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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 _{DSS} | 100 | V |
| Gate to Source Voltage | V _{GSS} | ±20 | V |
| Drain Current (DC) | I _D | 100 | A |
| Drain Current (Pulse) PW≤10μs, duty cycle≤1% | I _{DP} | 400 | A |
| Power Dissipation Tc=25°C | P _D | 2.1 | W |
| | | 110 | |
| Junction Temperature | T _J | 175 | °C |
| Storage Temperature | T _{stg} | -55 to +175 | °C |
| Source Current (Body Diode) | I _S | 100 | A |
| Avalanche Energy (Single Pulse) *1 | E _{AS} | 147 | mJ |
| Lead Temperature for Soldering Purposes, 3mm from Case for 10 Seconds | T _L | 260 | °C |

Thermal Resistance Ratings

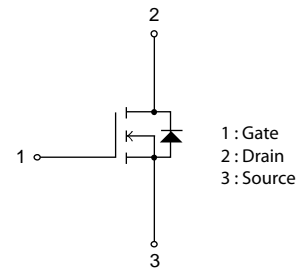
| Parameter | Symbol | Value | Unit |
|-------------------------------|------------------|-------|------|
| Junction to Case Steady State | R _{θJC} | 1.36 | °C/W |
| Junction to Ambient *2 | R _{θJA} | 71.4 | |

Note : *1 V_{DD}=48V, L=100μH, I_{AV}=40A (Fig.1)

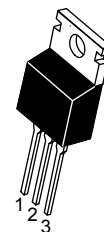
*2 Insertion mounted

| V _{DSS} | R _{DS(on) Max} | I _{D Max} |
|------------------|-------------------------|--------------------|
| 100V | 7.2 mΩ@15V | 100A |
| | 8.7 mΩ@10V | |

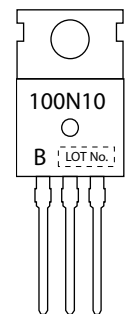
Electrical Connection N-Channel



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 | μA |
| Gate to Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | | | ± 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

