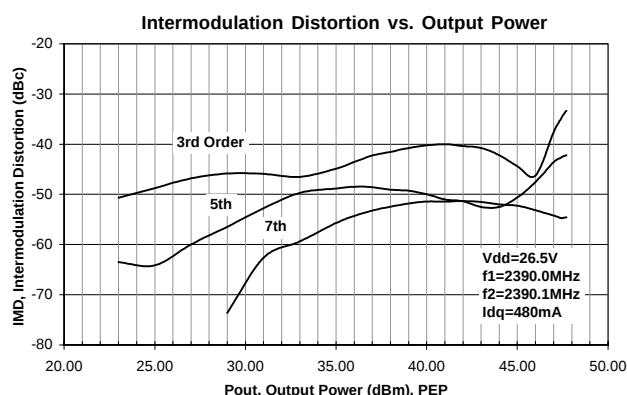


## Product Description

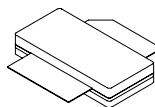
The SL-4522 is Stanford Microdevices' high-linearity 45W LDMOS transistor designed for base station applications at or near 2200 MHz. Rated for minimum output power of 45W, it is ideal for CDMA, TDMA, GSM, FM, Single or Multi-Carrier Power Amplifiers in Class A or AB operation.

Patented LDMOS Technology is used to achieve high performance and reliability at a low cost. Dual nitride passivation and gold metallization ensure excellent device performance and reliability.

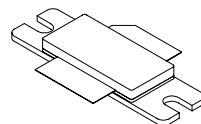


## SL-4522

### 2200 MHz 45W Broadband 26.5V RF Power N-Channel Enhancement Mode LDMOS



Model SL-45221



Model SL-45222

Available in pill or flange ceramic packages

## Product Features

- Patented, High Reliability LDMOS Technology
- Low intermodulation distortion: -30dBc at 45W (PEP).
- Industry Standard Packages
- Gold Metalization, Gold Bond Wires

## Applications

- CDMA, TDMA, GSM, FM
- Single/Multi-Carrier Applications in Class A or AB operation

## RF and Functional Tests

(Tc=25°C unless otherwise specified, Stanford Microdevices broadband fixture)

| Symbol           | Rating                                                                                                                                             | Unit | Min  | Typ | Max |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------|------|-----|-----|
| G <sub>pln</sub> | Linear Power Gain, Single Tone (CW)<br>(V <sub>ds</sub> =26.5V, I <sub>dq</sub> =480mA, P <sub>out</sub> =10W, f=2150 MHz)                         | dB   | 7.5  | 9.5 | -   |
| G <sub>ps</sub>  | Compressed Power Gain, Single Tone (CW)<br>(V <sub>ds</sub> =26.5V, I <sub>dq</sub> =480mA, P <sub>out</sub> =45W, f=2150 MHz)                     | dB   | 7.0  | 8.5 | -   |
| $\eta$           | Drain Efficiency, Single Tone (CW)<br>(V <sub>ds</sub> =26.5V, I <sub>dq</sub> =480mA, P <sub>out</sub> =45W, f=2150 MHz)                          | %    | 22   | 28  | -   |
| IMD              | Intermodulation Distortion, Two Tone<br>(V <sub>ds</sub> =26.5V, I <sub>dq</sub> =480mA, P <sub>out</sub> =45W PEP,<br>f1=2150 MHz, f2=2150.1 MHz) | dBc  | -    | -32 | -30 |
| VSWR             | Load Mismatch Survivability<br>(V <sub>ds</sub> = 26.5V, I <sub>dq</sub> = 480mA, P <sub>out</sub> =45W, f=2150 MHz)                               | -    | 10:1 | -   | -   |

