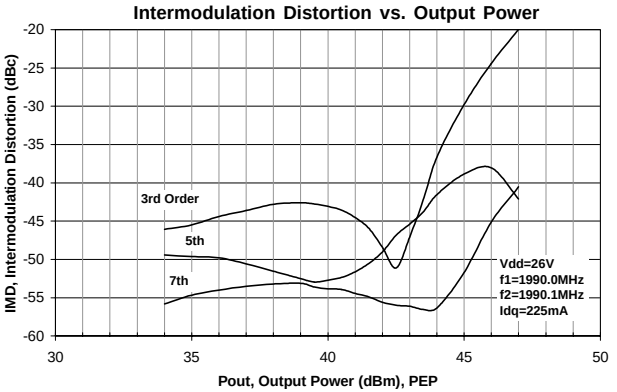
Advance Data Sheet

Product Description

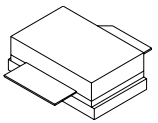
The SL-3020 is Stanford Microdevices' high-linearity 30W LDMOS transistor designed for base station applications at or near 2000 MHz. Rated for minimum output power of 30W, it is ideal for CDMA, TDMA, GSM, FM, Single or Multi-Carrier Power Amplifiers in Class A or AB operation.

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.

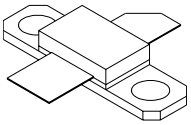


SL-3020

2000 MHz 30W Broadband 26V RF Power N-Channel Enhancement Mode LDMOS



Model SL-30201



Model SL-30202

Available in pill or flange ceramic packages

Product Features

- **Patented, High Reliability LDMOS Technology**
- **Low intermodulation distortion: –30dBc at 30W (PEP)**
- **Industry Standard Packages**
- **Surface-Mountable**

Applications

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

RF and Functional Tests
(Tc=25C unless otherwise specified, Stanford Microdevices broadband fixture)

Symbol	Rating	Unit	Min	Typ	Max
Gplin	Linear Power Gain, Single Tone (CW) (Vds=26V, Idq=300mA, Pout=5W, f=1990 MHz)	dB	8.7	10.0	-
Gps	Compressed Power Gain, Single Tone (CW) (Vds=26V, Idq=300mA, Pout=30W, f=1990 MHz)	dB	8.0	9.3	-
η	Drain Efficiency, Single Tone (CW) (Vds=26V, Idq=300mA, Pout=30W, f=1990 MHz)	%	35	40	-
IMD	Intermodulation Distortion, Two Tone (Vds=26.5V, Idq=300mA, Pout=30W PEP, f1=1990 MHz, f2=1990.1 MHz)	dBc	-	-30	-28
VSWR	Load Mismatch Tolerance (Vds= 26V, Idq=300mA, Pout=30W, f= 1990 MHz)	-	10:1	-	-

SL-3020 30W, 26V N-Channel Enhancement Mode LDMOS

AC Characteristics

Symbol	Rating	Unit	Min	Typ	Max
Ciss	Input Capacitance (Vds=26V, Vgs=0V, f=1MHz)	pF	-	44	-
Coss	Output Capacitance (Vds=26V, Vgs=0V, f=1MHz)	pF	-	26	-
Crss	Feedback Capacitance (Vds=26V, Vgs=0V, f=1MHz)	pF	-	1.2	-

