NDPL070N10B

Power MOSFET
100V, 10.8mΩ, 70A, N-Channel

This N-Channel Power MOSFET is produced using ON Semiconductor's trench technology, which is specifically designed to minimize gate charge and ultra low on resistance. This device is suitable for applications with low gate charge driving or ultra low on resistance requirements.

ON Semiconductor®

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Features

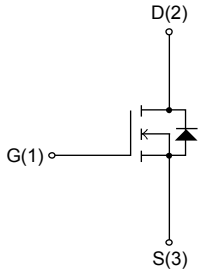
- Low On-Resistance
- Low Gate Charge
- High Speed Switching
- 100% Avalanche Tested
- Pb-Free and RoHS compliance

Applications

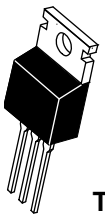
- Battery Protection
- Motor Drive
- Primary Side Switch
- Secondary Side Synchronous Rectification

V_{DSS}	R_{DS}(on) Max	I_D Max
100V	10.8 mΩ@15V	70A
	12.8 mΩ@10V	

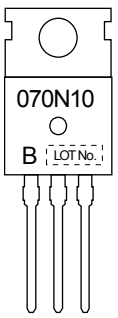
ELECTRICAL CONNECTION
N-Channel



MARKING



TO-220-3L



SPECIFICATION

ABSOLUTE MAXIMUM RATINGS at Ta = 25°C (Note 1)

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	70	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	I_{DP}	280	A
Power Dissipation Tc=25°C	P_D	2.1	W
		72	
Junction Temperature	Tj	175	°C
Storage Temperature	Tstg	−55 to +175	°C
Source Current (Body Diode)	I_S	70	A
Avalanche Energy (Single Pulse) (Note 2)	E_{AS}	82	mJ
Lead Temperature for Soldering Purposes, 3mm from Case for 10 Seconds	T_L	260	°C

Note 1 : 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.

2 : V_{DD}=48V, L=100μH, I_{AV}=30A (Fig.1)

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Case Steady State	$R_{\theta JC}$	2.08	°C/W
Junction to Ambient (Note 3)	$R_{\theta JA}$	71.4	

Note 3 : Insertion mounted

ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.

ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 4)

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}=±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=35A		50		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=35A, V_{GS}=15V		9.0	10.8	mΩ
	$R_{DS}(on)2$	I_D=35A, V_{GS}=10V		9.8	12.8	mΩ
Input Capacitance	Ciss	V_{DS}=50V, f=1MHz		2,010		pF
Output Capacitance	Coss			840		pF
Reverse Transfer Capacitance	Crss			21		pF
Turn-ON Delay Time	$t_d(on)$	See Fig.2		30		ns
Rise Time	t_r			180		ns
Turn-OFF Delay Time	$t_d(off)$			55		ns
Fall Time	t_f			40		ns
Total Gate Charge	Qg	V_{DS}=48V, V_{GS}=10V, I_D=70A		26		nC
Gate to Source Charge	Qgs			9		nC
Gate to Drain “Miller” Charge	Qgd			8		nC
Forward Diode Voltage	V_{SD}	I_S=70A, V_{GS}=0V		1.1	1.5	V
Reverse Recovery Time	t_{rr}	See Fig.3 I_S=70A, V_{GS}=0V, di/dt=100A/μs		95		ns
Reverse Recovery Charge	Q_{rr}			240		nC