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Phone: (800) SMI-MMIC

<http://www.stanfordmicro.com>
<http://www.LDMOS.com>

**SL-4522 45W, 26.5V N-Channel Enhancement Mode LDMOS****AC Characteristics**

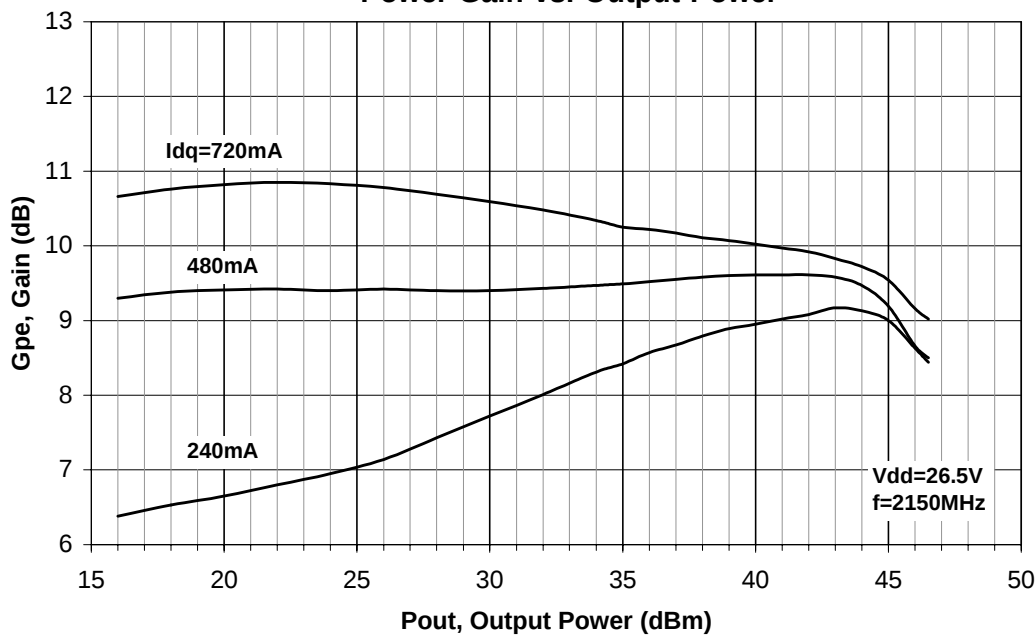
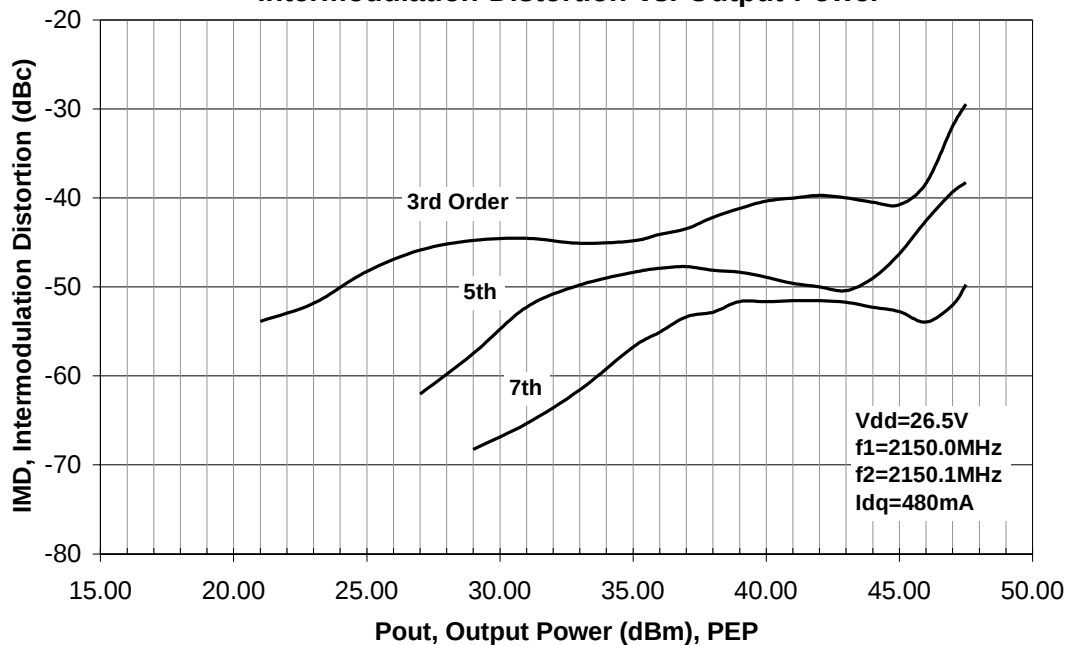
| Symbol | Rating                                            | Unit | Min | Typ | Max |
|--------|---------------------------------------------------|------|-----|-----|-----|
| Coss   | Output Capacitance<br>(Vds=26V, Vgs=0V, f=1MHz)   | pF   | -   | 62  | -   |
| Crss   | Feedback Capacitance<br>(Vds=26V, Vgs=0V, f=1MHz) | pF   | -   | 2.8 | -   |

