

# NDBA100N10B



## Power MOSFET 100V, 6.9mΩ, 100A, N-Channel

ON Semiconductor®

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### Features

- Low On-Resistance
- Low Gate Charge
- High Speed Switching
- 100% Avalanche Tested
- Pb-Free, Halogen Free and RoHS Compliance

VDSS	RDS(on) Max	ID Max
100V	6.9 mΩ@15V 8.2 mΩ@10V	100A

### Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Value	Unit
Drain to Source Voltage	VDSS	100	V
Gate to Source Voltage	VGSS	±20	V
Drain Current (DC)	ID	100	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	IDP	400	A
Power Dissipation Tc=25°C	PD	110	W
Junction Temperature	Tj	175	°C
Storage Temperature	Tstg	-55 to +175	°C
Source Current (Body Diode)	IS	100	A
Avalanche Energy (Single Pulse) *1	EAS	147	mJ
Lead Temperature for Soldering Purposes, 3mm from Case for 10 Seconds	TL	260	°C

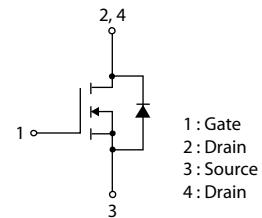
### Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Case Steady State	R <sub>θJC</sub>	1.36	°C/W
Junction to Ambient *2	R <sub>θJA</sub>	62.5	°C/W

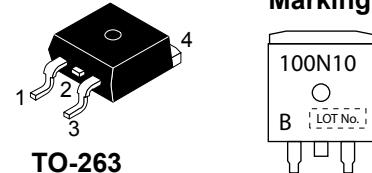
Note : \*1 V<sub>D</sub>=48V, L=100μH, I<sub>AV</sub>=40A (Fig.1)

\*2 Surface mounted on FR4 board using recommended footprint

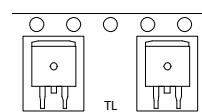
### Electrical Connection N-Channel



### Marking



### Packing Type : TL



Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

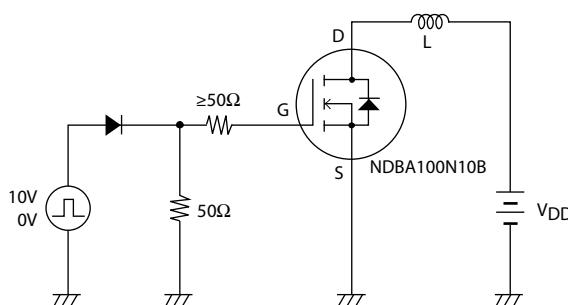
# NDBA100N10B

## Electrical Characteristics at $T_a = 25^\circ\text{C}$

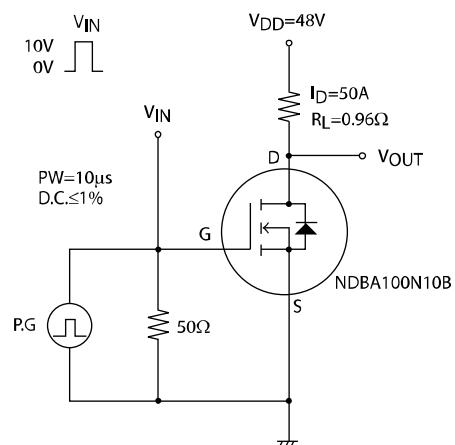
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V(\text{BR})_{\text{DSS}}$	$I_D=10\text{mA}, V_{GS}=0\text{V}$	100			V
Zero-Gate Voltage Drain Current	$I_{\text{DSS}}$	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			10	$\mu\text{A}$
Gate to Source Leakage Current	$I_{\text{GSS}}$	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	2		4	V
Forward Transconductance	$g_{\text{FS}}$	$V_{DS}=10\text{V}, I_D=50\text{A}$		75		S
Static Drain to Source On-State Resistance	$R_{DS(\text{on})1}$	$I_D=50\text{A}, V_{GS}=15\text{V}$		5.7	6.9	$\text{m}\Omega$
	$R_{DS(\text{on})2}$	$I_D=50\text{A}, V_{GS}=10\text{V}$		6.3	8.2	$\text{m}\Omega$
Input Capacitance	$C_{\text{iss}}$	$V_{DS}=50\text{V}, f=1\text{MHz}$		2,950		$\text{pF}$
Output Capacitance	$C_{\text{oss}}$			1,250		$\text{pF}$
Reverse Transfer Capacitance	$C_{\text{rss}}$			20		$\text{pF}$
Turn-ON Delay Time	$t_{\text{q(on)}}$	See Fig.2		40		ns
Rise Time	$t_r$			385		ns
Turn-OFF Delay Time	$t_{\text{q(off)}}$			68		ns
Fall Time	$t_f$			52		ns
Total Gate Charge	$Q_g$	$V_{DS}=48\text{V}, V_{GS}=10\text{V}, I_D=100\text{A}$		35		nC
Gate to Source Charge	$Q_{gs}$			13		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			10		nC
Forward Diode Voltage	$V_{SD}$	$I_S=100\text{A}, V_{GS}=0\text{V}$		1.1	1.5	V
Reverse Recovery Time	$t_{\text{rr}}$	See Fig.3 $I_S=100\text{A}, V_{GS}=0\text{V}, V_{DD}=50\text{V}, di/dt=100\text{A}/\mu\text{s}$		130		ns
Reverse Recovery Charge	$Q_{rr}$			400		nC