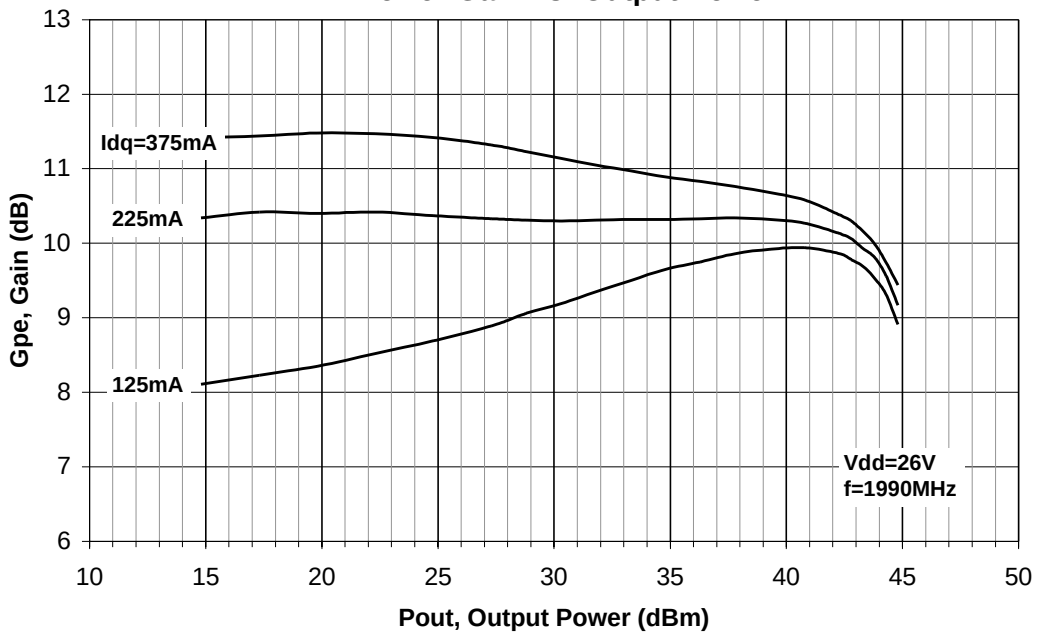
Electrical DC Characteristics(Tc=25°C unless otherwise specified)

Symbol	Characteristics	Unit	Min	Typ	Max
BVdss	Drain to Source Voltage, gate connected to source (Vgs=0V, Ids=1mA)	Volts	65	-	-
Idss	Drain to Source Leakage Current (Vds=28V, Vgs=0)	mA	-	-	1.0
Igss	Gate to Source Leakage Current (Vgs=20V, Vds=0)	uA	-	-	1.0
Vth	Threshold Voltage (Vds=10V, Ids=1mA)	Volts	3.0	3.5	5.0
Vgs (on)	Gate Quiescent Voltage (Vds=26V, Ids=200mA)	Volts	3.0	4.0	6.0
Vds (on)	Drain to Source On Voltage (Vgs=10V, Ids=1A)	Volts	-	0.28	-
Gm	Forward Transconductance (Vds=10V, Ids=5A)	S	1.4	1.8	-

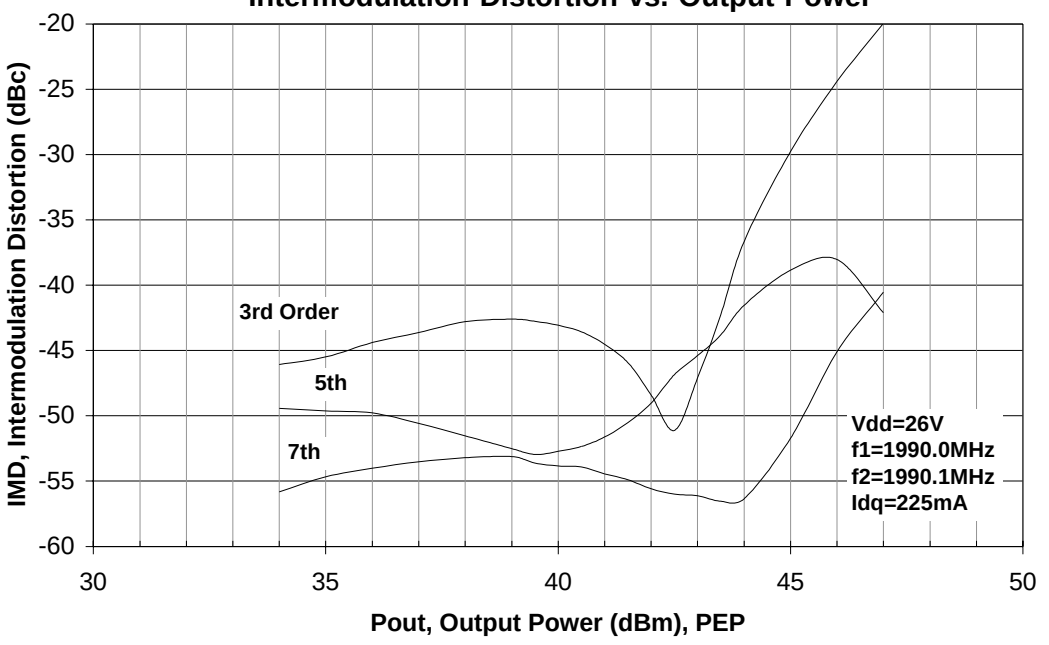
Thermal Characteristics

Symbol	Characteristics	Unit	Min	Typ	Max
Θjc	Thermal Resistance, Junction to Case	°C/W	-	-	2.0