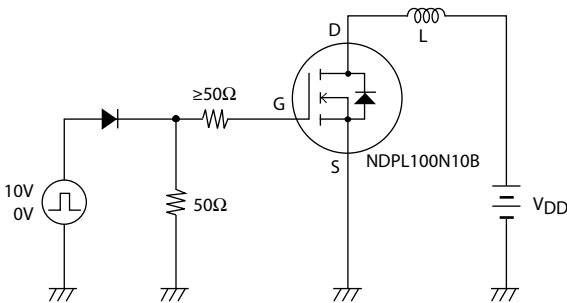


Fig.2 Switching Time Test Circuit

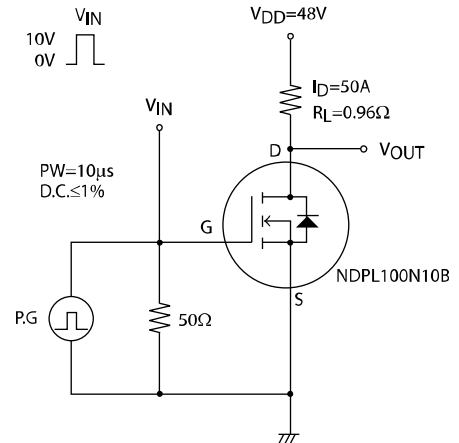
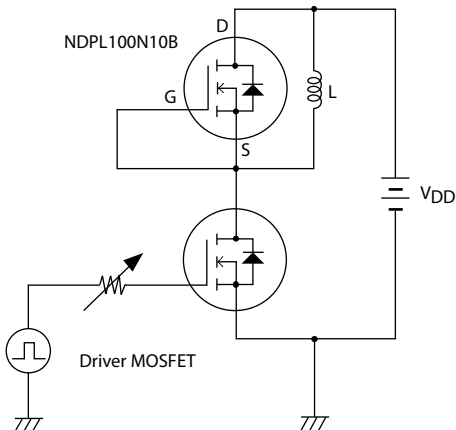
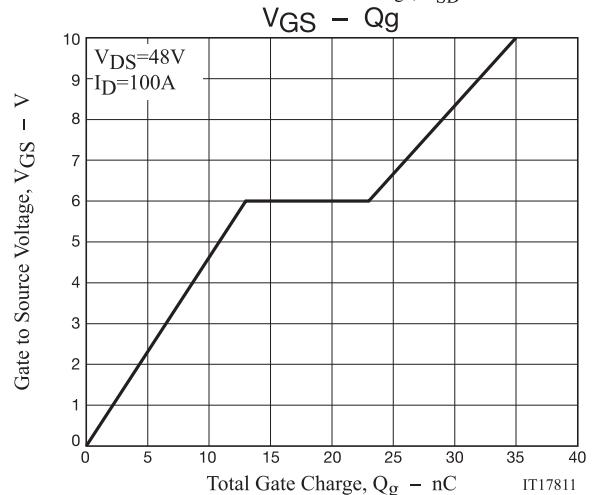
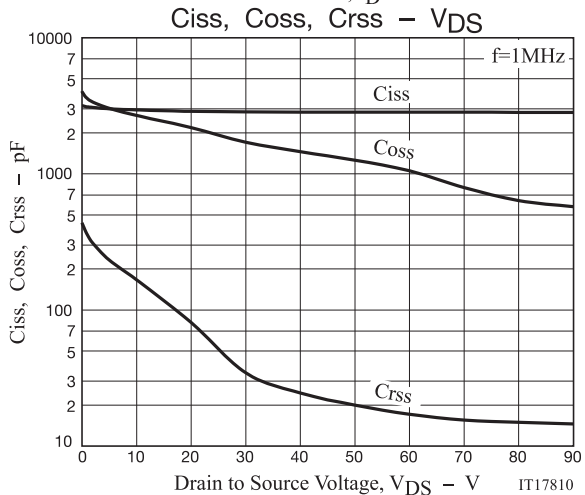
