Foshan city Hexin semiconductor Co., Ltd.

## 4N70 700V N-Channel Power MOSFET

General Description

This advanced high voltage MOSFET is designed to wighstand
High energy in the avalanche mode and switche mode and switch
efficiently.This new
High energydevice also offersa drain-to-source diode wigh fast
Recovery time.Desighed for high voltage,high speed switching
Applications such as power supplies,converters,power motor
controls
and brdge circuits.

TO-251

1. GATE
2. DRAIN
3. SOURCE

1 2 3

FEATURE

- High Current Rating
- Lower $R_{ds(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter VSD Specifications
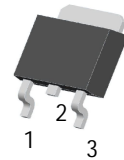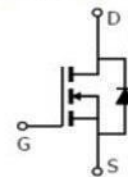- Avalanche Energy Specified
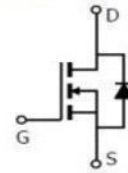
TO-252

1. GATE
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Maximum ratings (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	700	V
Gate-Source Voltage	V_{GSS}	±30	
Continuous Drain Current	I_D	4.0	A
Continuous Drain-Source Diode Forward Current	I_S	4.0	
Single Pulsed Avalanche Energy (note1)	E_{AS}	260	mJ
Thermal Resistance fromJunction to Ambient	$R_{θJA}$	100	℃/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~+150	℃
Maximum lead temperure for soldering purposes , 1/8"from case for 5 seconds	T_L	260	

Electrical characteristics (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	V$_{(BR)DSS}$	V$_{GS}$ = 0V, I$_D$ =250µA	700			V
Drain-source diode forward voltage(note2)	V$_{SD}$	V$_{GS}$ = 0V, I$_S$ =4.0A			1.5	
Zero gate voltage drain current	I$_{DSS}$	V$_{DS}$ =600V, V$_{GS}$ =0V			25	µA
Gate-body leakage current, forward(note2)	I$_{GSSF}$	V$_{DS}$ =0V, V$_{GS}$ =30V			100	nA
Gate-body leakage current, reverse(note2)	I$_{GSSR}$	V$_{DS}$ =0V, V$_{GS}$ =-30V			-100	
On characteristics (note2)						
Gate-threshold voltage	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ =250µA	2.0		4.0	V
Static drain-source on-resistance	R$_{DS(on)}$	V$_{GS}$ =10V, I$_D$ =2.0A		2.5	3.0	Ω
Forward transconductance	g$_{fs}$	V$_{DS}$ =50V, I$_D$ =2A	2.0	2.6		S
Dynamic characteristics (note 3)						
Input capacitance	C$_{iss}$	V$_{DS}$ =25V,V$_{GS}$ =0V,f =1MHz		540	760	pF
Output capacitance	C$_{oss}$			125	180	
Reverse transfer capacitance	C$_{rss}$			8.0	20	
Switching characteristics						
Total gate charge	Q$_g$	V$_{DS}$ =480V,V$_{GS}$ =10V,I$_D$ =4.0A		5.0	10	nC
Gate-source charge	Q$_{gs}$			2.7		
Gate-drain charge	Q$_{gd}$			2.0		
Turn-on delay time (note3)	t$_{d(on)}$	V$_{DD}$=300V, V$_{GS}$=10V, R$_G$=9.1Ω, I$_D$ =4.0A		12	20	ns
Turn-on rise time (note3)	t$_r$			7.0	10	
Turn-off delay time (note3)	t$_{d(off)}$			19	40	
Turn-off fall time (note3)	t$_r$			10	20	

Notes :

1. L=30mH, I$_L$=4 A, V$_{DD}$=100V, V$_{GS}$=10V, R$_G$=25Ω, Starting T$_J$=25℃.

2. Pulse Test : Pulse width≤300µs, duty cycle ≤2%.

3. These parameters have no way to verify.

Typical Characteristics

Output Characteristics

Transfer Characteristics

$R_{DS(ON)}$ — I_D

$R_{DS(ON)}$ — V_{GS}

I_S — V_{SD}

Threshold Voltage