

NDDP010N25AZ

Power MOSFET 250V, 10A, 420mΩ, N-Channel



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Features

- High Speed Switching
- Low Gate Charge
- ESD Diode-Protected Gate
- 100% Avalanche Tested
- Pb-Free, Halogen Free and RoHS Compliance

Specifications

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DS}	250	V
Gate to Source Voltage	V_{GS}	± 30	V
Drain Current (DC)	I_D	10	A
Drain Current (Pulse) $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	I_{DP}	40	A
Power Dissipation $T_c = 25^\circ\text{C}$	P_D	1 52	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$
Source Current (Body Diode)	I_S	10	A
Avalanche Energy (Single Pulse) * ¹	E_{AS}	15.5	mJ
Lead Temperature for Soldering Purposes, 3mm from Case for 10 Seconds	T_L	260	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Case Steady State	$R_{\theta JC}$	2.40	$^\circ\text{C/W}$
Junction to Ambient * ²	$R_{\theta JA}$	125	

Note : *¹ $V_{DD} = 50\text{V}$, $L = 1\text{mH}$, $I_{AV} = 5\text{A}$ (Fig.1)

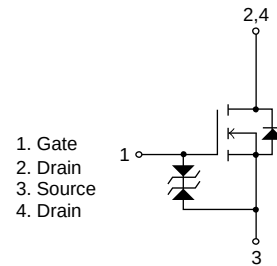
*² Insertion mounted

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.

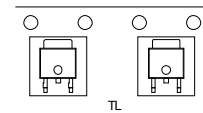
Ordering & Package Information

Device	Package	Shipping	Memo
NDDP010N25AZT4H	DPAK(TP-FA), SC-63, TO-252	700pcs. / reel	Pb-Free and Halogen Free
NDDP010N25AZ-1H	IPAK(TP), SC-64, TO-251	500pcs. / bag	

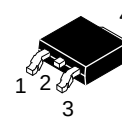
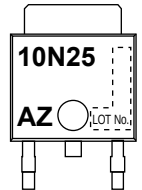
Electrical Connection



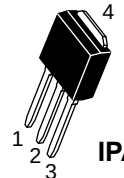
Packing Type: TL



Marking



DPAK



IPAK

NDDP010N25AZ

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

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$	250			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=250\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 24\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=10\text{V}$, $I_D=1\text{mA}$	2.5		4.5	V
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=5\text{A}$		6.5		S
Static Drain to Source On-State Resistance	$R_{DS(on)}$	$I_D=5\text{A}$, $V_{GS}=10\text{V}$		320	420	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=20\text{V}$, $f=1\text{MHz}$		980		pF
Output Capacitance	C_{oss}			80		pF
Reverse Transfer Capacitance	C_{rss}			25		pF
Turn-ON Delay Time	$t_{d(on)}$	See Fig.2		18		ns
Rise Time	t_r			26		ns
Turn-OFF Delay Time	$t_{d(off)}$			44		ns
Fall Time	t_f			31		ns
Total Gate Charge	Q_g	$V_{DS}=125\text{V}$, $V_{GS}=10\text{V}$, $I_D=10\text{A}$		16		nC
Gate to Source Charge	Q_{gs}			4.7		nC
Gate to Drain "Miller" Charge	Q_{gd}			4.6		nC
Forward Diode Voltage	V_{SD}	$I_S=10\text{A}$, $V_{GS}=0\text{V}$		0.96	1.2	V
Reverse Recovery Time	t_{rr}	See Fig.3		130		ns
Reverse Recovery Charge	Q_{rr}			540		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