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

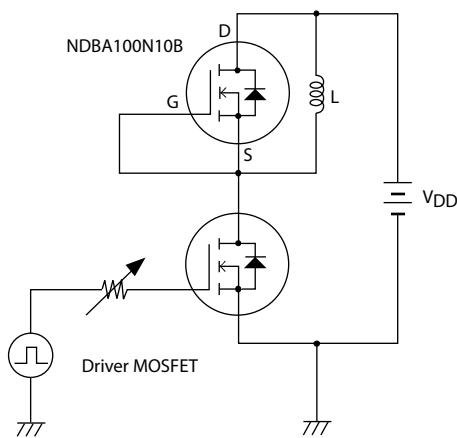
**Fig.1 Unclamped Inductive Switching Test Circuit**



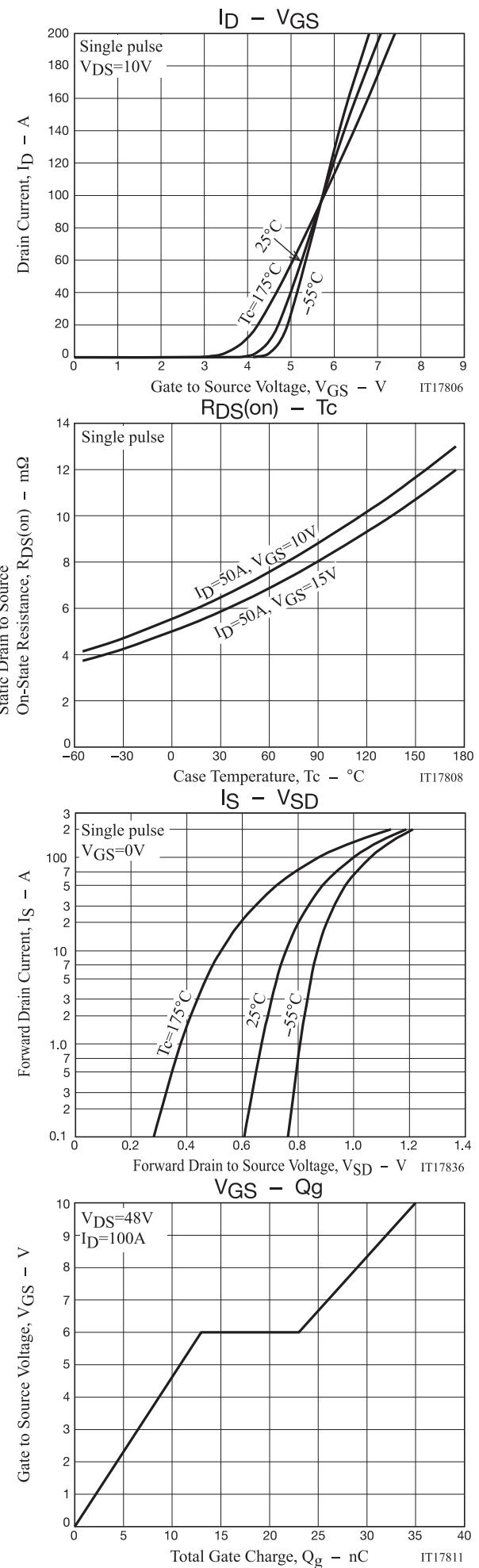
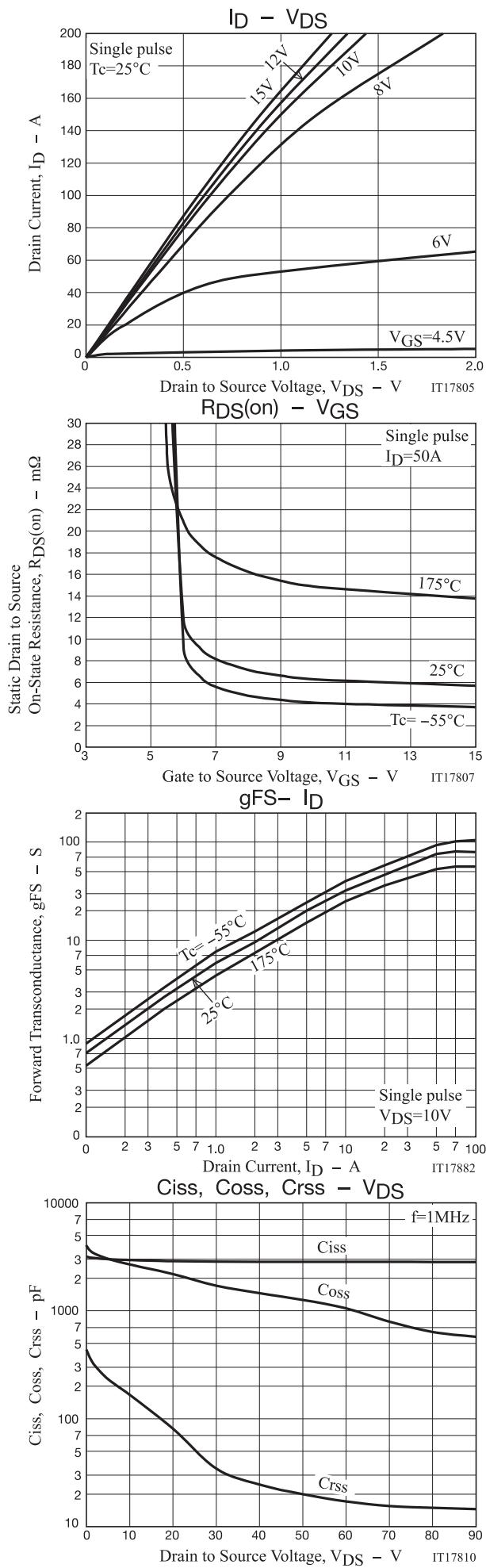
**Fig.2 Switching Time Test Circuit**



