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# NDPL100N10B

## Power MOSFET 100V, 7.2mΩ, 100A, N-Channel

### Features

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

### Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V <sub>DSS</sub>	100	V
Gate to Source Voltage	V <sub>GSS</sub>	±20	V
Drain Current (DC)	I <sub>D</sub>	100	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	I <sub>DP</sub>	400	A
Power Dissipation Tc=25°C	P <sub>D</sub>	2.1	W
		110	
Junction Temperature	T <sub>J</sub>	175	°C
Storage Temperature	T <sub>stg</sub>	-55 to +175	°C
Source Current (Body Diode)	I <sub>S</sub>	100	A
Avalanche Energy (Single Pulse) *1	E <sub>AS</sub>	147	mJ
Lead Temperature for Soldering Purposes, 3mm from Case for 10 Seconds	T <sub>L</sub>	260	°C

### Thermal Resistance Ratings

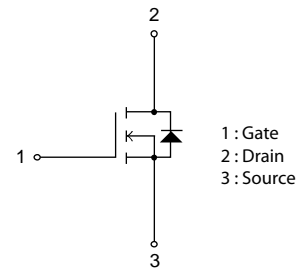
Parameter	Symbol	Value	Unit
Junction to Case Steady State	R <sub>θJC</sub>	1.36	°C/W
Junction to Ambient *2	R <sub>θJA</sub>	71.4	

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

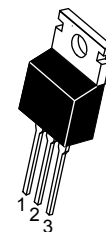
\*2 Insertion mounted

V <sub>DSS</sub>	R <sub>DS(on) Max</sub>	I <sub>D Max</sub>
100V	7.2 mΩ@15V	100A
	8.7 mΩ@10V	

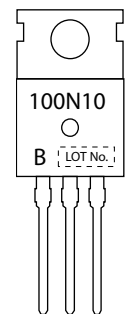
### Electrical Connection N-Channel



### Marking



TO-220-3L



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.

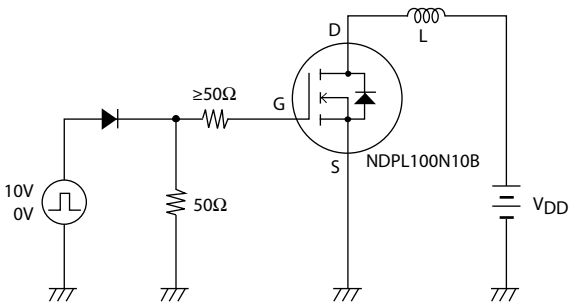
# NDPL100N10B

## Electrical Characteristics at Ta = 25°C

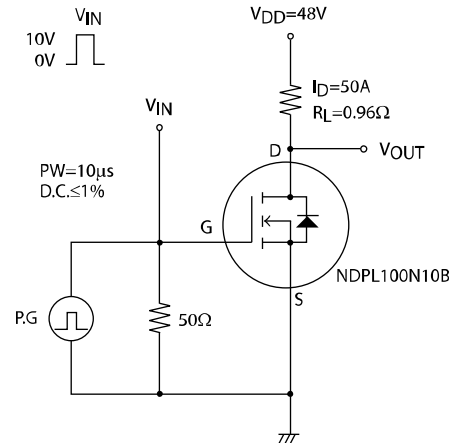
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	100			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$			10	$\mu A$
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10V, I_D=1mA$	2		4	V
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=50A$		75		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=50A, V_{GS}=15V$		6.0	7.2	$m\Omega$
	$R_{DS(on)2}$	$I_D=50A, V_{GS}=10V$		6.7	8.7	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=50V, f=1MHz$		2,950		pF
Output Capacitance	$C_{oss}$			1,250		pF
Reverse Transfer Capacitance	$C_{rss}$			20		pF
Turn-ON Delay Time	$t_{d(on)}$			40		ns
Rise Time	$t_r$	See Fig.2		385		ns
Turn-OFF Delay Time	$t_{d(off)}$			68		ns
Fall Time	$t_f$			52		ns
Total Gate Charge	$Q_g$	$V_{DS}=48V, V_{GS}=10V, I_D=100A$		35		nC
Gate to Source Charge	$Q_{gs}$			13		nC
Gate to Drain "Miller" Charge	$Q_{gd}$			10		nC
Forward Diode Voltage	$V_{SD}$		$I_S=100A, V_{GS}=0V$		1.1	1.5
Reverse Recovery Time	$t_{rr}$	See Fig.3		130		ns
Reverse Recovery Charge	$Q_{rr}$	$I_S=100A, V_{GS}=0V, V_{DD}=50V, di/dt=100A/\mu s$		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.