Note 4 : 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

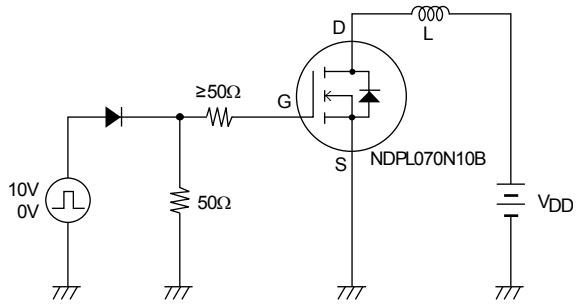


Fig.2 Switching Time Test Circuit

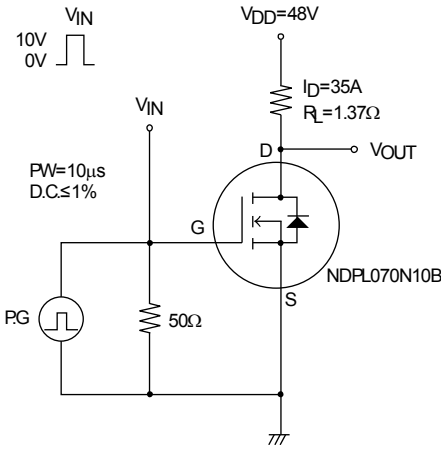
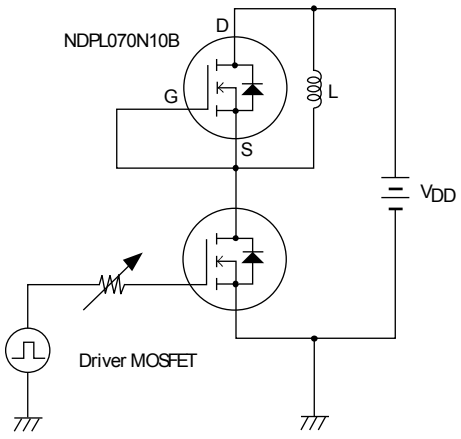
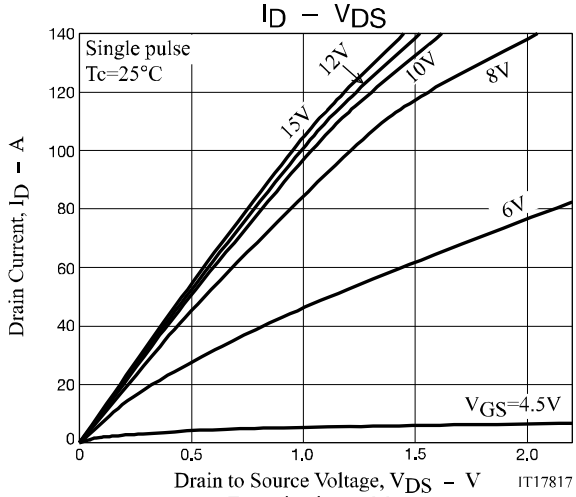
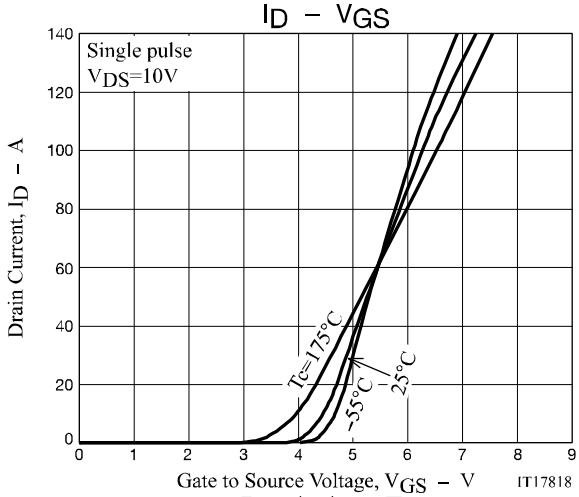
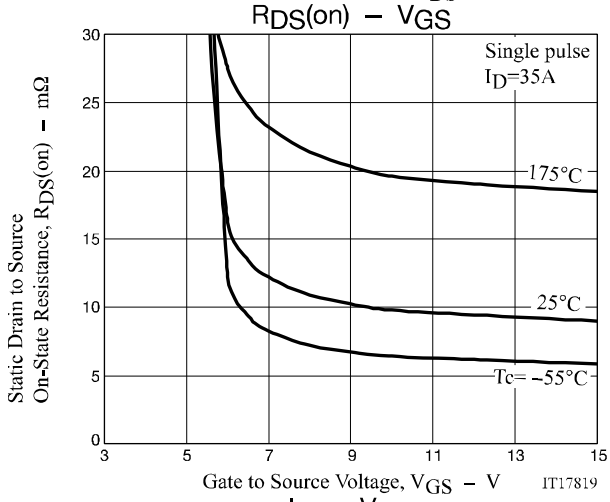


