Depletion-mode MOSFETs can be used either as “normally closed” switches or current sources. This note shows circuits, utilizing depletion mode devices, that will benefit many applications. The main performance features of the circuits and examples of applications are listed. For more applications information on depletion mode MOSFETs, refer to other LND1 and DN25 series application notes.

**High Voltage Regulators and Linear Circuits using LND1**

**High Voltage Protected Regulator**

- ±500V transient protection
- +5 to +500V operation
- Typically 800nA quiescent current
- See application note AN-D17 for details

Telecommunication, automotive, fax machines, off-line control circuits

**Zero Bias Amplifier**

\[ V_{OUT} = V_{DD} - \frac{G_{FS}R_D}{1 + G_{FS}R_S} \cdot V_{IN} \]

- Very high input impedance
- Large output swing
- Instrumentation amplifier for sensors/transducers

**Switchable Bleed Resistor**

- 500V operation
- Saves power

High voltage power supply, lab equipment

**Off-Line Trickle Charger**

- Suitable for single or multiple cells
- High compliance voltage

Hard-wired smoke alarms, burglar alarms, security systems

LND1 Series
Application Note
AN-D16

Supertex inc.
Off-Line Voltage Reference

- Universal input
- Resistor values determine voltage references
- See application note AN-D10 for details

Instrumentation, VCRs, televisions, ATEs

High Voltage Ramp Generator

- High linearity
- Adjustable slope
- See application note AN-D12 for details

Piezo transducer drivers, measuring instruments, soft start controls

High Voltage Protection

- ±500V protection
- Stack for ±1000V or higher
- Current limiter
- See application note AN-D11 for details

Handheld meters, lab instruments, data communication lines, resettable fuses

High Voltage High Gain Amplifier

- High input impedance
- Up to 500 V operation
- Over 60dB gain

High voltage linear regulators, instrumentation amplifiers, piezo transducer drivers