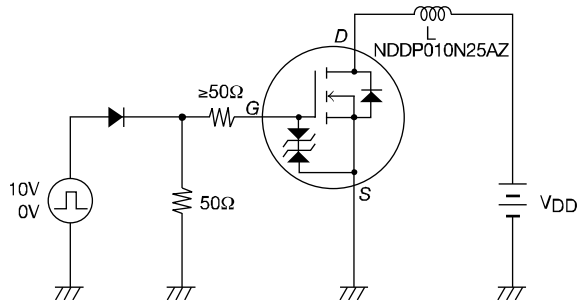


Fig.2 Switching Time Test Circuit

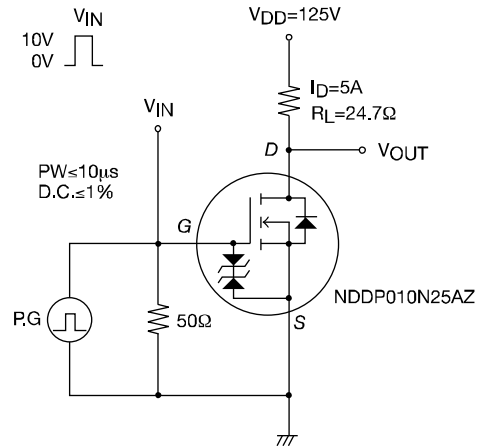
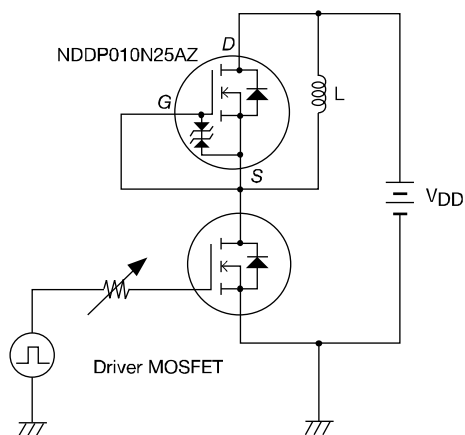
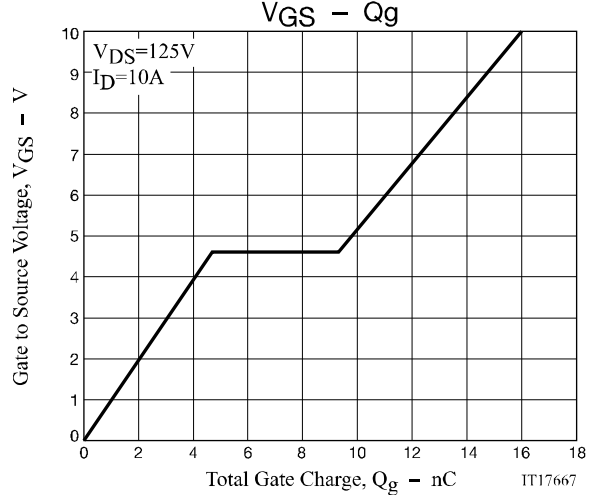
