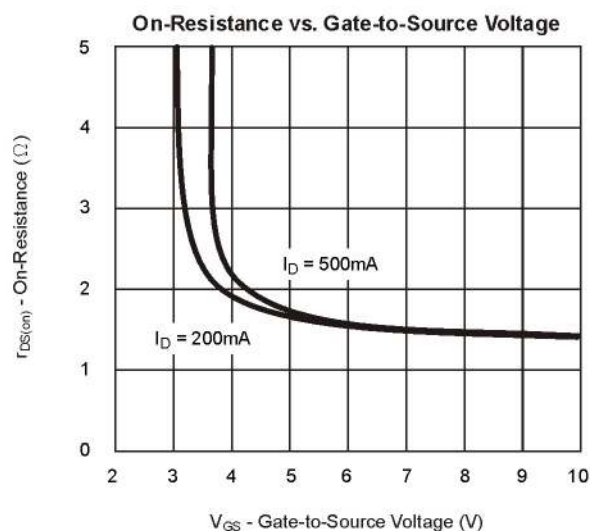
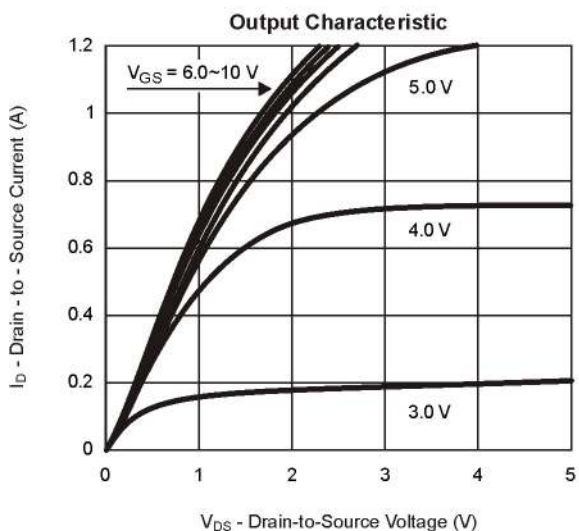
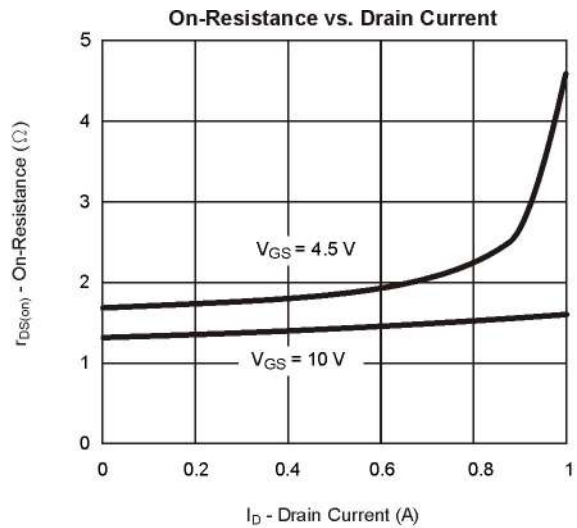
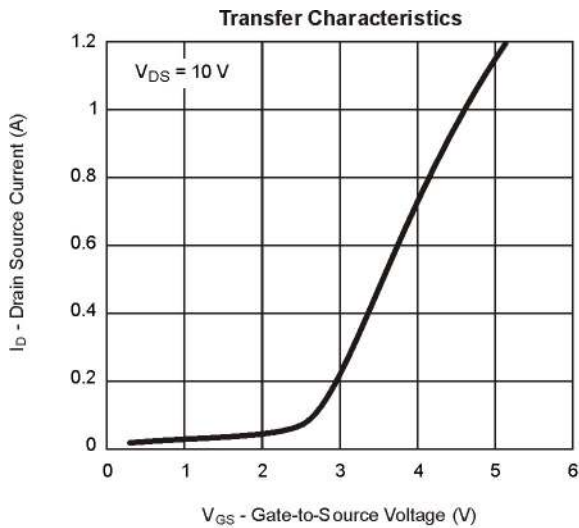
Q_g	Total Gate Charge	$I_D=200\text{mA}, V_{DS}=15\text{V}$ $V_{GS}=4.5\text{V}$	-	-	0.8	nC
$T_{d(on)}$	Turn-on Time	$V_{DD}=30\text{V}, R_L=150\Omega,$ $I_D=200\text{mA}, V_{GEN}=10\text{V}$ $R_G=10\Omega$	-	-	20	nS
$T_{d(off)}$	Turn-off Time		-	-	40	
C_{iss}	Input Capacitance	$V_{GS}=0\text{V}$	-	-	35	pF
C_{oss}	Output Capacitance	$V_{DS}=25\text{V}$	-	-	10	
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	-	5	

Source-Drain Diode

Symbol	Parameter	Limit	Min.	Typ.	Max.	Unit
V_{SD}	Diode Forward Voltage	$I_S=200\text{mA}, V_{GS}=0\text{V}$	-	0.82	1.3	V

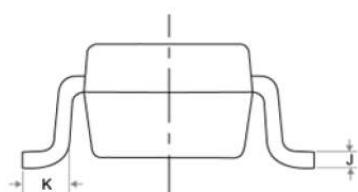
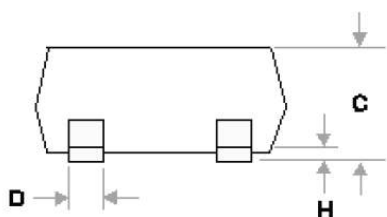
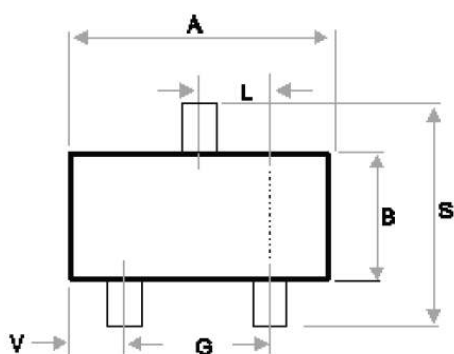
N-Channel Power MOSFET – ESD

Typical Characteristics (T_J = 25°C Noted)



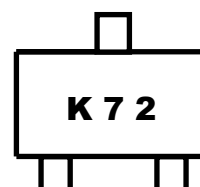
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SOT-23 Package Outline



DIM	MILLIMETERS (mm)	
	MIN	MAX
A	2.80	3.00
B	1.20	1.70
C	0.90	1.30
D	0.35	0.50
G	1.78	2.04
H	0.010	0.15
J	0.085	0.20
K	0.30	0.65
L	0.89	1.02
S	2.10	3.00
V	0.45	0.60

Body Marking Code



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