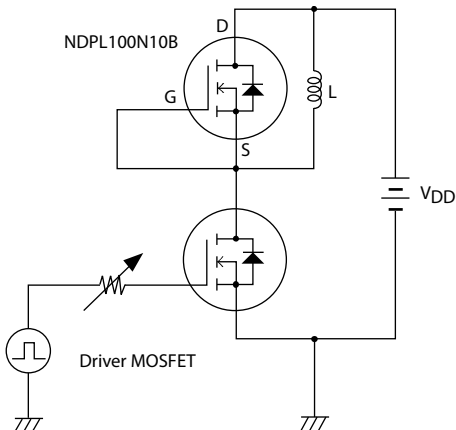
**Fig.1 Unclamped Inductive Switching Test Circuit**



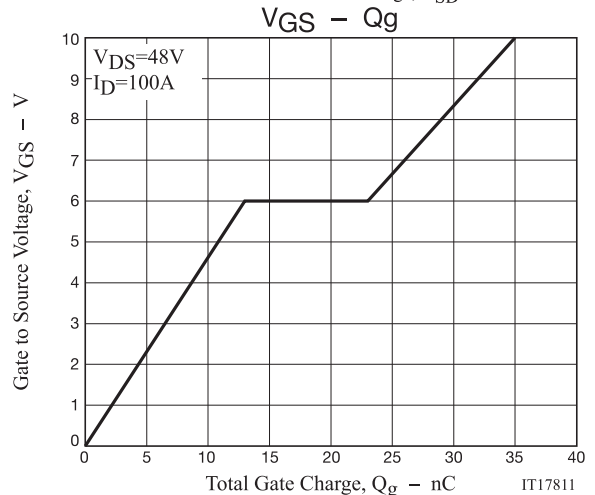
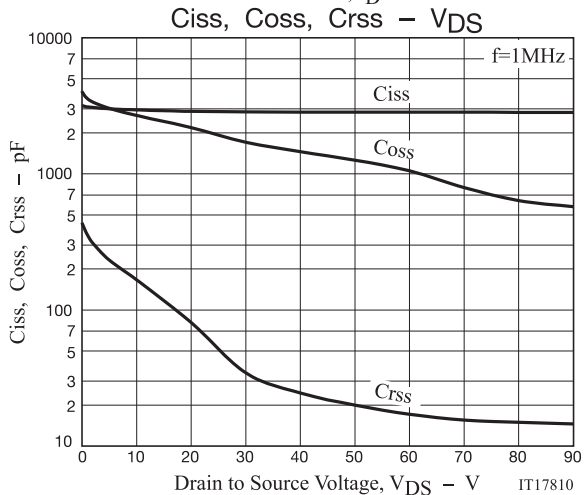
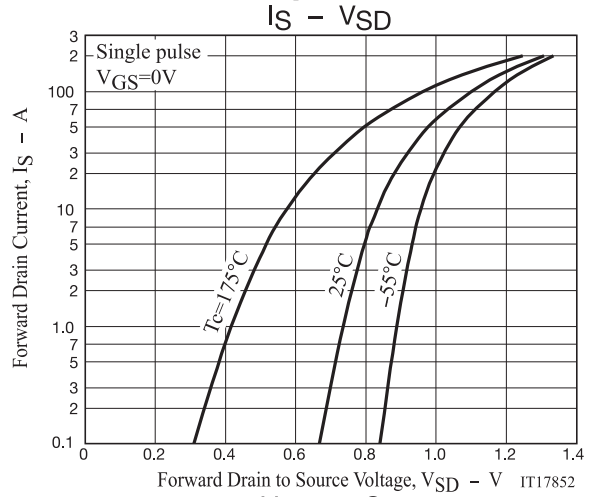