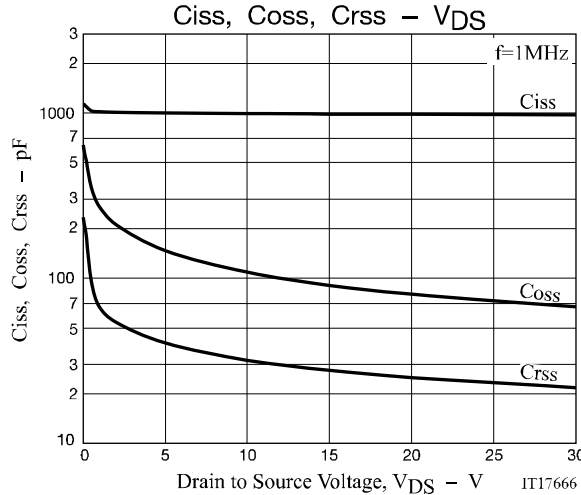
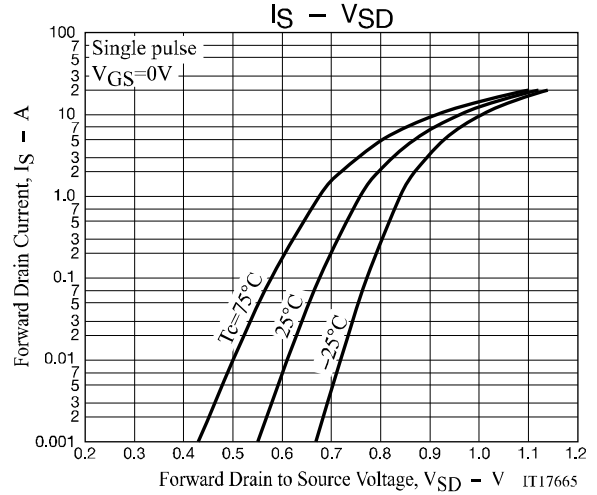
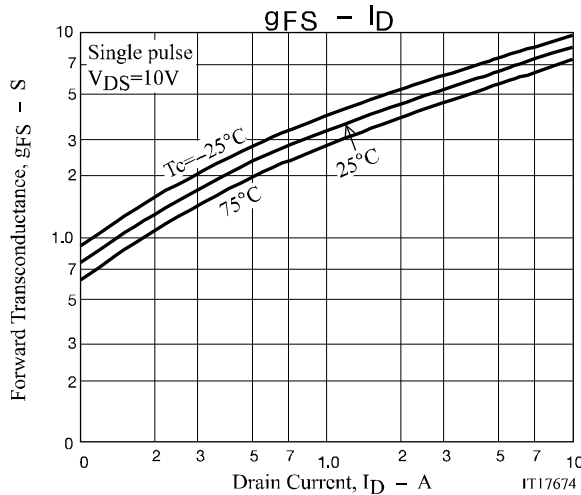
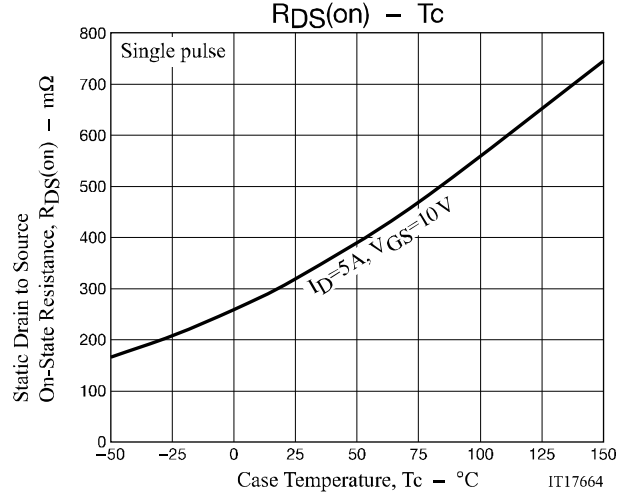