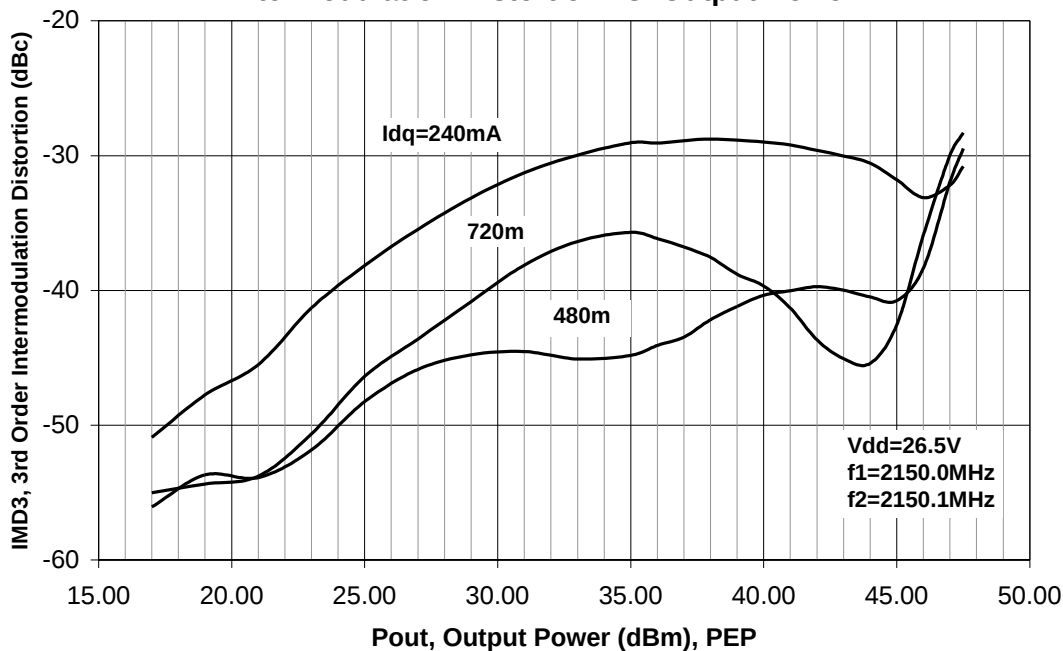
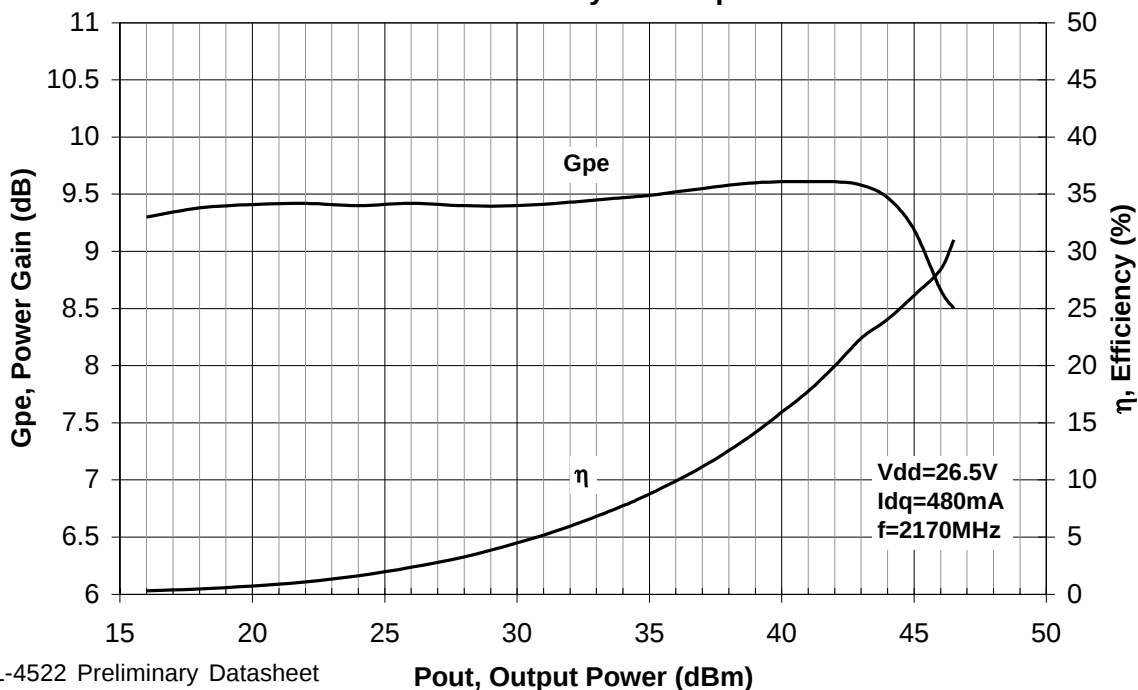
**Electrical DC Characteristics (Tc=25°C unless otherwise specified)**