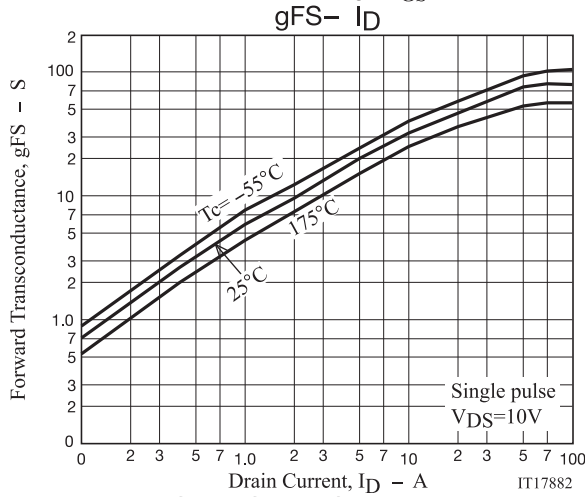
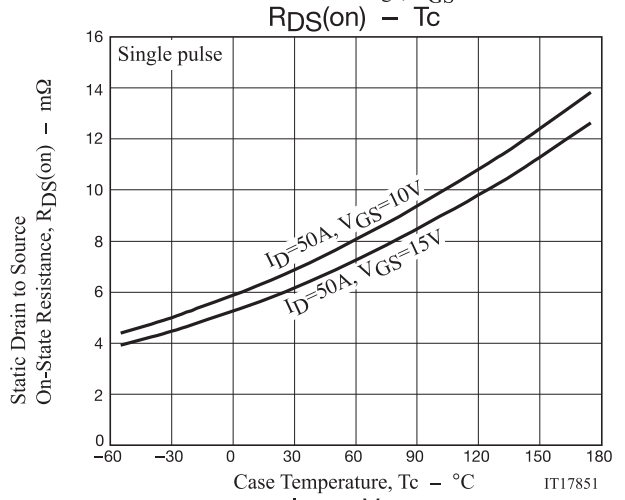
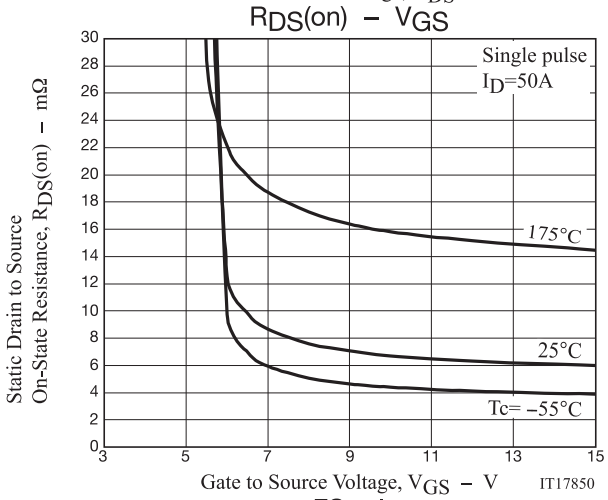
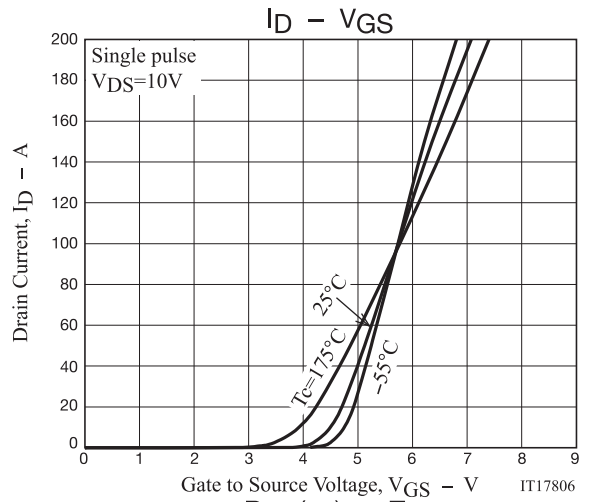
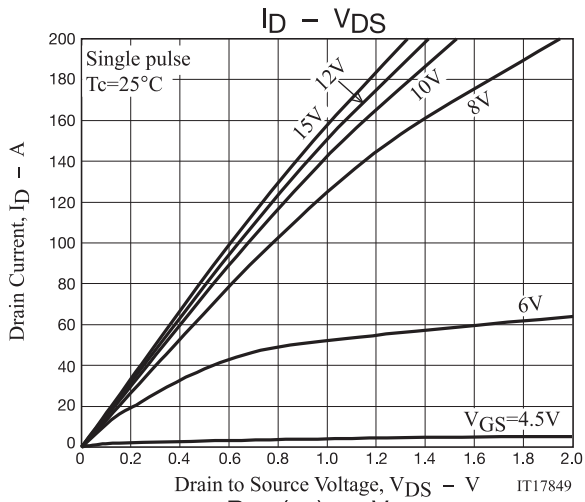
**Fig.2 Switching Time Test Circuit**