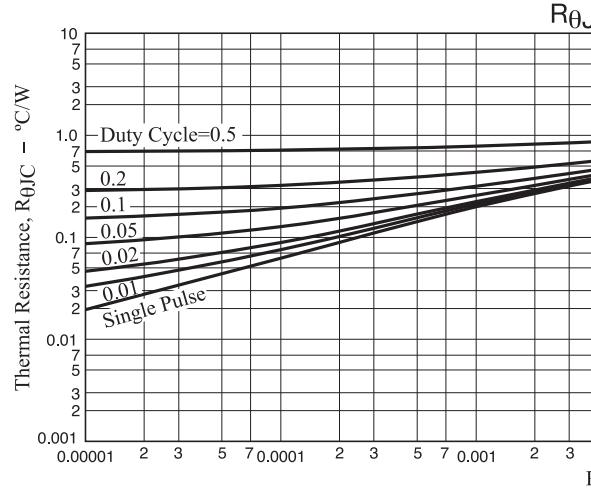
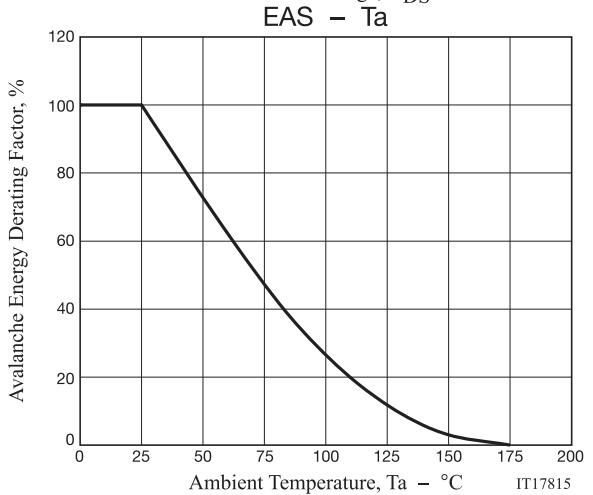
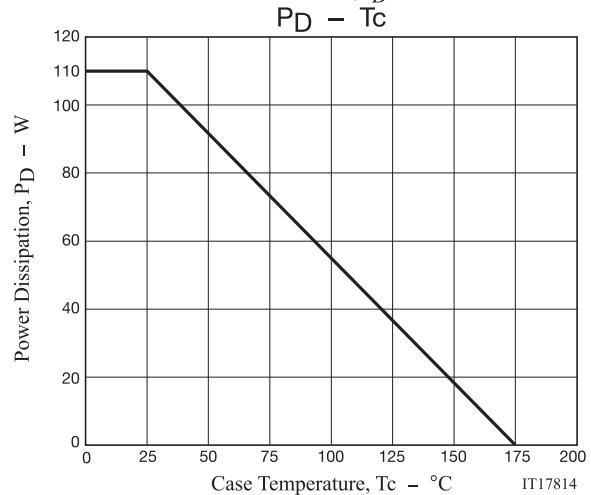
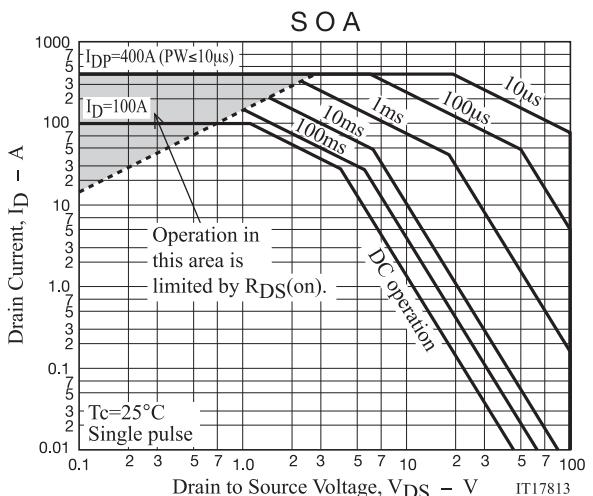
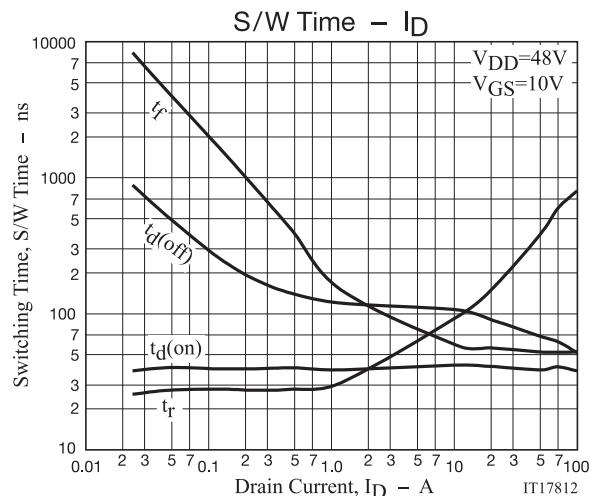
**Fig.3 Reverse Recovery Time Test Circuit**