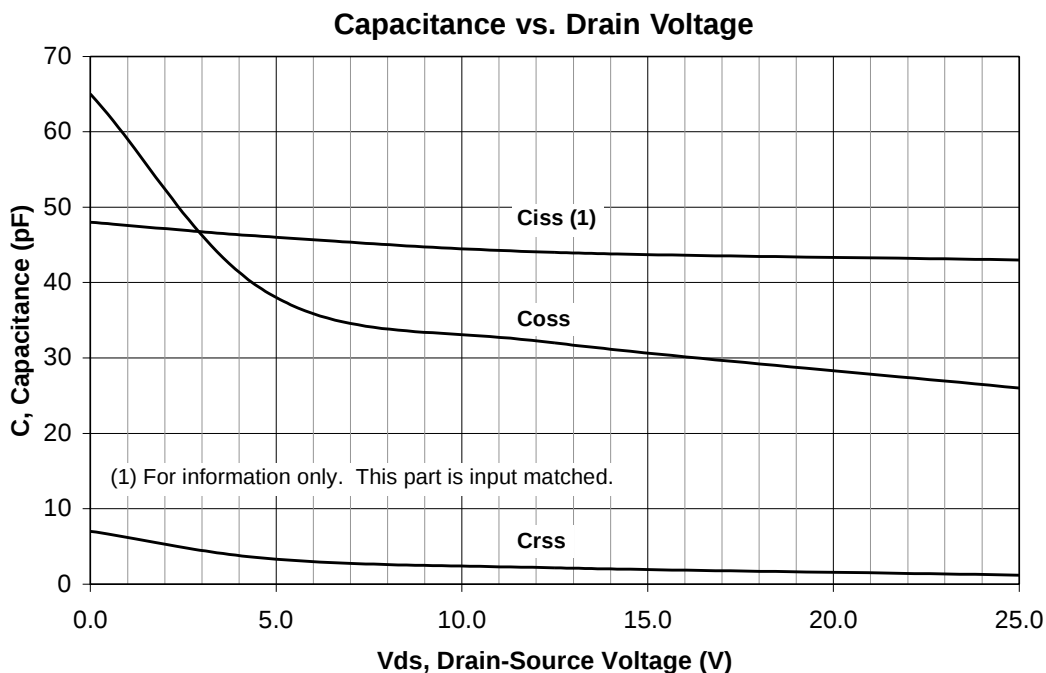
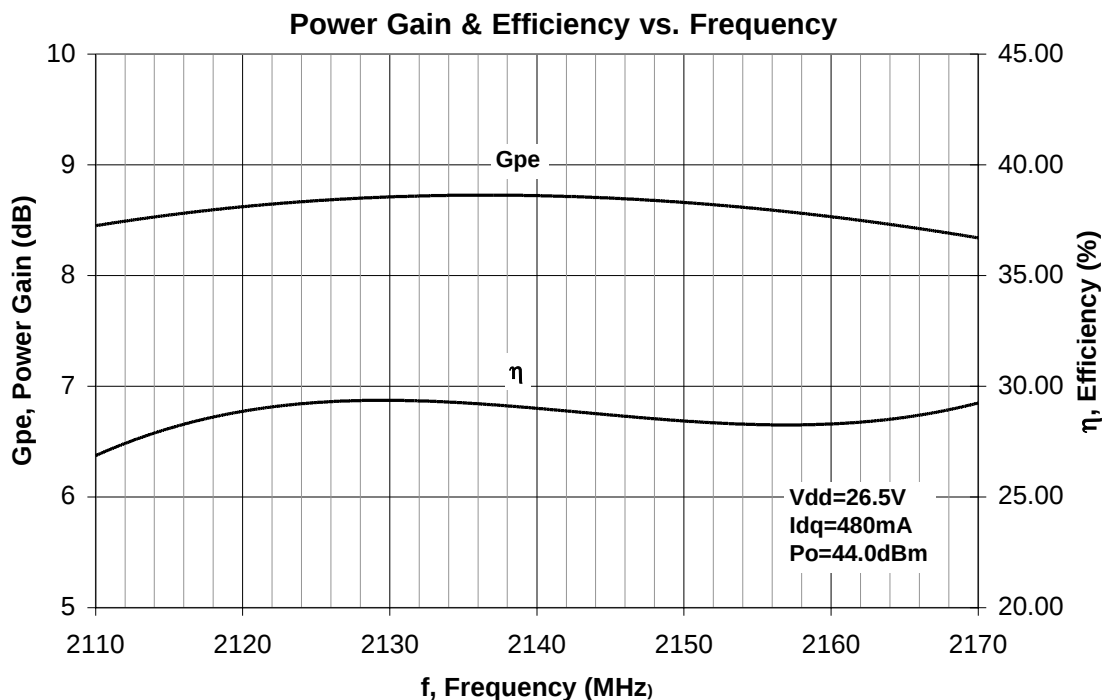
| Symbol   | Characteristics                                                        | Unit  | Min | Typ  | Max |
|----------|------------------------------------------------------------------------|-------|-----|------|-----|
| BVdss    | Drain to Source Voltage, gate connected to source<br>(Vgs=0V, Ids=1mA) | Volts | 65  | -    | -   |
| Idss     | Drain to Source Leakage Current<br>(Vds=28V, Vgs=0)                    | mA    | -   | -    | 2.0 |
| Igss     | Gate to Source Leakage Current<br>(Vgs=20V, Vds=0)                     | uA    | -   | -    | 2.0 |
| Vth      | Threshold Voltage<br>(Vds=10V, Ids=1mA)                                | Volts | 2.0 | 3.0  | 5.0 |
| Vgs (on) | Gate Quiescent Voltage<br>(Vds=26V, Ids=450mA)                         | Volts | 3.0 | 4.0  | 6.0 |
| Vds (on) | Drain to Source On Voltage<br>(Vgs=10V, Ids=1A)                        | Volts | -   | 0.14 | -   |
| Gm       | Forward Transconductance<br>(Vds=10V, Ids=5A)                          | S     | 2.2 | 3.0  | -   |