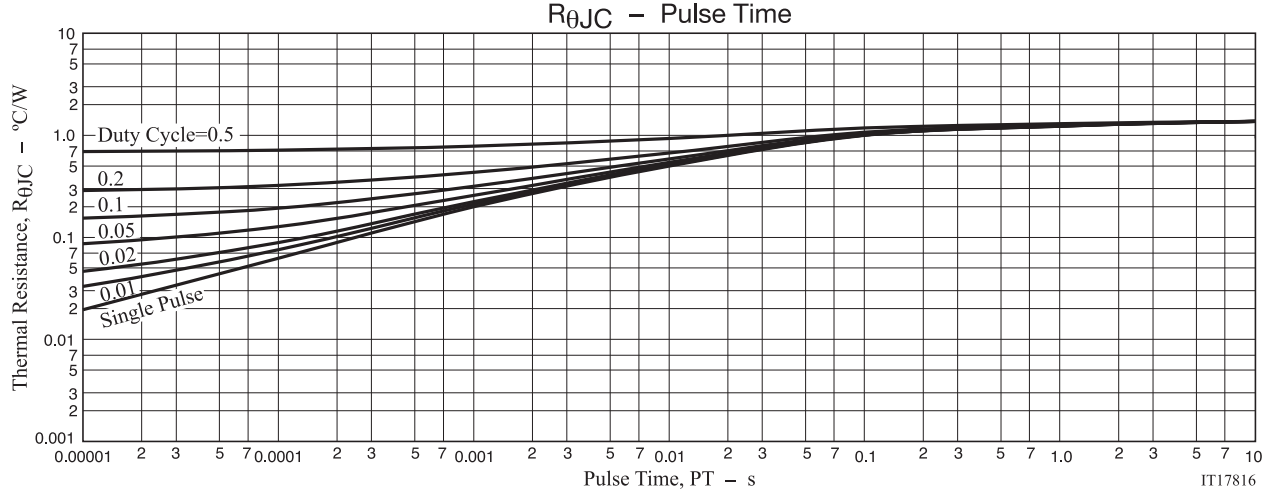
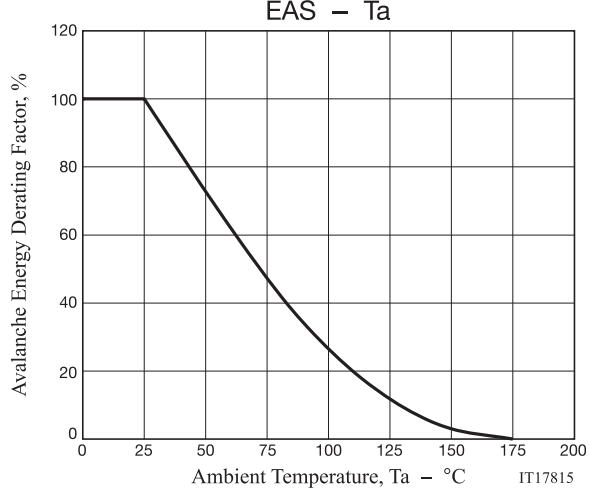
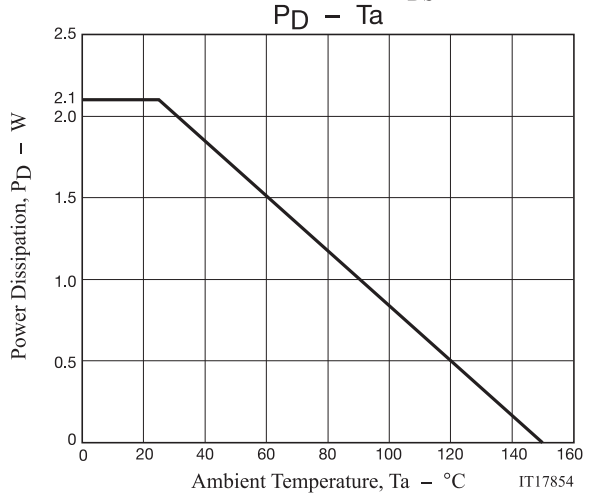
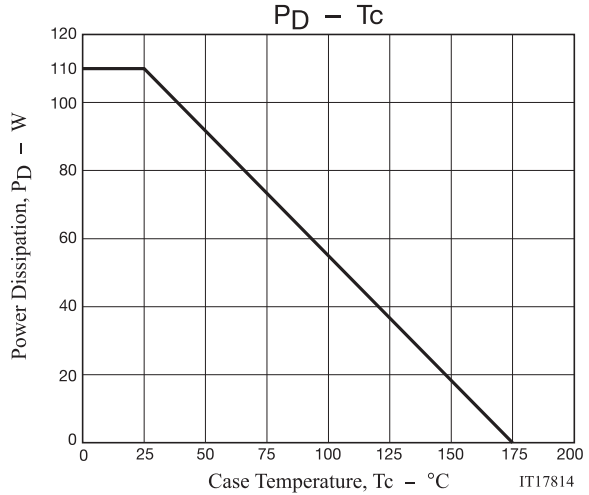