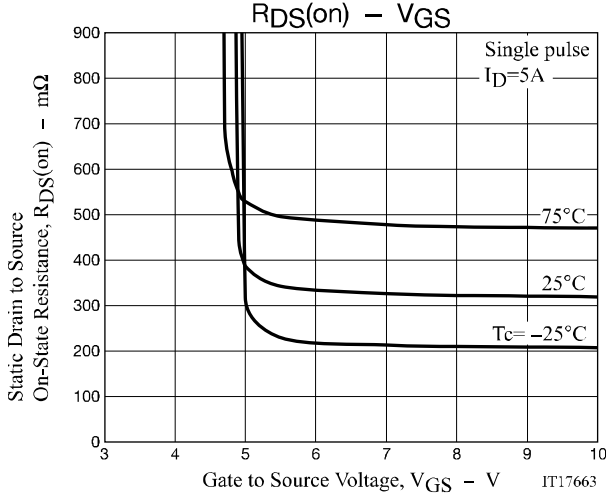
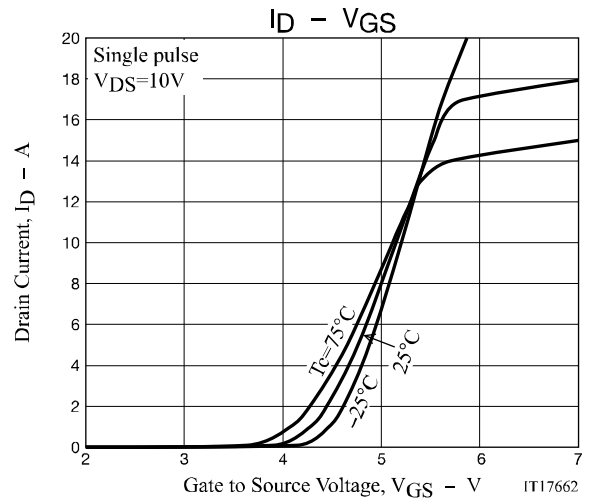
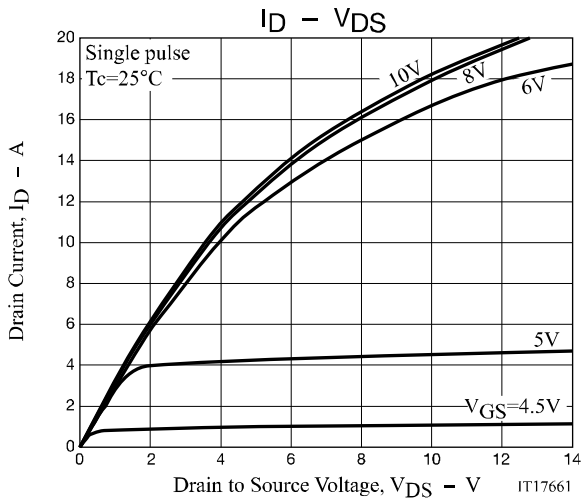
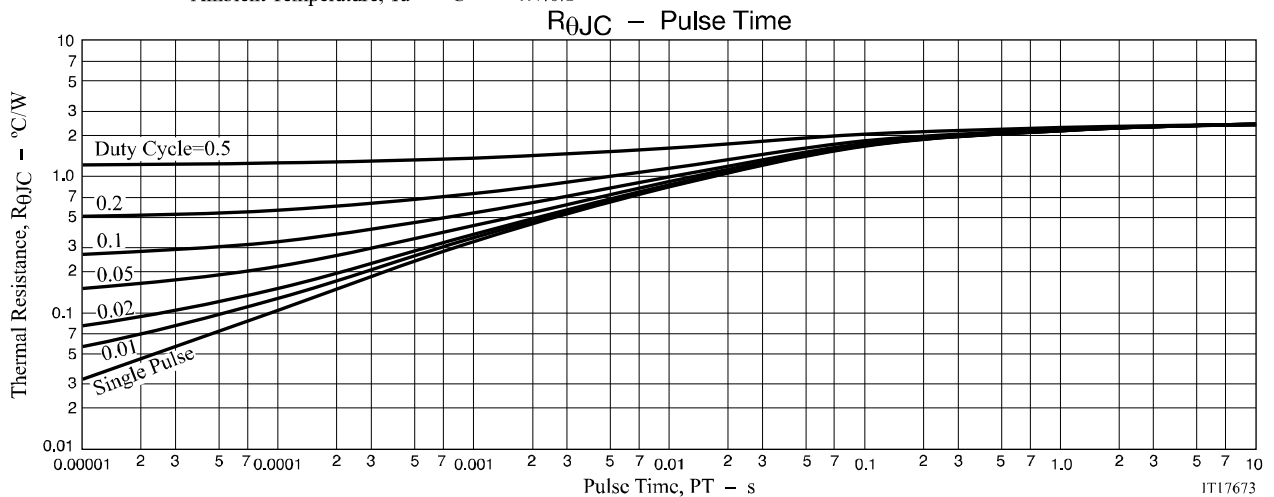
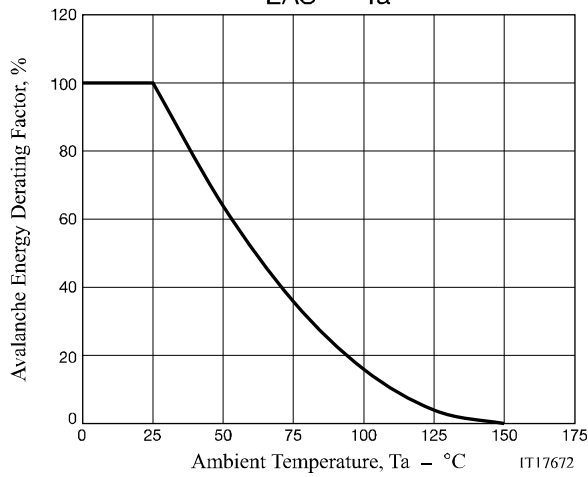
