

## **10V Drive Nch MOSFET RCJ330N25**

#### Structure

Silicon N-channel MOSFET

## Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Gate-source voltage
  - $V_{\text{GSS}}$  garanteed to be  $\pm 30 V$  .
- 4) High package power.

 Packaging specifications Package

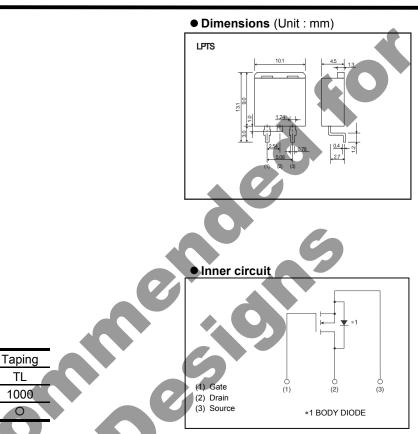
Code

#### Application

Switching

Туре

RCJ330N25



## •Absolute maximum ratings (Ta = 25°C)

Basic ordering unit (pieces)

Paramet	er	Symbol	Limits	Unit
Drain-source voltage		V <sub>DSS</sub>	250	V
Gate-source voltage		V <sub>GSS</sub>	±30	V
Drain current	Continuous	I <sub>D</sub> *3	±33	А
	Pulsed	I <sub>DP</sub> *1	±132	А
Source current	Continuous	I <sub>S</sub> *3	26	А
(Body Diode)	Pulsed	I <sub>SP</sub> *1	104	А
Avalanche current		I <sub>AS</sub> *2	16.5	А
Avalanche energy		E <sub>AS</sub> *2	74.8	mJ
Power dissipation (Tc=	25°C)	PD	211	W
Channel temperature		Tch	150	°C
Range of storage temp	erature	Tstg	-55 to +150	°C

TL

\*1 Pw≤10µs, Duty cycle≤1%

\*2 L $\doteqdot$  500µH, V<sub>DD</sub>=50V, Rg=25 $\Omega$ , starting Tch=25°C

\*3 Limited only by maximum temperature allowed.

#### • Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to Case	Rth(j-c) *	0.59	°C / W

\* T<sub>C</sub>=25°C

### • Electrical characteristics (Ta = 25°C)

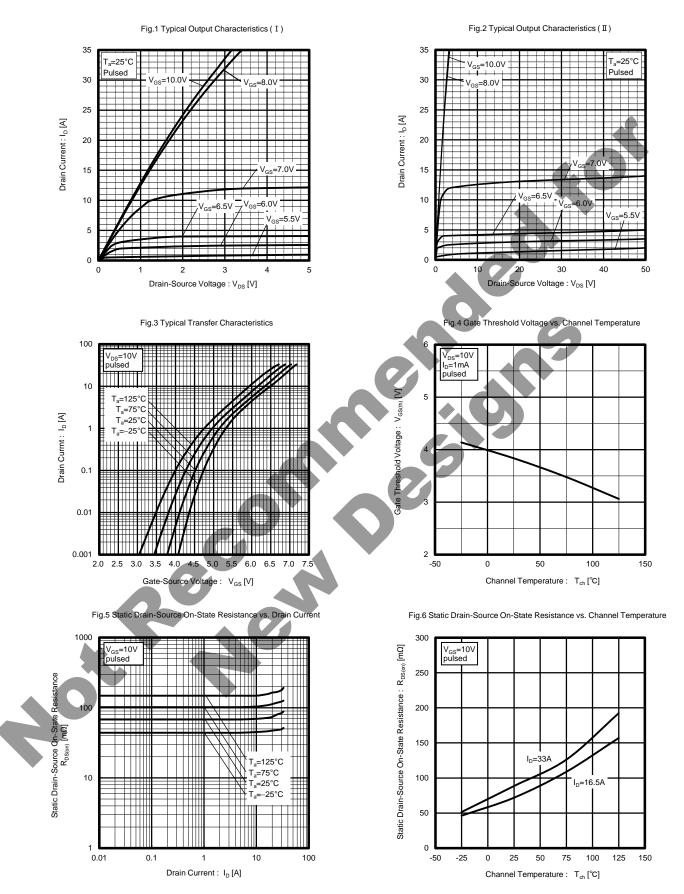
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Gate-source leakage	I <sub>GSS</sub>	-	-	±100	nA	$V_{GS}=\pm 30V, V_{DS}=0V$
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	250	-	-	V	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V
Zero gate voltage drain current	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> =250V, V <sub>GS</sub> =0V
Gate threshold voltage	V <sub>GS (th)</sub>	3	-	5	V	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA
Static drain-source on-state resistance	R <sub>DS (on</sub> *	-	77	105	mΩ	I <sub>D</sub> =16.5A, V <sub>GS</sub> =10V
Forward transfer admittance	I Y <sub>fs</sub> I*	10	20	-	S	I <sub>D</sub> =16.5A, V <sub>DS</sub> =10V
Input capacitance	C <sub>iss</sub>	-	4500	-	pF	V <sub>DS</sub> =25V
Output capacitance	C <sub>oss</sub>	-	220	-	pF	V <sub>GS</sub> =0V
Reverse transfer capacitance	C <sub>rss</sub>	-	130	-	pF	f=1MHz
Turn-on delay time	t <sub>d(on)</sub> *	-	50	-	ns	I <sub>D</sub> =16.5A, V <sub>DD</sub> ≒125V
Rise time	t <sub>r</sub> *	-	200	-	ns	V <sub>GS</sub> =10V
Turn-off delay time	t <sub>d(off)</sub> *	-	120	-	ns	R <sub>L</sub> =7.6Ω
Fall time	t <sub>f</sub> *	-	140	-	ns	R <sub>G</sub> =10Ω
Total gate charge	Q <sub>g</sub> *	-	80	-	nC	I <sub>D</sub> =33A,
Gate-source charge	Q <sub>gs</sub> *	-	25	-	nC	V <sub>DD</sub> ≒125V
Gate-drain charge	Q <sub>gd</sub> *	-	27	-	nC	V <sub>GS</sub> =10V

