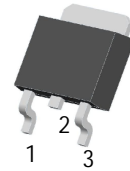




**FQD100N03 N-Channel Power MOSFET**

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
30V	3.1mΩ@10V	100A
	4.2mΩ@5V	

TO-252



- 1. GATE
- 2. DRAIN
- 3. SOURCE

**DESCRIPTION**

The MOSFET uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.

**FEATURES**

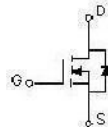
- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized Avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

**APPLICATIONS**

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

**MARKING**

**EQUIVALENT CIRCUIT**



**MAXIMUM RATINGS (  $T_a=25^\circ\text{C}$  unless otherwise noted )**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	100	A
Pulsed Drain Current	$I_{DM}$	320	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	306	mJ
Power Dissipation	$P_D$	1.25	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	$T_L$	260	$^\circ\text{C}$

(1). $E_{AS}$  condition:  $V_{DD}=20V, L=0.5mH, R_G=25\Omega, \text{Starting } T_J = 25^\circ\text{C}$

# MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
<b>On characteristics (note1)</b>						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.5	3.0	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		3.1	4	$m\Omega$
		$V_{GS} = 5V, I_D = 24A$		4.2	7	$m\Omega$
Forward transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 24A$	20			S
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1MHz$		2330		pF
Output capacitance	$C_{oss}$			460		
Reverse transfer capacitance	$C_{rss}$			230		
<b>Switching characteristics (note 2)</b>						
Total gate charge	$Q_g$	$V_{DS} = 10V, V_{GS} = 10V,$ $I_D = 30A$		51		nC
Gate-source charge	$Q_{gs}$			14		
Gate-drain charge	$Q_{gd}$			11		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 15V, I_D = 30A,$ $V_{GS} = 10V, R_G = 2.7\Omega$		20		ns
Turn-on rise time	$t_r$			15		
Turn-off delay time	$t_{d(off)}$			60		
Turn-off fall time	$t_f$			10		
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage(note1)	$V_{SD}$	$V_{GS} = 0V, I_S = 24A$			1.2	V
Continuous drain-source diode forward current	$I_S$				80	A
Pulsed drain-source diode forward current	$I_{SM}$				320	A

Notes:

1. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production.

# Typical Characteristics