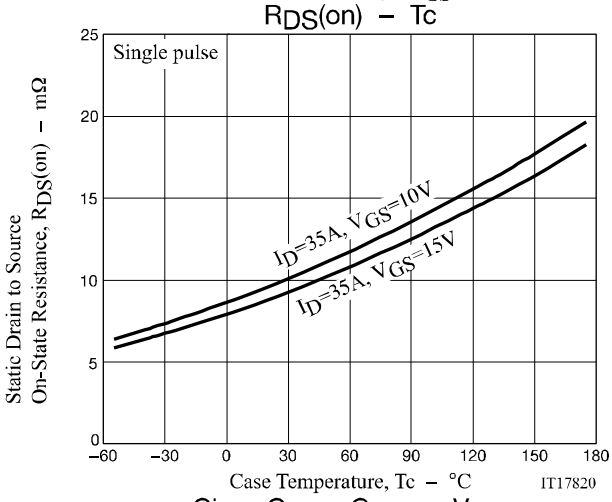
Fig.3 Reverse Recovery Time Test Circuit

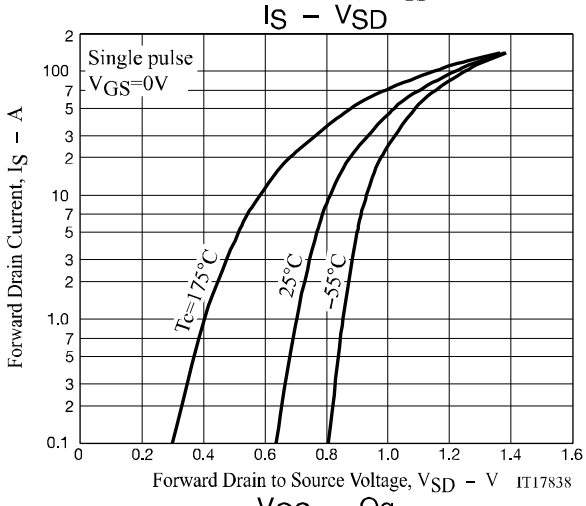


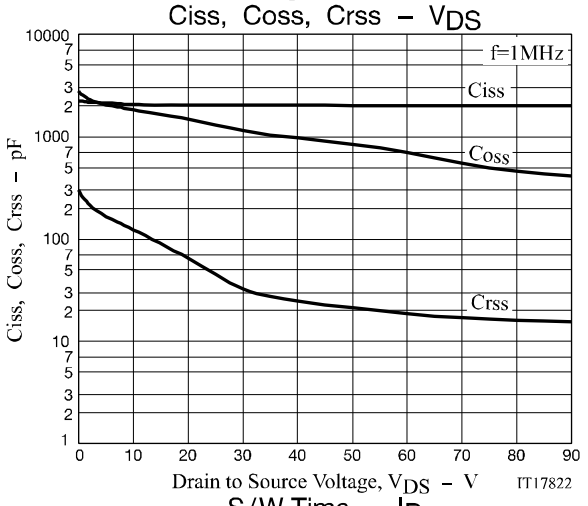


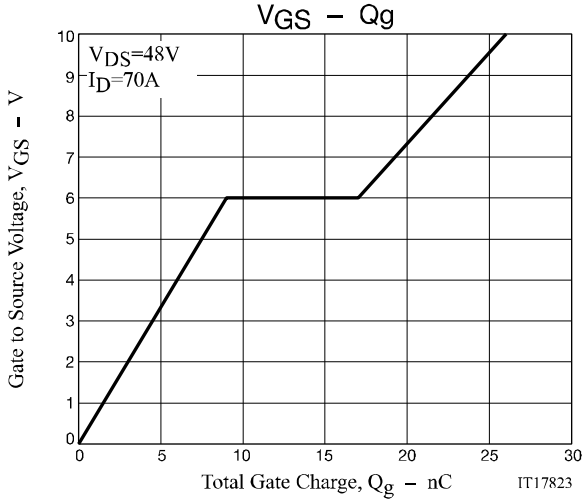


