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# NDDP010N25AZ

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

### Features

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

### Specifications

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

Parameter	Symbol	Value	Unit
Drain to Source Voltage	$V_{DSS}$	250	V
Gate to Source Voltage	$V_{GSS}$	$\pm 30$	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)

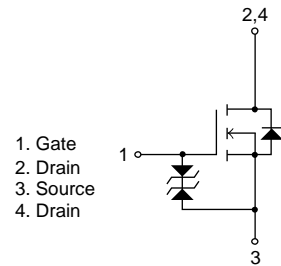
\*2 Insertion mounted

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.

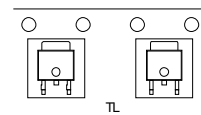
### Ordering & Package Information

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	

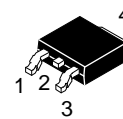
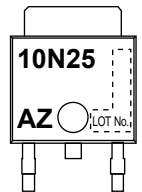
### Electrical Connection



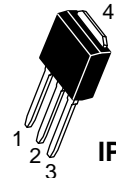
### Packing Type: TL



### Marking



DPAK



IPAK

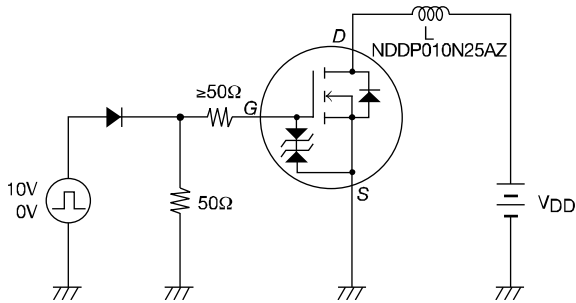
# NDDP010N25AZ

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

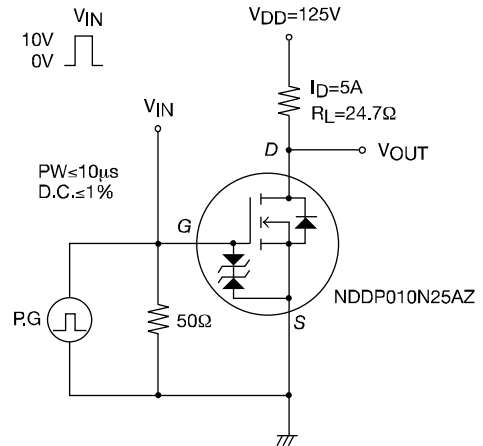
Parameter	Symbol	Conditions	Value			Unit	
			min	typ	max		
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	250			V	
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=250\text{V}, V_{GS}=0\text{V}$			1	$\mu\text{A}$	
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 24\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$	
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	$Q_{rr}$	$I_S=10\text{A}, V_{GS}=0\text{V}, di/dt=100\text{A}/\mu\text{s}$		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.

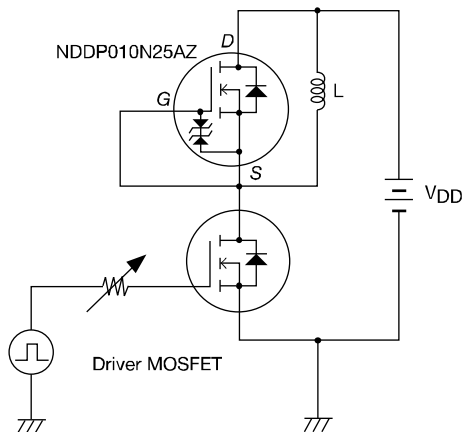
**Fig.1 Unclamped Inductive Switching Test Circuit**