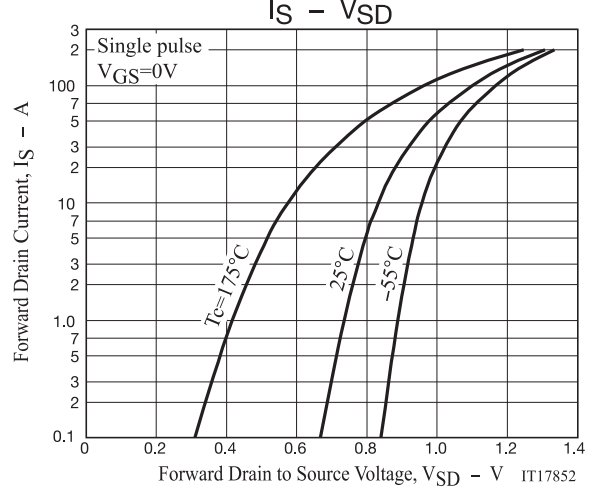
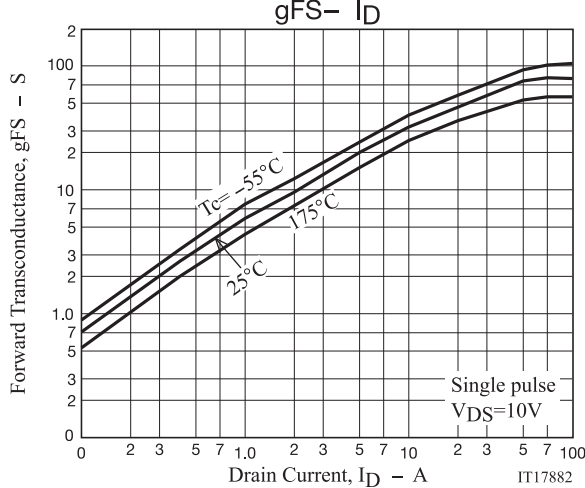
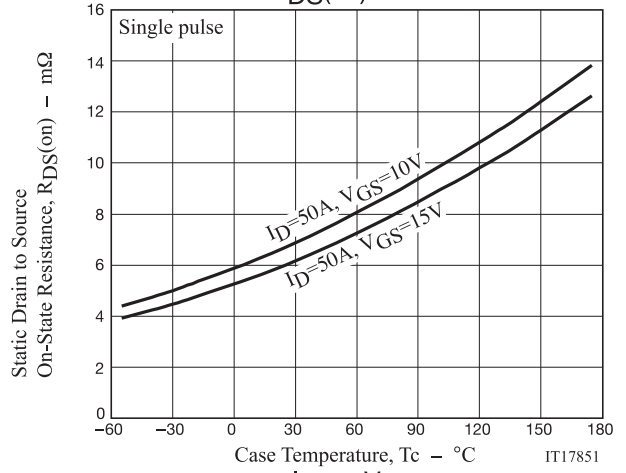
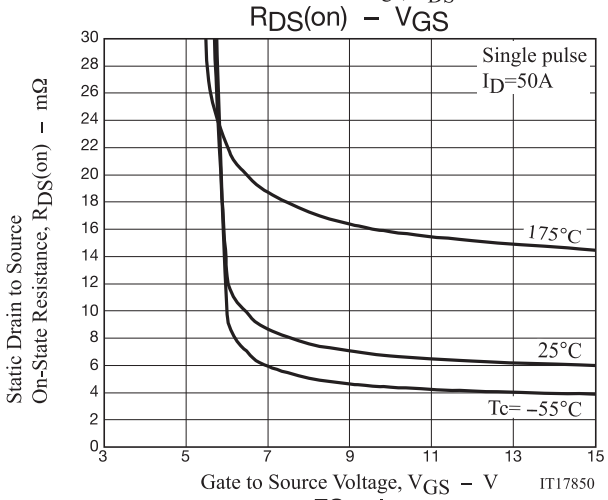
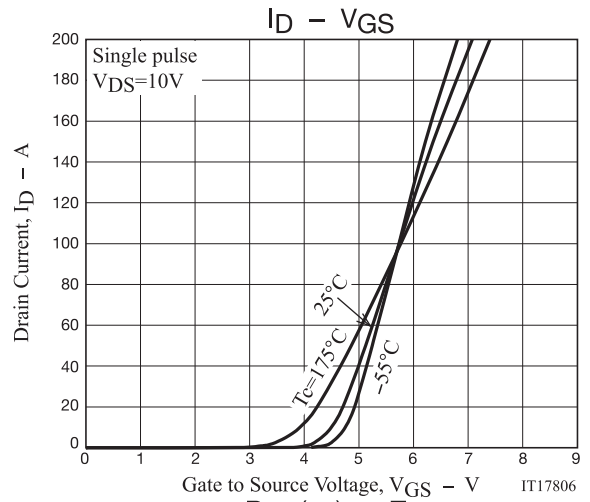
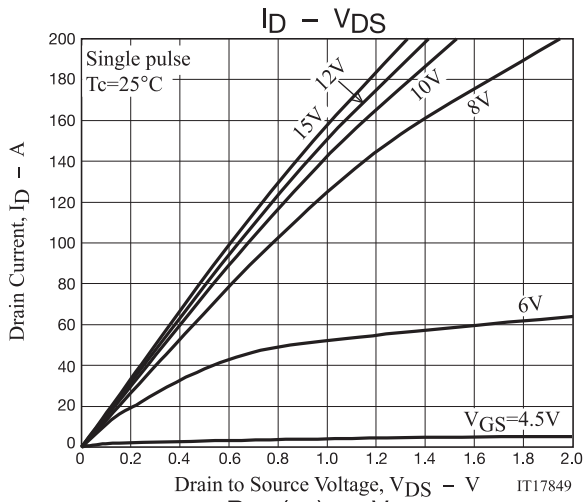