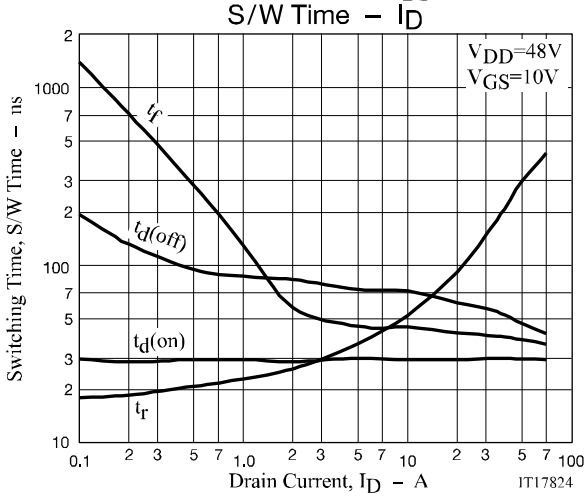


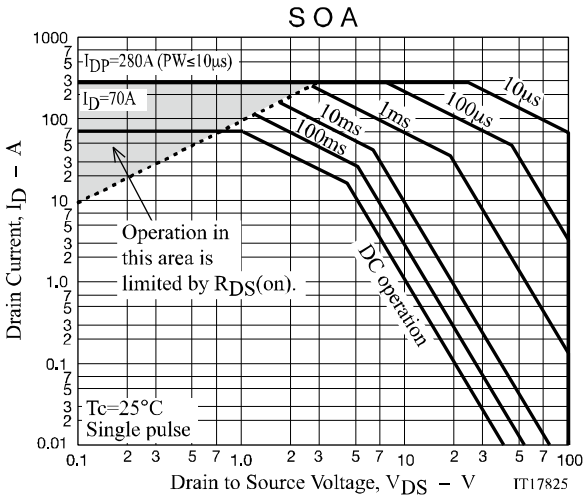


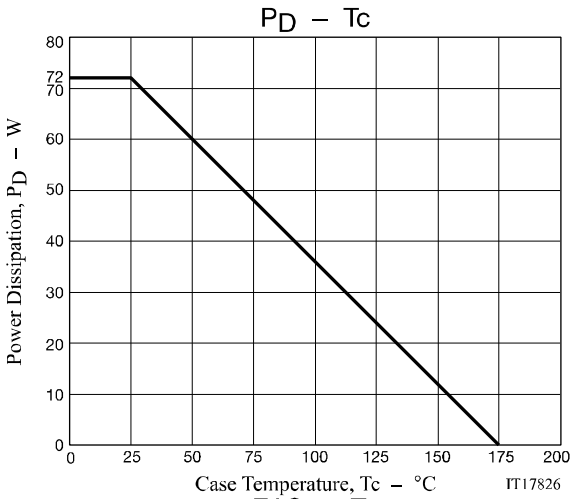


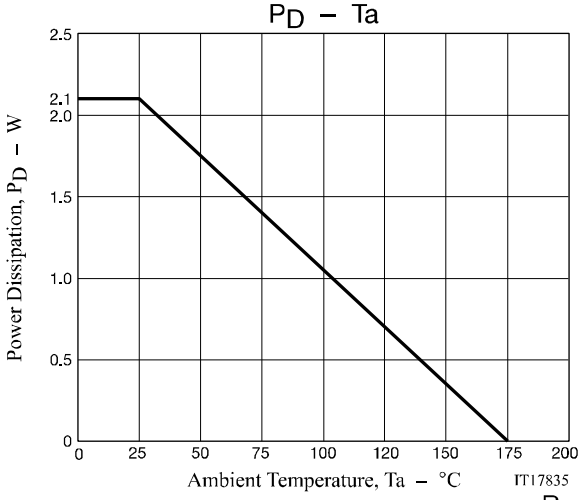


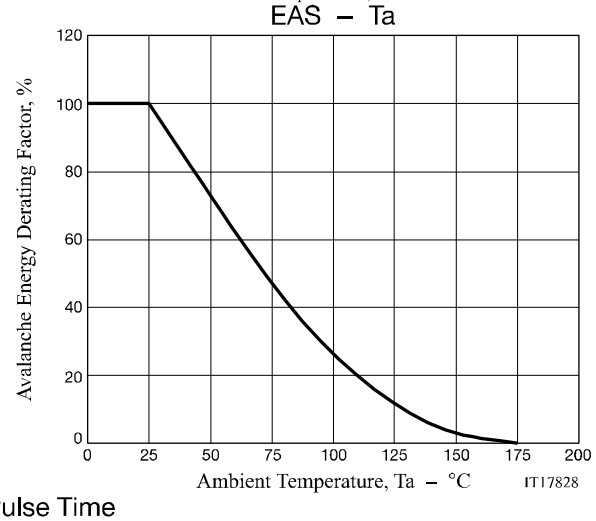