**NDBA100N10B**



# NDBA100N10B



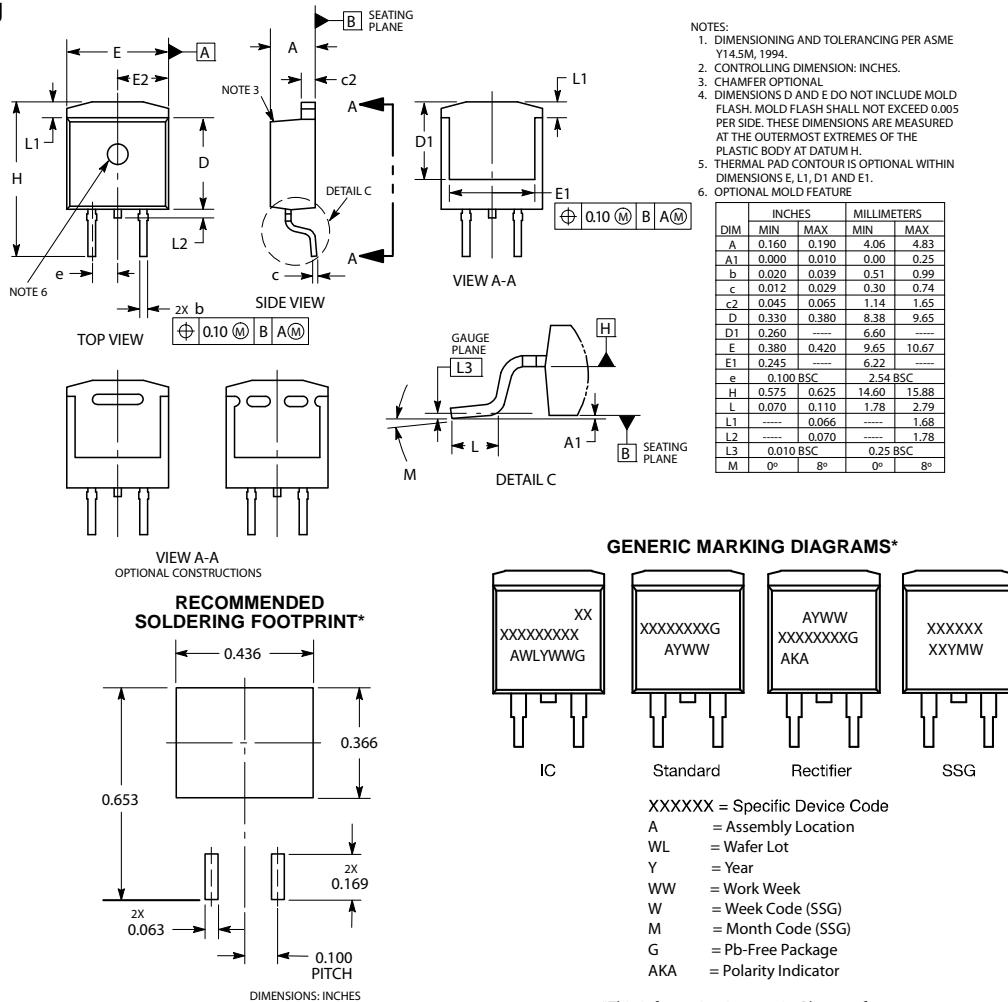
## Package Dimensions

NDBA100N10BT4H

D<sup>2</sup>PAK-3 (TO-263, 3-LEAD)

CASE 418AJ

ISSUE B



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERIRM/D.

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present.

## ORDERING INFORMATION

Device	Package	Shipping	note
NDBA100N10BT4H	D <sup>2</sup> PAK-3 (TO-263, 3-LEAD)	800 pcs. / Tape & Reel	Pb-Free and Halogen Free

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. [http://www.onsemi.com/pub\\_link/Collateral/BRD8011-D.PDF](http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF)

Note on usage : Since the NDBA100N10B is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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