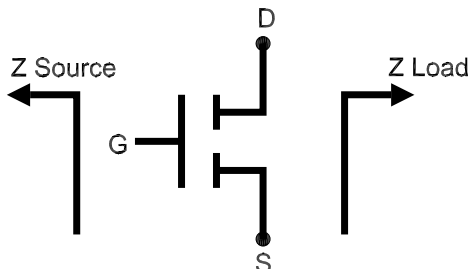
**Thermal Characteristics**

| Symbol | Characteristics                      | Unit | Min | Typ | Max |
|--------|--------------------------------------|------|-----|-----|-----|
| θjc    | Thermal Resistance, Junction to Case | °C/W | -   | -   | 1.3 |

**SL-4522 45W, 26.5V N-Channel Enhancement Mode LDMOS**
**Power Gain vs. Output Power**

**Intermodulation Distortion vs. Output Power**


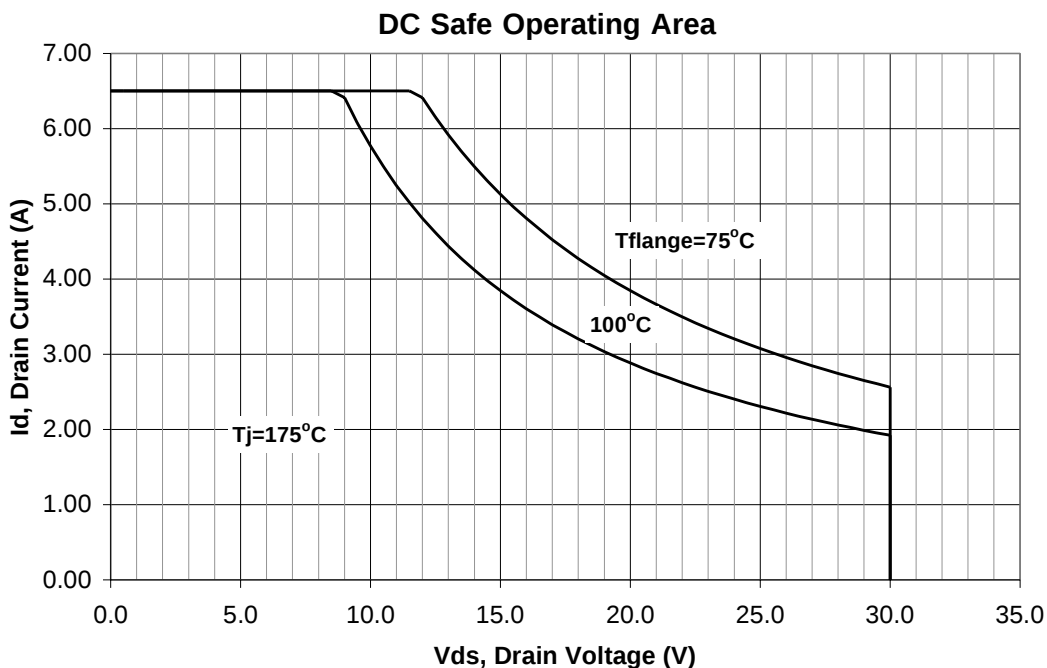
**SL-4522 45W, 26.5V N-Channel Enhancement Mode LDMOS**
**Intermodulation Distortion vs. Output