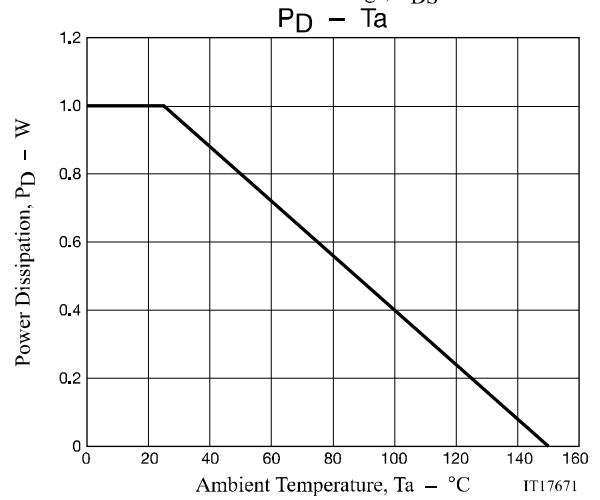
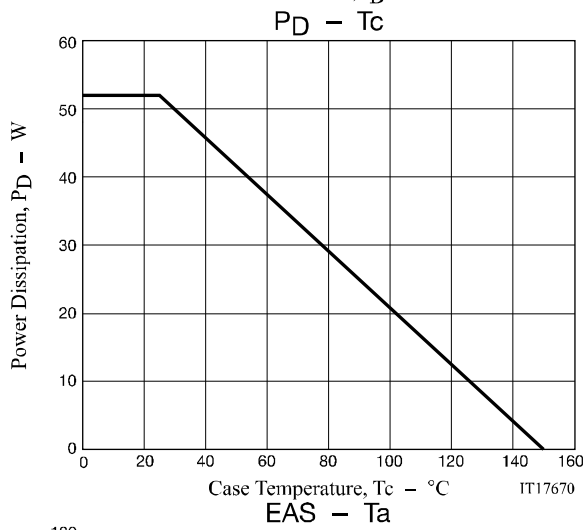
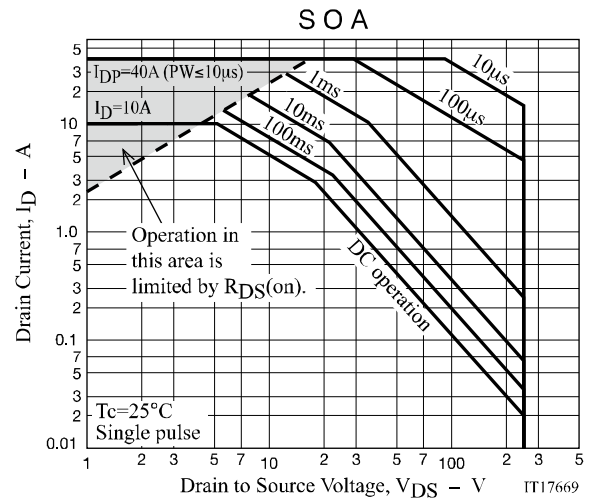
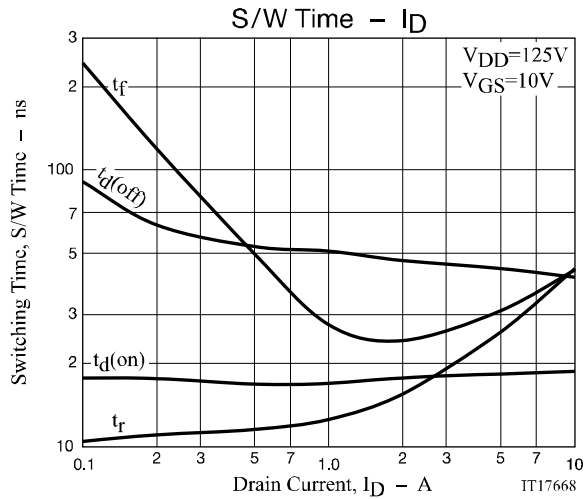