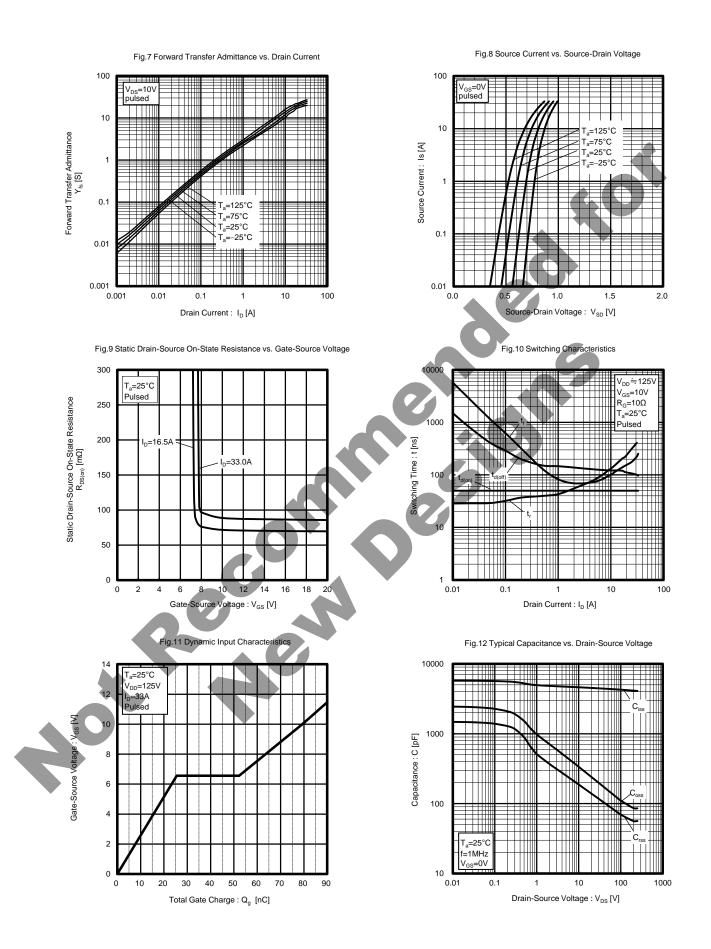
\*Pulsed

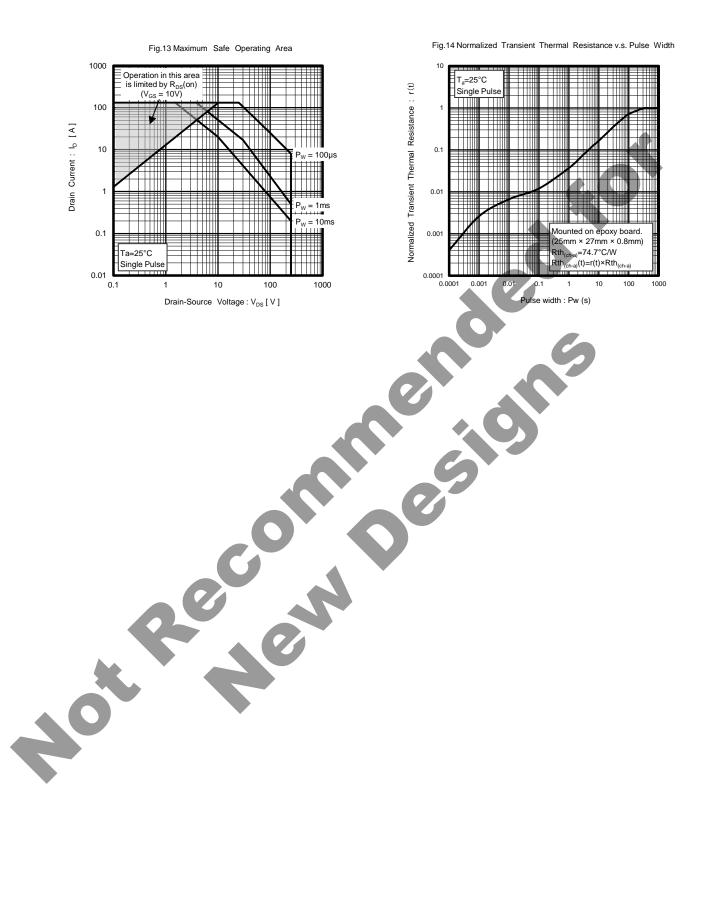
#### •Body diode characteristics (Source-Drain) (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Forward Voltage	V <sub>SD</sub> *	-		1.5	V I <sub>s</sub>	=33A, V <sub>GS</sub> =0V
*Pulsed		0				

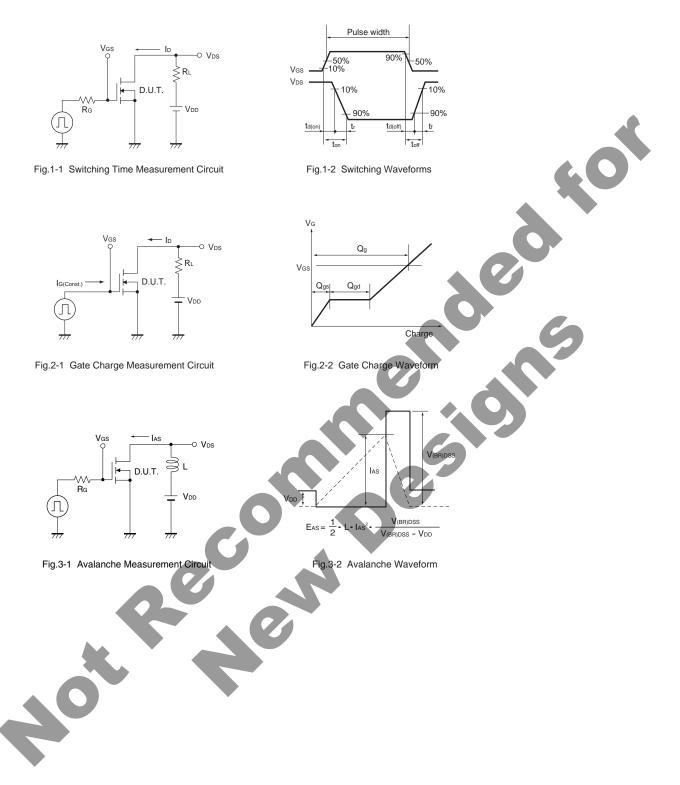
#### •Electrical characteristic curves (Ta=25°C)







#### • Measurement circuits



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(Note1)	Medical	Equi	pment Classifi	cation of the	Spec	ific Applications	
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CLASSⅣ	CLASSII	CLASSⅢ	- CLASSII

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  - [f] Sealing or coating our Products with resin or other coating materials
  - [g] Use of our Products without cleaning residue of flux (even if you use no-clean type fluxes, cleaning residue of flux is recommended); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
  - [h] Use of the Products in places subject to dew condensation
- 4. The Products are not subject to radiation-proof design.
- 5. Please verify and confirm characteristics of the final or mounted products in using the Products.
- 6. In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power, exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

De-rate Power Dissipation (Pd) depending on Ambient temperature (Ta). When used in sealed area, confirm the actual ambient temperature.

- 8. Confirm that operation temperature is within the specified range described in the product specification.
- 9. ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

#### Precaution for Mounting / Circuit board design

- 1. When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- 2. In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

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- 1. If change is made to the constant of an external circuit, please allow a sufficient margin considering variations of the characteristics of the Products and external components, including transient characteristics, as well as static characteristics.
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#### **Precaution for Electrostatic**

This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of lonizer, friction prevention and temperature / humidity control).

#### **Precaution for Storage / Transportation**

- 1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
  - [a] the Products are exposed to sea winds or corrosive gases, including Cl2, H2S, NH3, SO2, and NO2
  - [b] the temperature or humidity exceeds those recommended by ROHM
  - [c] the Products are exposed to direct sunshine or condensation
  - [d] the Products are exposed to high Electrostatic
- 2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
- 3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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QR code printed on ROHM Products label is for ROHM's internal use only.

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