Power**

**Power Gain & Efficiency vs. Output Power**




**SL-4522 45W, 26.5V N-Channel Enhancement Mode LDMOS**


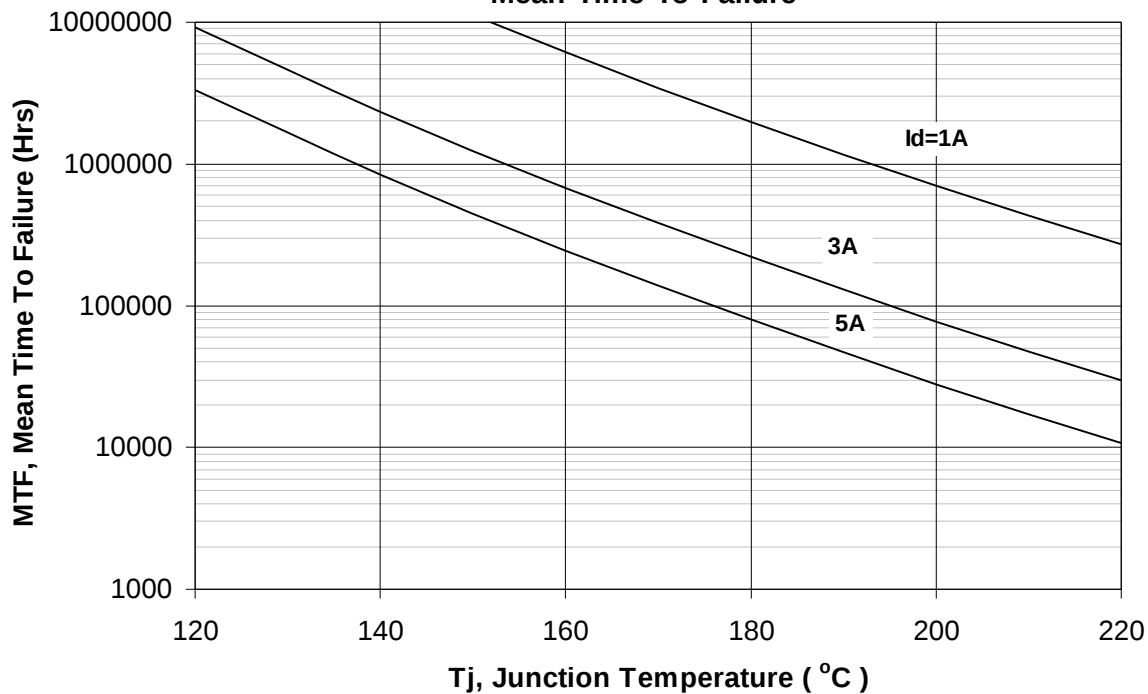
| Frequency<br>MHz | Z Source     | Z Load       |
|------------------|--------------|--------------|
| 2100             | 1.33 - j4.25 | 0.70 - j2.68 |
| 2120             | 1.31 - j4.20 | 0.69 - j2.61 |
| 2140             | 1.29 - j4.15 | 0.68 - j2.55 |
| 2160             | 1.28 - j4.11 | 0.67 - j2.48 |
| 2180             | 1.26 - j4.06 | 0.66 - j2.42 |
| 2200             | 1.24 - j4.02 | 0.65 - j2.35 |