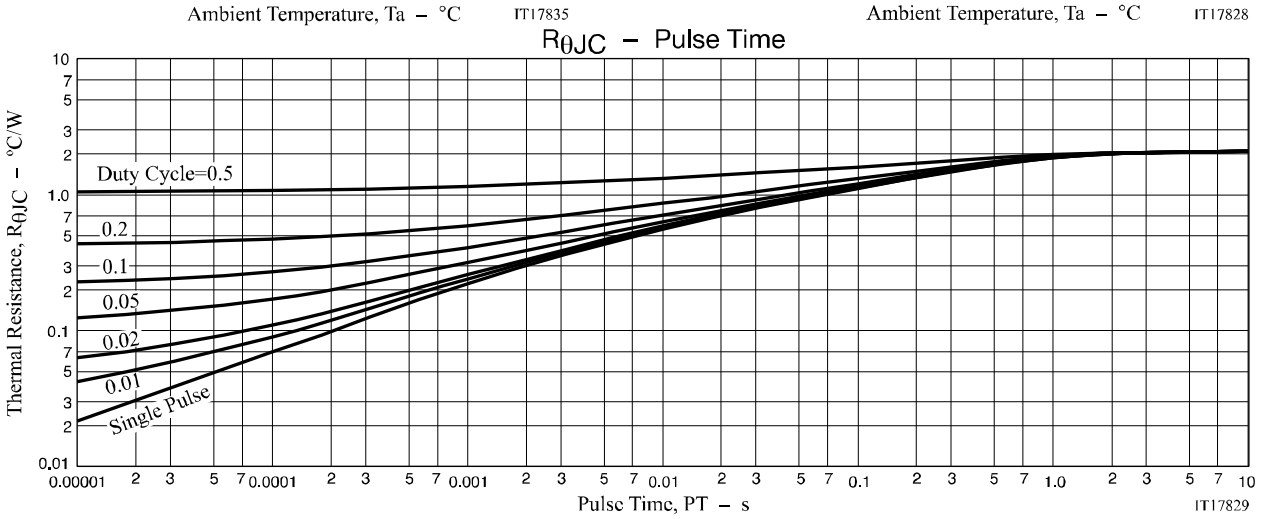








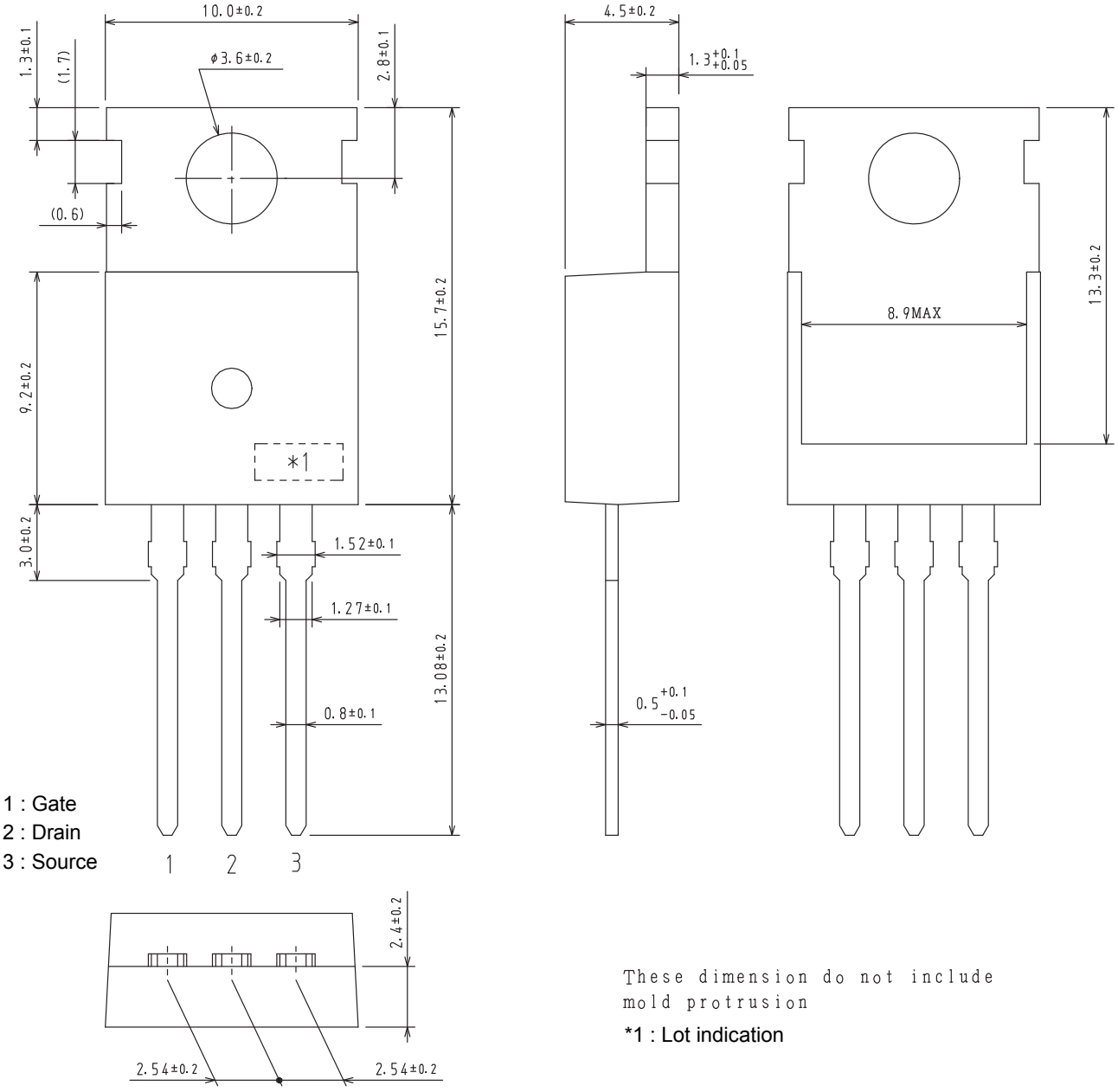




PACKAGE DIMENSIONS

unit : mm

TO-220, 3-Lead / TO-220-3L
CASE 221AU
ISSUE O



These dimension do not include mold protrusion

*1 : Lot indication

ORDERING INFORMATION

Device	Marking	Package	Shipping (Qty / Packing)
NDPL070N10BG	070N10	TO-220, 3-Lead / TO-220-3L (Pb-Free)	50 / Tube

Note on usage : Since the NDPL070N10B is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.