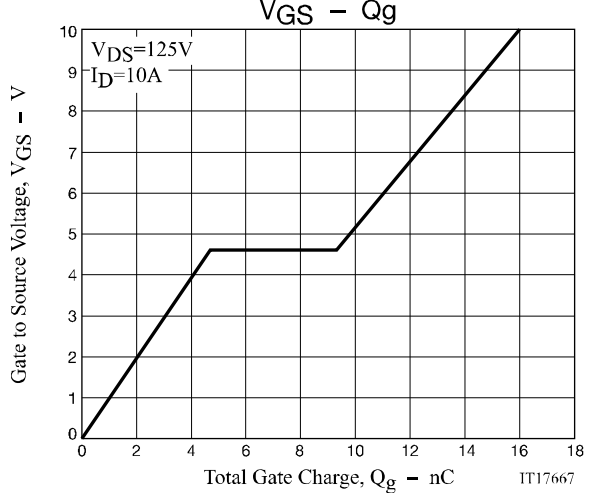
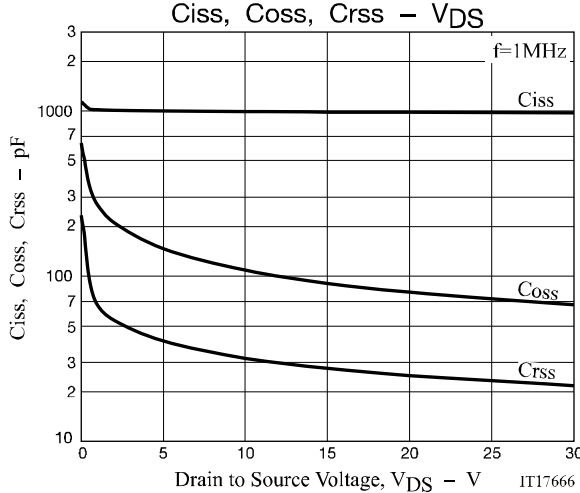
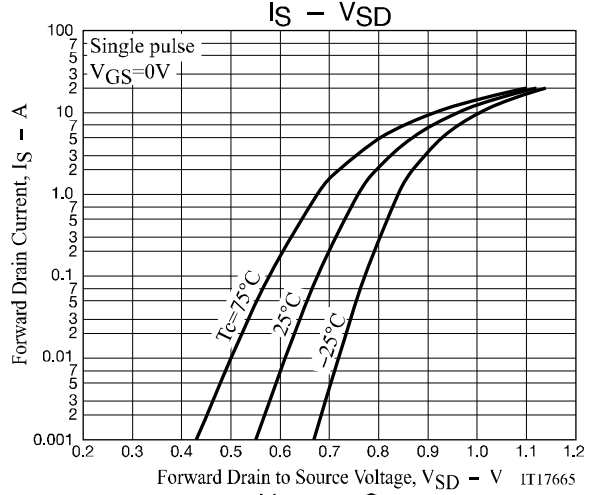
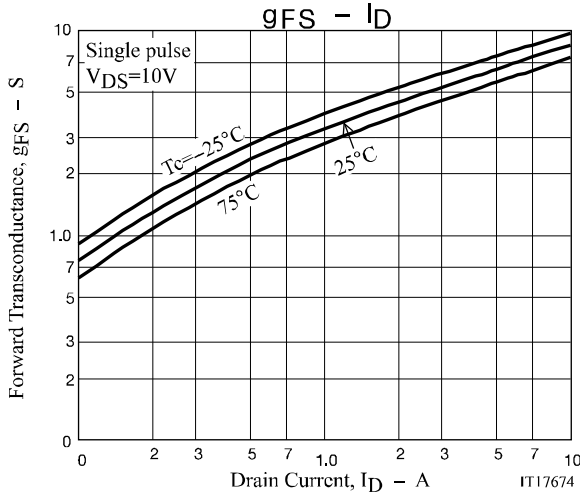
