**New Product** 



**Ordering Information** 

BV <sub>DSX</sub> /	R <sub>DS(ON)</sub>	I <sub>DSS</sub>	Order Number / Package		
BV <sub>DGX</sub>	(max)	(min)	Die*		
250V	20Ω	200mA	DN3125NW		

<sup>\*</sup> Die in wafer form.

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High input impedance
Low input capacitance
Fast switching speeds
Low on resistance
Free from secondary breakdown
Low input and output leakage

A	pplications
	Normally-on switches
	Solid state relays
	Converters
	Linear amplifiers
	Constant current sources
	Power supply circuits
П	Telecom

# **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

### Advanced DMOS Technology

These low threshold depletion-mode (normally-on) transistors utilize an advanced vertical DMOS structure and Supertex's well-proven silicon-gate manufacturing process. This combination produces devices with the power handling capabilities of bipolar transistors and with the high input impedance and positive temperature coefficient inherent in MOS devices. Characteristic of all MOS structures, these devices are free from thermal runaway and thermally-induced secondary breakdown.

Supertex's vertical DMOS FETs are ideally suited to a wide range of switching and amplifying applications where high breakdown voltage, high input impedance, low input capacitance, and fast switching speeds are desired.

### 03/03/99

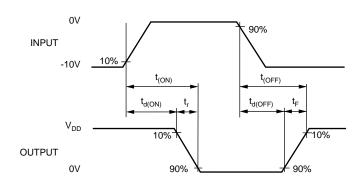
## Electrical Characteristics (@ 25°C unless otherwise specified)

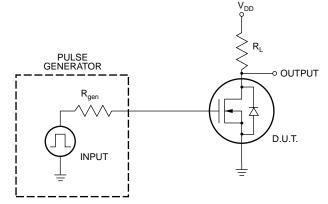
Symbol	Parameter	Min	Тур	Max	Unit	Conditions
BV <sub>DSX</sub>	Drain-to-Souce Breakdown Voltage	250			V	$V_{GS} = -5.0V, I_{D} = 100\mu A$
V <sub>GS(OFF)</sub>	Gate-to-Source OFF Voltage	-1.5		-3.5	V	$V_{DS} = 15V, I_{D} = 10\mu A$
$\Delta V_{GS(OFF)}$	Change in V <sub>GS(OFF)</sub> with Temperature			4.5	mV/°C	$V_{DS} = 15V, I_{D} = 10\mu A$
I <sub>GSS</sub>	Gate Body Leakage Current			100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
I <sub>D(OFF)</sub>	Drain-to-Source Leakage Current			1.0	μΑ	$V_{GS} = -5.0V$ , $V_{DS} = Max$ Rating
				1.0	mA	$V_{GS} = -5.0V, V_{DS} = 0.8 \text{ Max Rating} $ $T_A = 125 ^{\circ}\text{C}$
I <sub>DSS</sub>	Saturated Drain-to-Source Current	200			mA	$V_{GS} = 0V$ , $V_{DS} = 15V$
R <sub>DS(ON)</sub>	Static Drain-to-Source ON-State Resistance			20	Ω	$V_{GS} = 0V, I_{D} = 150 \text{mA}$
				20		$V_{GS} = -0.8V, I_{D} = 50mA$
$\Delta R_{DS(ON)}$	Change in R <sub>DS(ON)</sub> with Temperature			1.1	%/°C	$V_{GS} = 0V, I_{D} = 150 \text{mA}$
G <sub>FS</sub>	Forward Transconductance	150			mΩ	$I_{D} = 100 \text{mA}, V_{DS} = 10 \text{V}$
C <sub>ISS</sub>	Input Capacitance		60	120	pF	$V_{GS} = -5.0V, V_{DS} = 25V,$ f = 1.0Mhz
C <sub>oss</sub>	Common Source Output Capacitance		6.0	15		
C <sub>RSS</sub>	Reverse Transfer Capacitance		3.0	10		
t <sub>d(ON)</sub>	Turn-ON Delay Time			10	- ns	$V_{DD} = 25V$ ,
t <sub>r</sub>	Rise Time			15		I <sub>D</sub> = 150mA,
t <sub>d(OFF)</sub>	Turn-OFF Delay Time			15		$R_{GEN} = 25\Omega$ ,
t <sub>f</sub>	Fall Time			20		V <sub>GS</sub> = 0V to -10V
V <sub>SD</sub>	Diode Forward Voltage Drop			1.8	V	V <sub>GS</sub> = -5.0V, I <sub>SD</sub> = 150mA
t <sub>rr</sub>	Reverse Recovery Time		800		ns	V <sub>GS</sub> = -5.0V, I <sub>SD</sub> = 150mA

#### Notes

- 1. All D.C. parameters 100% tested at  $25^{\circ}$ C unless otherwise stated. (Pulse test:  $300\mu$ s pulse, 2% duty cycle.)
- 2. All A.C. parameters sample tested.

# **Switching Waveforms and Test Circuit**





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