

General Description

The 100N03B uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a wide variety of applications.

Product Summary

BVDSS	RDSON	ID
30V	4mΩ	100A

Applications

- Uninterruptible Power Supply
- DC Motor Control
- Load Switch

Features

- Simple Drive Requirement
- Fast Switching
- Low On-Resistance

Absolute Maximum Ratings**TO-252/251 Pin Configuration**

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c = 25^\circ C$	Continuous Drain Current	100	A
$I_D @ T_c = 100^\circ C$	Continuous Drain Current	70	A
I_{DM}	Pulsed Drain Current ¹	300	A
EAS	Single Pulse Avalanche Energy ²	400	mJ
P_D	Total Power Dissipation	100	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R_{eJC}	Thermal Resistance Junction-case	---	1.36	°C/W

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{D}}=250\text{uA}$	30	---	---	V
$\text{R}_{\text{DS(ON)}}$	Static Drain-Source On-Resistance	$\text{V}_{\text{GS}}=10\text{V}$, $\text{I}_{\text{D}}=20\text{A}$	---	---	4	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=4.5\text{V}$, $\text{I}_{\text{D}}=20\text{A}$	---	---	6	
$\text{V}_{\text{GS(th)}}$	Gate Threshold Voltage	$\text{V}_{\text{GS}}=\text{V}_{\text{DS}}$, $\text{I}_{\text{D}}=250\text{uA}$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$\text{V}_{\text{DS}}=24\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	$\text{V}_{\text{GS}}=\pm 20\text{V}$, $\text{V}_{\text{DS}}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$\text{V}_{\text{DS}}=20\text{V}$, $\text{I}_{\text{D}}=40\text{A}$	---	26	---	S
R_{g}	Gate Resistance	$\text{V}_{\text{DS}}=0\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	2	---	Ω
Q_{g}	Total Gate Charge	$\text{I}_{\text{D}}=30\text{A}$	---	67	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	18	---	
$\text{T}_{\text{d(on)}}$	Turn-On Delay Time	$\text{V}_{\text{DD}}=15\text{V}$	---	20	---	ns
T_{r}	Rise Time		---	60	---	
$\text{T}_{\text{d(off)}}$	Turn-Off Delay Time		---	110	---	
T_{f}	Fall Time		---	85	---	
C_{iss}	Input Capacitance	$\text{V}_{\text{DS}}=15\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	2800	---	pF
C_{oss}	Output Capacitance		---	550	---	
C_{rss}	Reverse Transfer Capacitance		---	210	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_{S}	Continuous Source Current	$\text{V}_{\text{G}}=\text{V}_{\text{D}}=0\text{V}$, Force Current	---	---	100	A
I_{SM}	Pulsed Source Current		---	---	300	A
V_{SD}	Diode Forward Voltage	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{S}}=20\text{A}$, $T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

1.Repetitive rating; pulse width limited by maximum junction temperature

2.The test condition is $\text{V}_{\text{D}}=15\text{V}$, $L=0.5\text{mH}$, $\text{I}_{\text{D}}=40\text{A}$

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