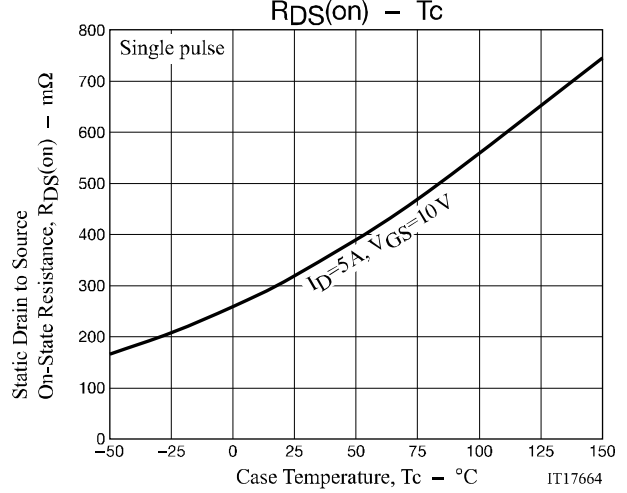
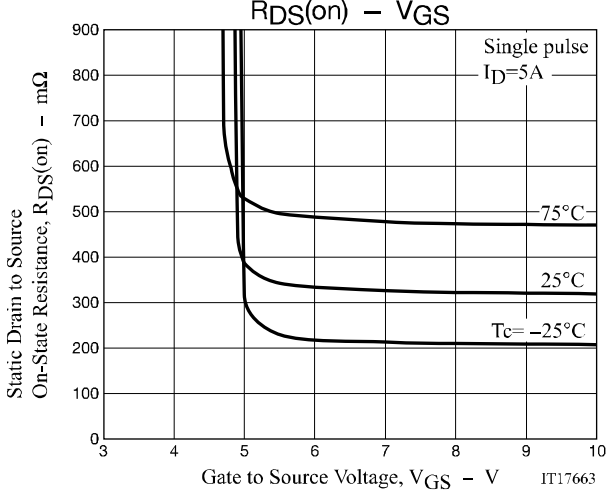
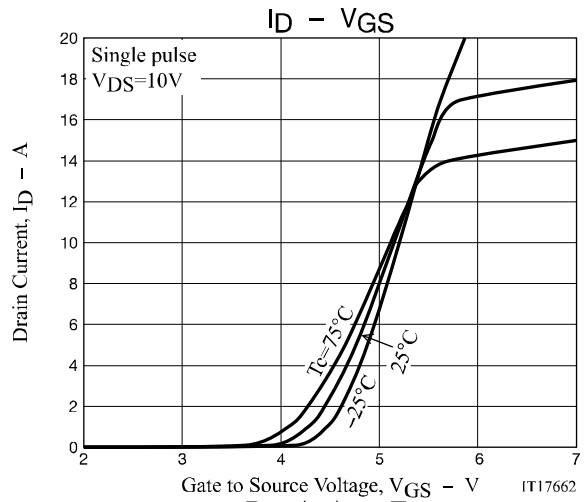
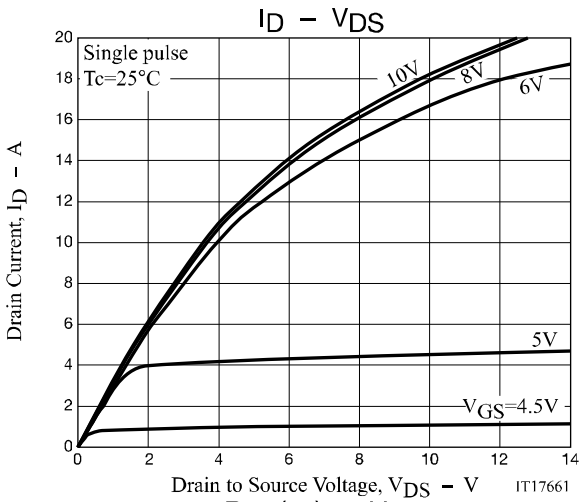
**Fig.2 Switching Time Test Circuit**