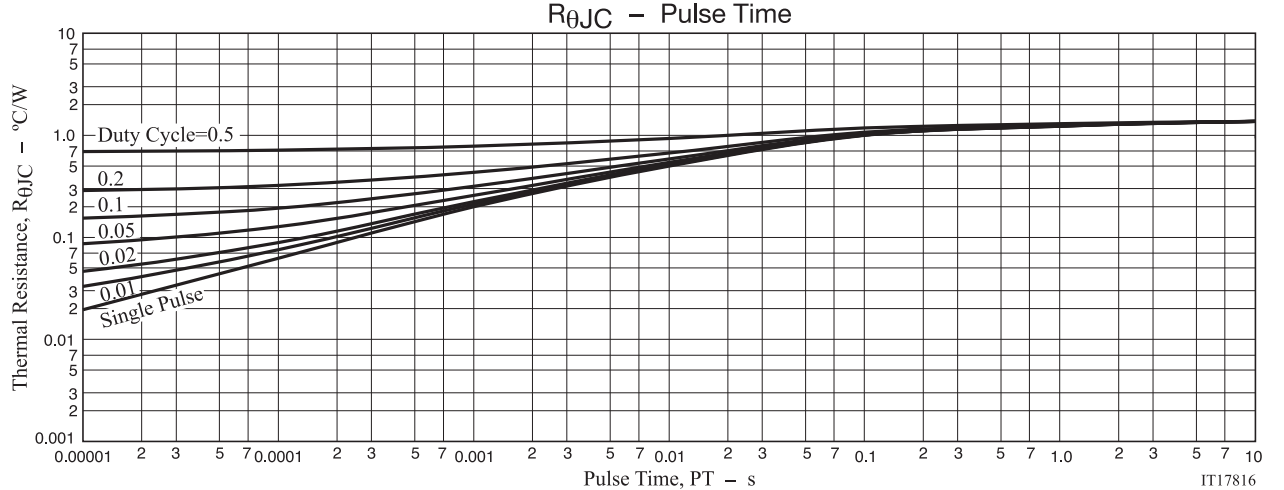
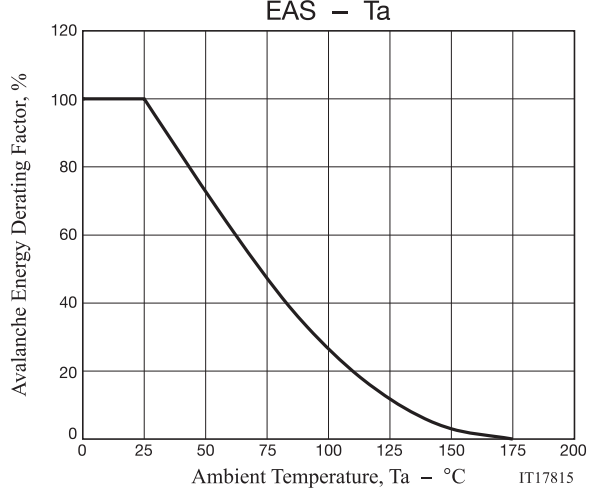
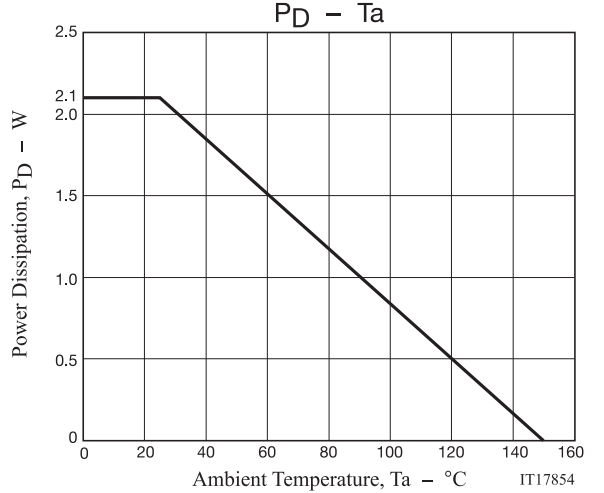
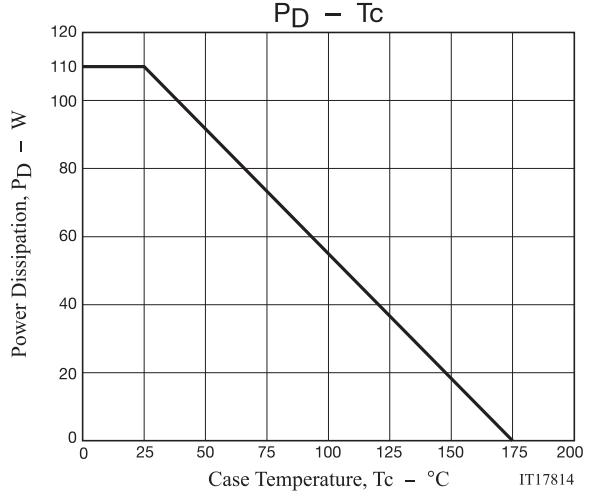
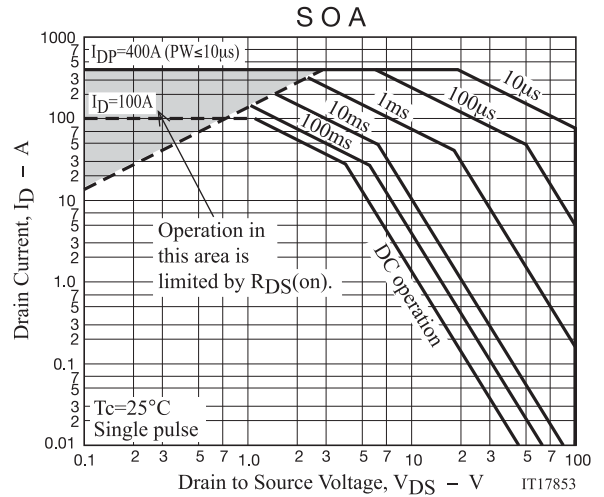
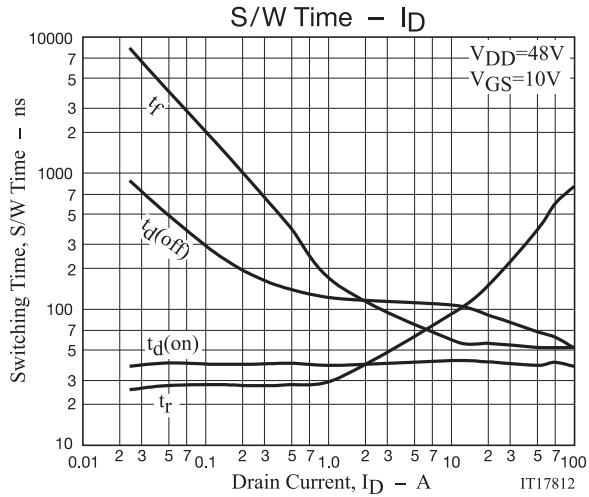
Fig.3 Reverse Recovery Time Test Circuit