Fig.3 Reverse Recovery Time Test Circuit







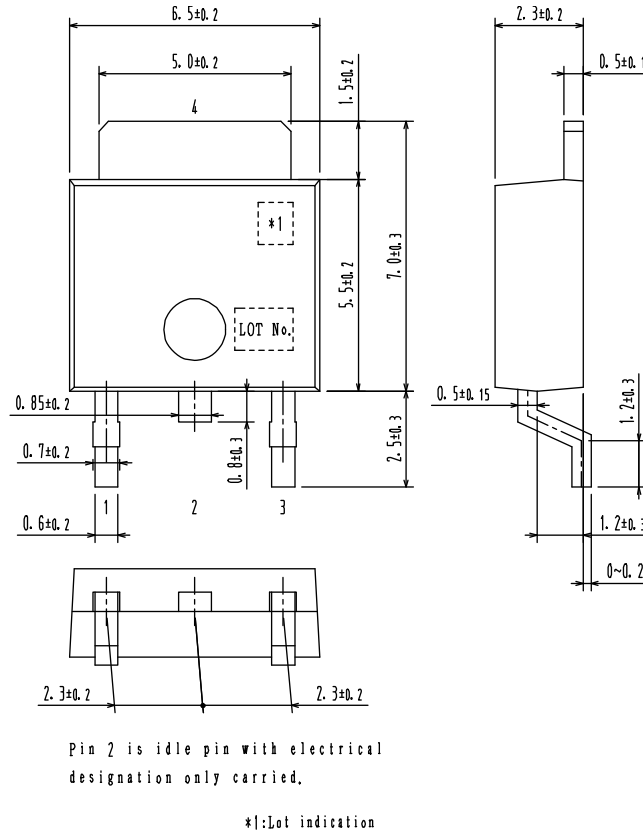
Package Dimensions

NDDP010N25AZT4H

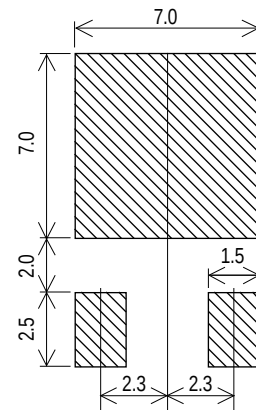
DPAK / TP-FA

unit : mm

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



Recommended Soldering Footprint



Package Dimensions

NDDP010N25AZ-1H

IPAK / TP

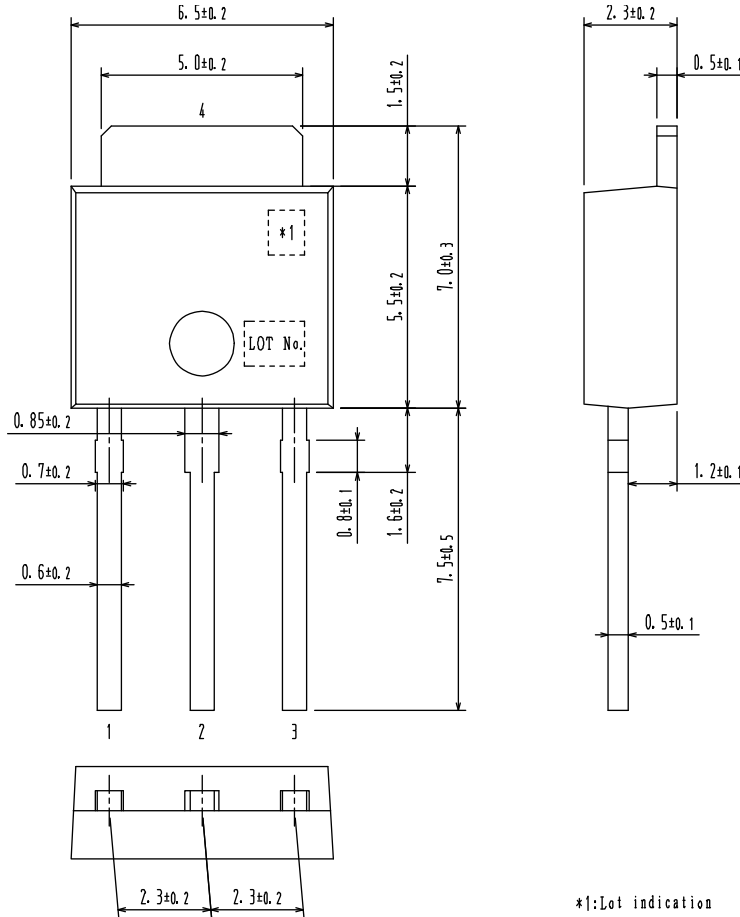
unit : mm

1:Gate

2:Drain

3:Source

4:Drain



Note on usage : Since the NDDP010N25AZ is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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Наши контакты:

Телефон: +7 812 627 14 35

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Промышленная ул, дом № 19, литера Н,
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