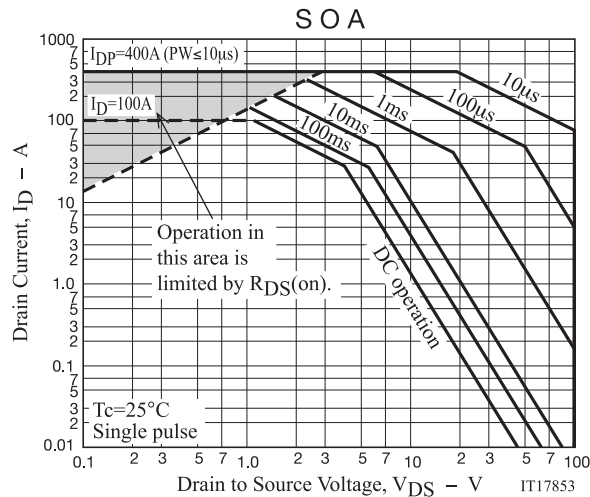
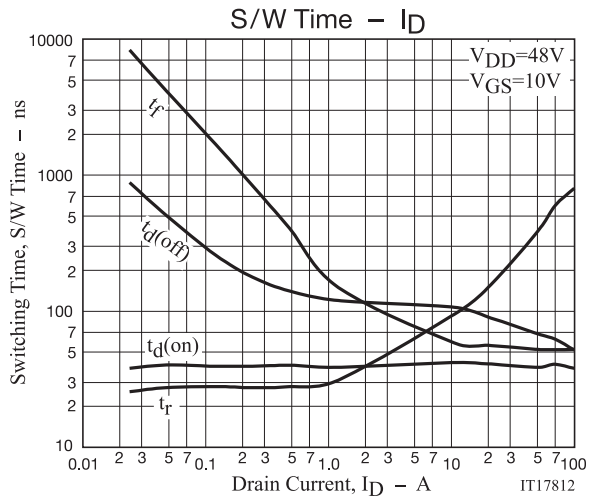
**Fig.3 Reverse Recovery Time Test Circuit**