Series Equivalent Input and Output Impedances, V<sub>dd</sub>= 26.5V, I<sub>dq</sub>= 480mA



**SL-4522 45W, 26.5V N-Channel Enhancement Mode LDMOS**

**Mean Time To Failure**



# SL-4522 45W, 26.5V N-Channel Enhancement Mode LDMOS

## Absolute Maximum Ratings

| Rating                                                                 | Symbol            | Value       | Unit          |
|------------------------------------------------------------------------|-------------------|-------------|---------------|
| Drain to Source, gate connected to source                              | BV <sub>dss</sub> | 65          | Volts         |
| Gate to Source Voltage                                                 | BV <sub>gs</sub>  | +/- 20      | Volts         |
| Total Device Dissipation @T <sub>case</sub> =70°C<br>Derate above 70°C | P <sub>d</sub>    | 100<br>0.8  | Watts<br>W/°C |
| Storage Temperature Range                                              | T <sub>stg</sub>  | -65 to +150 | °C            |
| Operating Junction Temperature                                         | T <sub>j</sub>    | 200         | °C            |

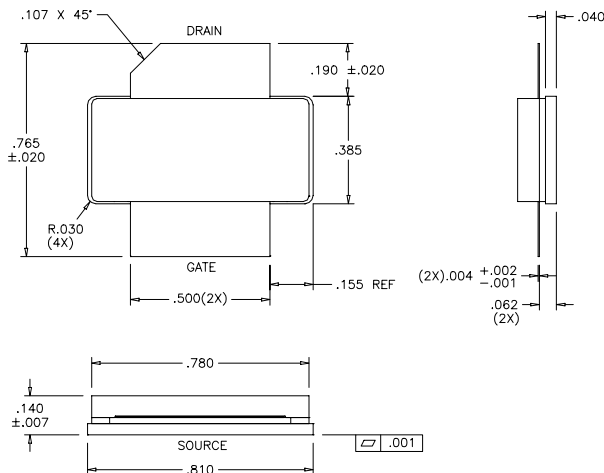
## Part Number Ordering Information

| Part Number | Package | Devices Per Pak |
|-------------|---------|-----------------|
| SL-45221    | Pill    | 25              |
| SL-45222    | Flange  | 25              |

### Caution:

MOS Devices are susceptible to damage from ElectroStatic Discharge (ESD). Appropriate precautions in handling, packaging and testing MOS devices must be observed.

## Pill Package



Note:

- 1) Cut lead identifies drain.
- 2) Dimensions are in inches.
- 3) Tolerances:  
.XX +/- .01  
.XXX +/- .005

## Flange Package

