



## N-Channel Enhancement-Mode Vertical DMOS FETs

### Ordering Information

BV <sub>DSS</sub> / BV <sub>DGS</sub>	R <sub>DS(ON)</sub> (max)	I <sub>D(ON)</sub> (min)	Order Number / Package
			TO-92
80V	4.0Ω	1.5A	VN0808L

### Features

- Free from secondary breakdown
- Low power drive requirement
- Ease of paralleling
- Low C<sub>ISS</sub> and fast switching speeds
- Excellent thermal stability
- Integral Source-Drain diode
- High input impedance and high gain
- Complementary N- and P-channel devices

### Applications

- Motor controls
- Converters
- Amplifiers
- Switches
- Power supply circuits
- Drivers (relays, hammers, solenoids, lamps, memories, displays, bipolar transistors, etc.)

### Absolute Maximum Ratings

Drain-to-Source Voltage	BV <sub>DSS</sub>
Drain-to-Gate Voltage	BV <sub>DGS</sub>
Gate-to-Source Voltage	±30V
Operating and Storage Temperature	-55°C to +150°C
Soldering Temperature*	300°C

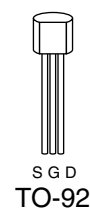
\* Distance of 1.6 mm from case for 10 seconds.

### Advanced DMOS Technology

These enhancement-mode (normally-off) transistors utilize a 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.

### Package Option



Note: See Package Outline section for dimensions.

## Thermal Characteristics

Package	$I_D$ (continuous)*	$I_D$ (pulsed)	Power Dissipation @ $T_C = 25^\circ\text{C}$	$\theta_{jC}$ $^\circ\text{C/W}$	$\theta_{ja}$ $^\circ\text{C/W}$	$I_{DR}^*$	$I_{DRM}$
TO-92	0.3A	1.9A	1W	125	170	0.3A	1.9A

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

## Electrical Characteristics (@ $25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
$BV_{DSS}$	Drain-to-Source Breakdown Voltage	80			V	$I_D = 10\mu\text{A}$ , $V_{GS} = 0\text{V}$
$V_{GS(th)}$	Gate Threshold Voltage	0.8		2.0	V	$V_{GS} = V_{DS}$ , $I_D = 1\text{mA}$
$I_{GSS}$	Gate Body Leakage			100	nA	$V_{GS} = \pm 15\text{V}$ , $V_{DS} = 0\text{V}$
$I_{DSS}$	Zero Gate Voltage Drain Current			10	$\mu\text{A}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 80\text{V}$
				500		$V_{GS} = 0\text{V}$ , $V_{DS} = 0.8 \times \text{Max Rating}$ $T_A = 125^\circ\text{C}$
$I_{D(ON)}$	ON-State Drain Current	1.5			A	$V_{GS} = 10\text{V}$ , $V_{DS} = 10\text{V}$
$R_{DS(ON)}$	Static Drain-to-Source ON-State Resistance			4.0	$\Omega$	$V_{GS} = 10\text{V}$ , $I_D = 1\text{A}$
$G_{FS}$	Forward Transconductance	170			$\text{m}\Omega$	$V_{DS} = 10\text{V}$ , $I_D = 0.5\text{A}$
$C_{ISS}$	Input Capacitance			50	$\text{pF}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$
$C_{OSS}$	Common Source Output Capacitance			40		
$C_{RSS}$	Reverse Transfer Capacitance			10		
$t_{(ON)}$	Turn-ON Time			10	ns	$V_{DD} = 25\text{V}$ , $I_D = 1\text{A}$ $R_{GEN} = 25\Omega$
$t_{(OFF)}$	Turn-OFF Time			10		
$V_{SD}$	Diode Forward Voltage Drop		0.85		V	$I_{SD} = 0.35\text{A}$ , $V_{GS} = 0\text{V}$

### Notes:

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

## Switching Waveforms and Test Circuit