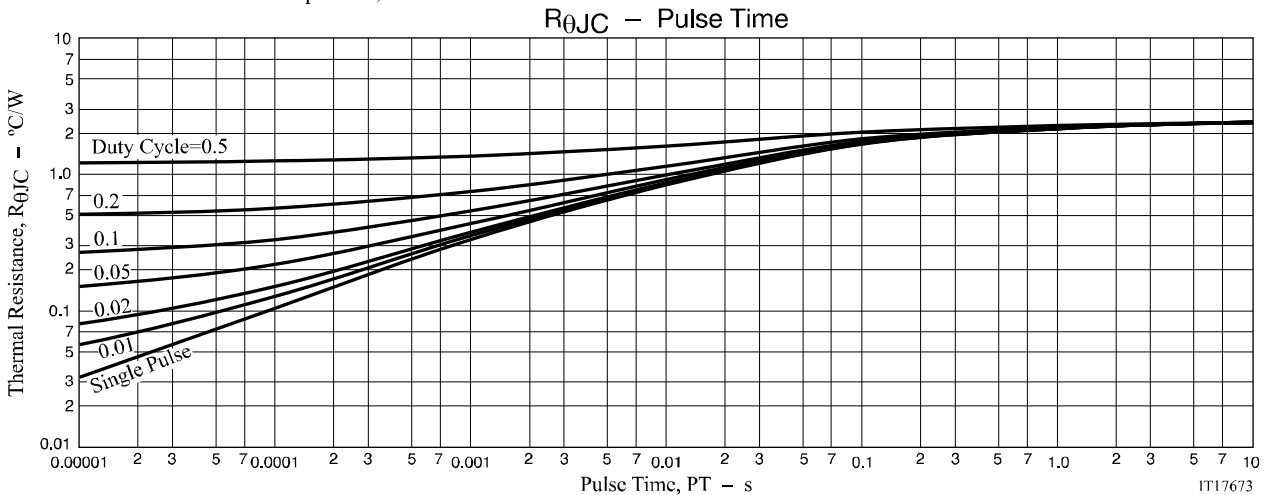
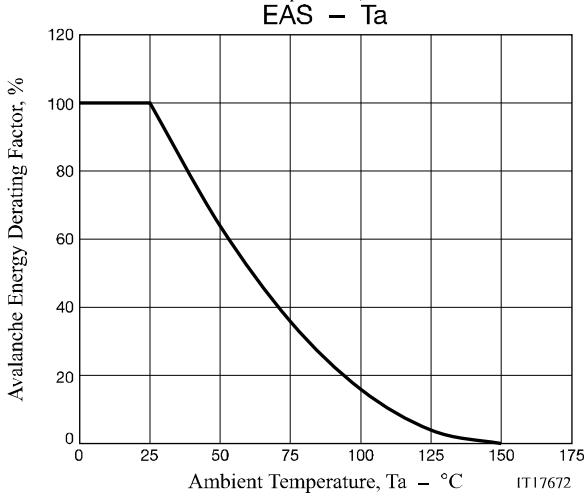
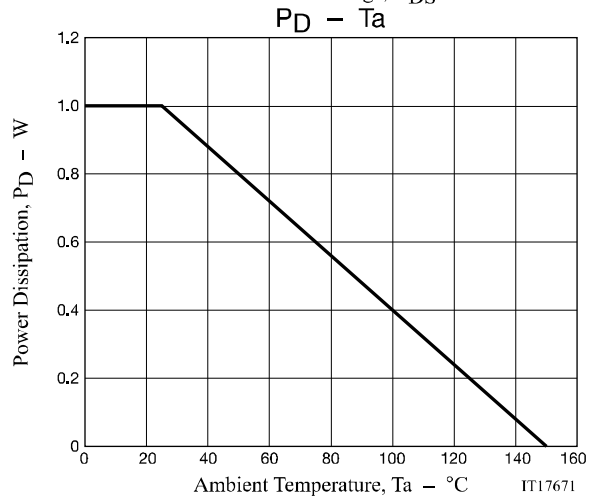
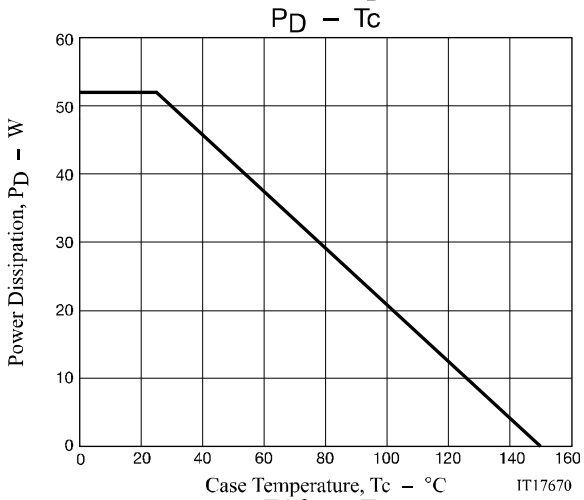
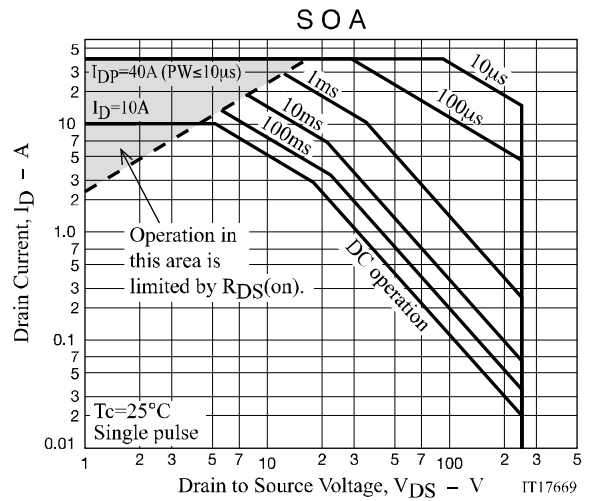
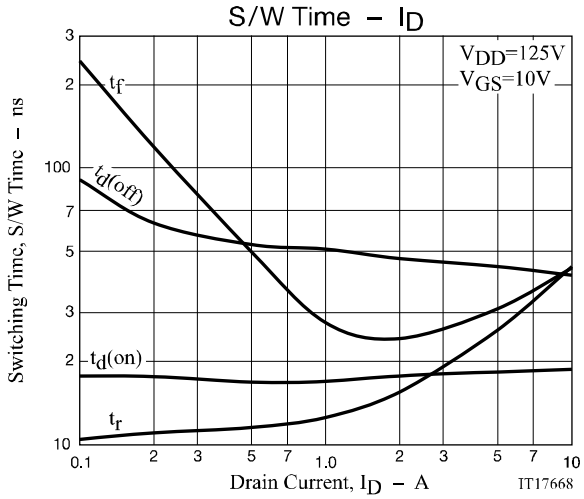
**Fig.3 Reverse Recovery Time Test Circuit**



