N-Channel Depletion-Mode MOSFET

Ordering Information

BV_{DSX} / BV_{DGX}	$R_{DS(ON)}$ (max)	I_{DSS} (min)	Order Number / Package
			TO-236AB*
500V	1.0KΩ	1.0mA	LND250K1

*Same as SOT-23. All units shipped on 3,000 piece carrier tape reels.

Product marking for SOT-23:

NDE✻

where ✻ = 2-week alpha date code

Features

- ❏ ESD gate protection
- ❏ Free from secondary breakdown
- ❏ Low power drive requirement
- ❏ Ease of paralleling
- ❏ Excellent thermal stability
- ❏ Integral source-drain diode
- ❏ High input impedance and low C_{ISS}

Advanced DMOS Technology

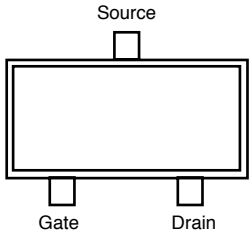
The LND2 is a high voltage N-channel depletion mode (normally-on) transistor utilizing Supertex's lateral DMOS technology. The gate is ESD protected.

The LND2 is ideal for high voltage applications in the areas of normally-on switches, precision constant current sources, voltage ramp generation and amplification.

Applications

- ❏ Solid state relays
- ❏ Normally-on switches
- ❏ Converters
- ❏ Power supply circuits
- ❏ Constant current sources
- ❏ Input protection circuits

Package Options



TO-236AB

(SOT-23)

top view

Note: See Package Outline section for dimensions.

Absolute Maximum Ratings

Drain-to-Source Voltage	BV_{DSX}
Drain-to-Gate Voltage	BV_{DGX}
Gate-to-Source Voltage	±20V
Operating and Storage Temperature	-55°C to +150°C
Soldering Temperature*	300°C

* Distance of 1.6 mm from case for 10 seconds.

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Thermal Characteristics

Package	I_D (continuous)*	I_D (pulsed)	Power Dissipation @T_A = 25°C	θ_{jc} °C/W	θ_{ja} °C/W	I_{DR}	I_{DRM}*
TO-236AB	13mA	30mA	0.36W	200	350	13mA	30mA

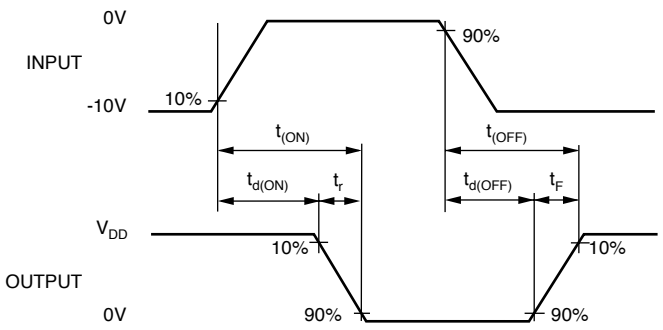
* I_D (continuous) is limited by max rated T_j.

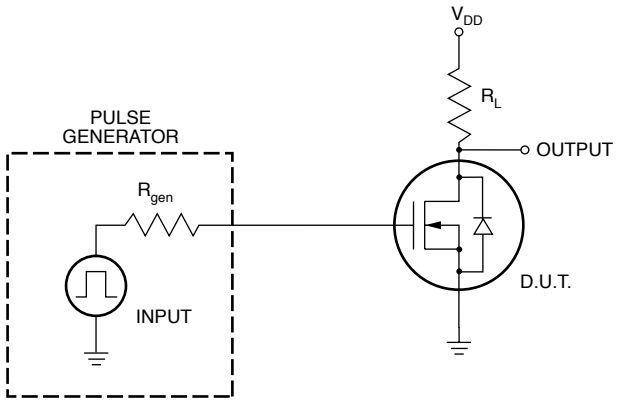
Electrical Characteristics (@ 25°C unless otherwise specified)

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
BV_{DSX}	Drain-to-Source Breakdown Voltage	500			V	V_{GS} = -10V, I_D = 1.0mA
$V_{GS(OFF)}$	Gate-to-Source OFF Voltage	-1.0		-3.0	V	V_{DS} = 25V, I_D = 100nA
$\Delta V_{GS(OFF)}$	Change in $V_{GS(OFF)}$ with Temperature			5.0	mV/°C	V_{DS} = 25V, I_D = 100nA
I_{GSS}	Gate Body Leakage Current			100	nA	V_{GS} = ±20V, V_{DS} = 0V
$I_{D(OFF)}$	Drain-to-Source Leakage Current			100	nA	V_{GS} = -10V, V_{DS} = 450V
				100	µA	V_{GS} = -10V, V_{DS} = 0.8V max rating, T_A =125°C
I_{DSS}	Saturated Drain-to-Source Current	1.0		3.0	mA	V_{GS} = 0V, V_{DS} = 25V
$R_{DS(ON)}$	Static Drain-to-Source ON-State Resistance		850	1K	Ω	V_{GS} = 0V, I_D = 0.5mA
$\Delta R_{DS(ON)}$	Change in $R_{DS(ON)}$ with Temperature			1.2	%/°C	V_{GS} = 0V, I_D = 0.5mA
G_{FS}	Forward Transconductance	1.0	2.0		m℧	V_{GS} = 0V, I_D = 1.0mA
C_{ISS}	Input Capacitance		7.5	10	pF	V_{GS} = -10V, V_{DS} = 25V, f = 1MHz
C_{OSS}	Output Capacitance		2.0	3.5		
C_{RSS}	Reverse Transfer Capacitance		0.5	1.0		
$t_{d(ON)}$	Turn-ON Delay Time		0.09		µs	V_{DD} = 25V, I_D = 1.0mA, R_{GEN} = 25Ω
tr	Rise Time		0.45			
$t_{d(OFF)}$	Turn-OFF Delay Time		0.1			
t_f	Fall Time		1.3			
V_{SD}	Diode Forward Voltage Drop			0.9	V	V_{GS} = -10V, I_{SD} = 1.0mA
t_{rr}	Reverse Recovery Time		200		ns	V_{GS} = -10V, I_{SD} = 1.0mA

Notes:
1. All D.C. parameters 100% tested at 25°C unless otherwise stated. (Pulse test: 300µs pulse, 2% duty cycle.)
2. All A.C. parameters sample tested.

Switching Waveforms and Test Circuit





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