# NDPL100N10B



# NDPL100N10B



# NDPL100N10B

## Package Dimensions

NDPL100N10BG

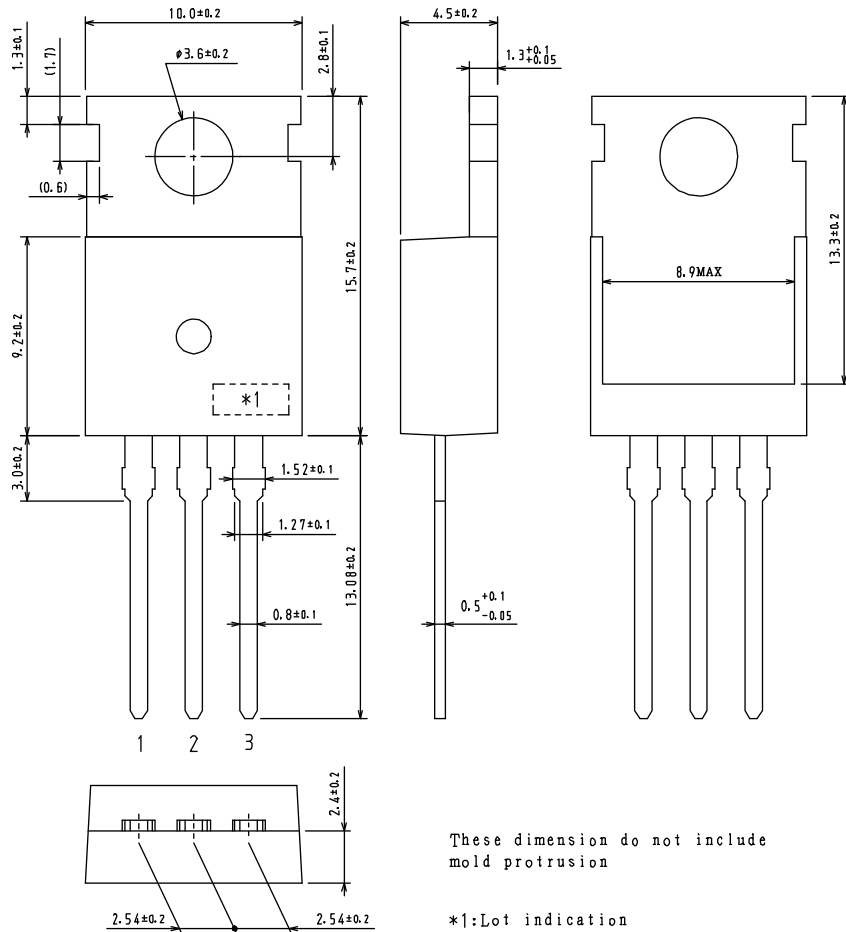
### TO-220, 3-Lead / TO-220-3L

CASE 221AU

ISSUE O

unit : mm

- 1:Gate
- 2:Drain
- 3:Source



## ORDERING INFORMATION

Device	Package	Shipping	note
NDPL100N10BG	TO-220, 3-Lead TO-220-3L	50 pcs. / Tube	Pb-Free

Note on usage : Since the NDPL100N10B is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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