# NDDP010N25AZ



# NDDP010N25AZ



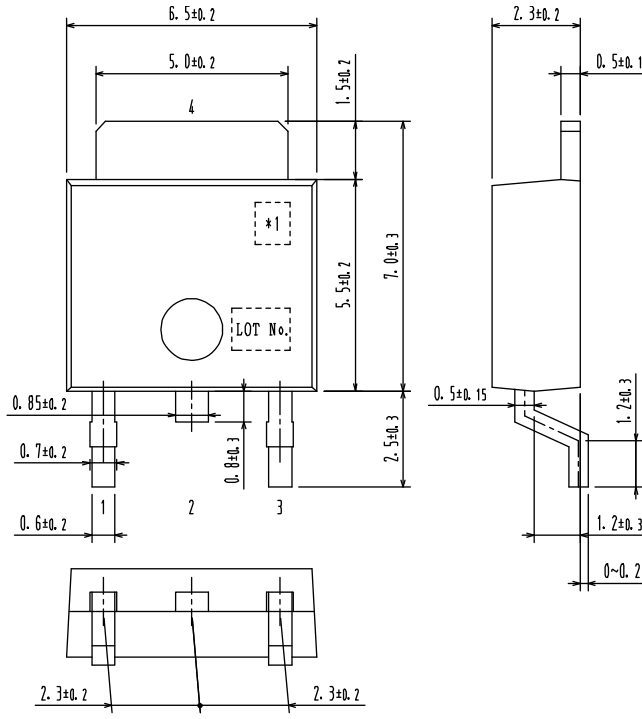
Package Dimensions

NDDP010N25AZT4H

DPAK / TP-FA

unit : mm

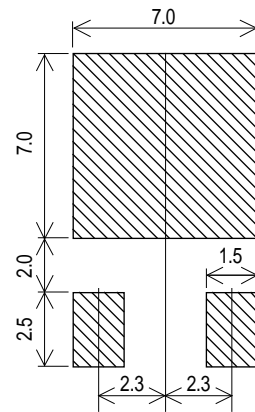
- 1:Gate
- 2:Drain
- 3:Source
- 4:Drain



Pin 2 is idle pin with electrical designation only carried.

\*1:Lot indication

Recommended Soldering Footprint



# NDDP010N25AZ

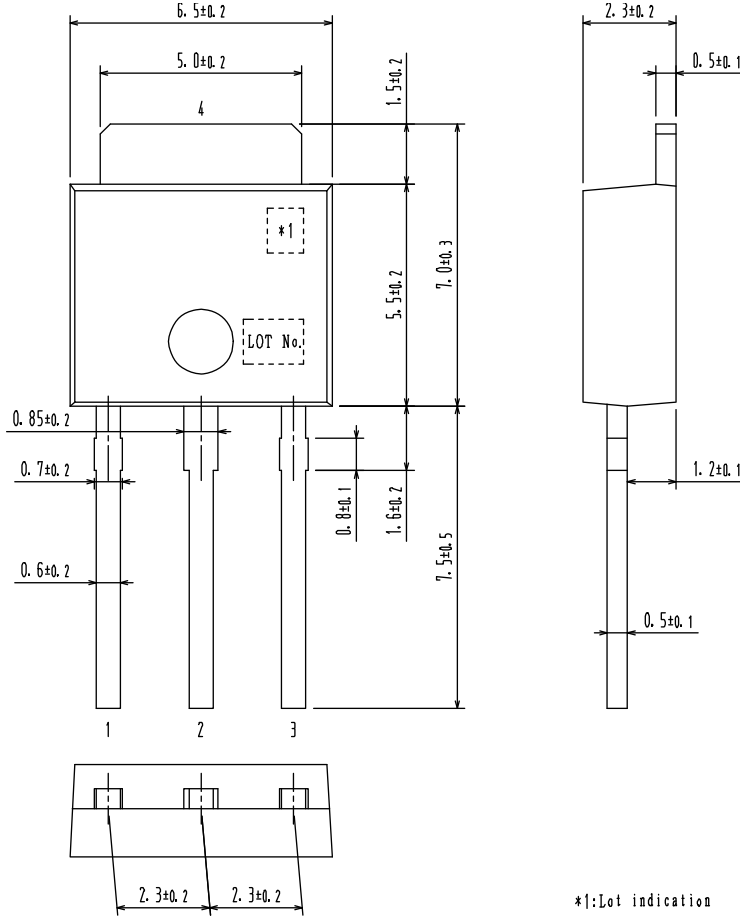
## Package Dimensions

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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