NDPL100N10B



NDPL100N10B



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Package Dimensions

NDPL100N10BG

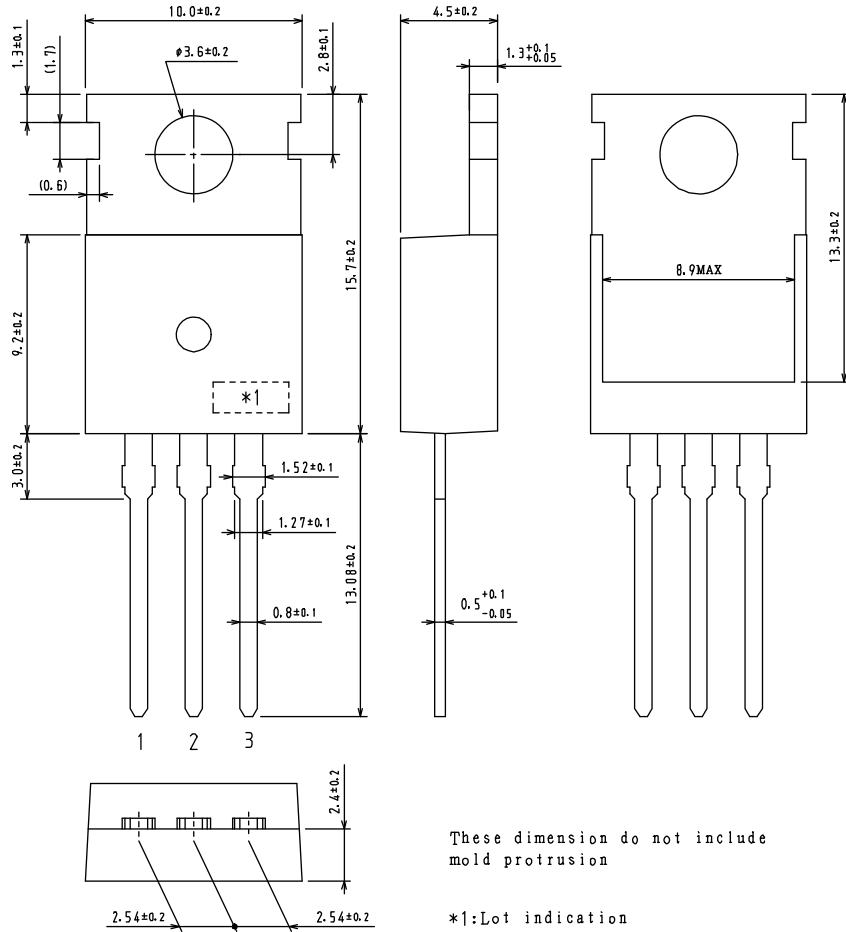
TO-220, 3-Lead / TO-220-3L

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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