Power Gain vs. Output Power



Intermodulation Distortion vs. Output Power



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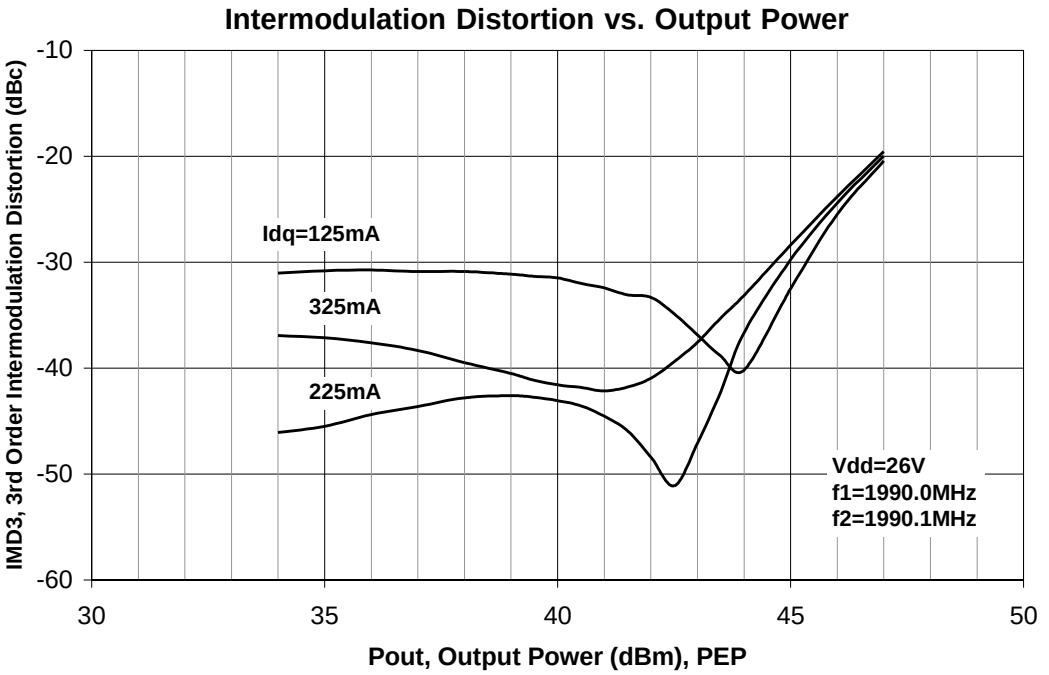
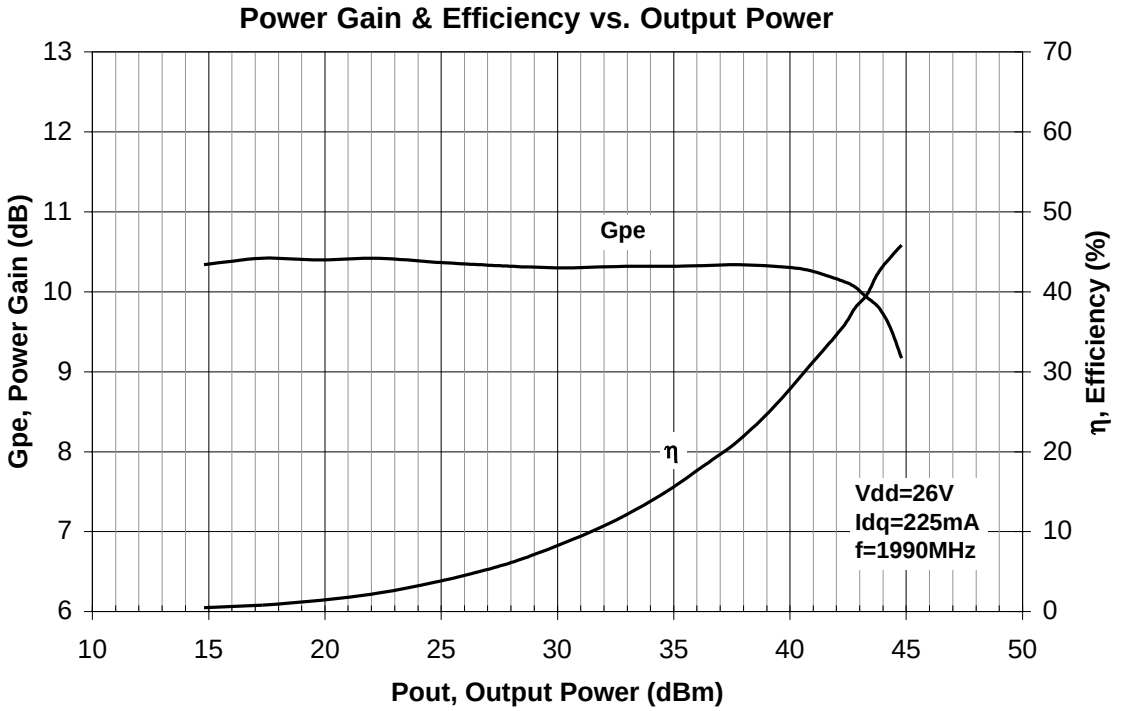
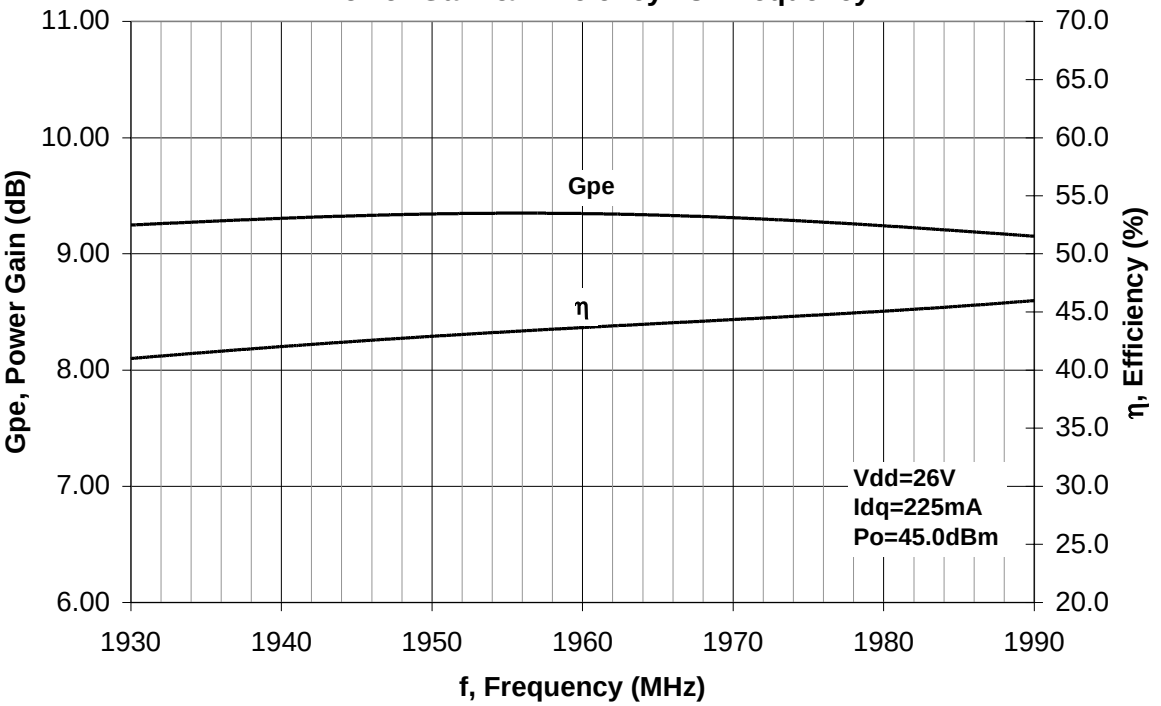
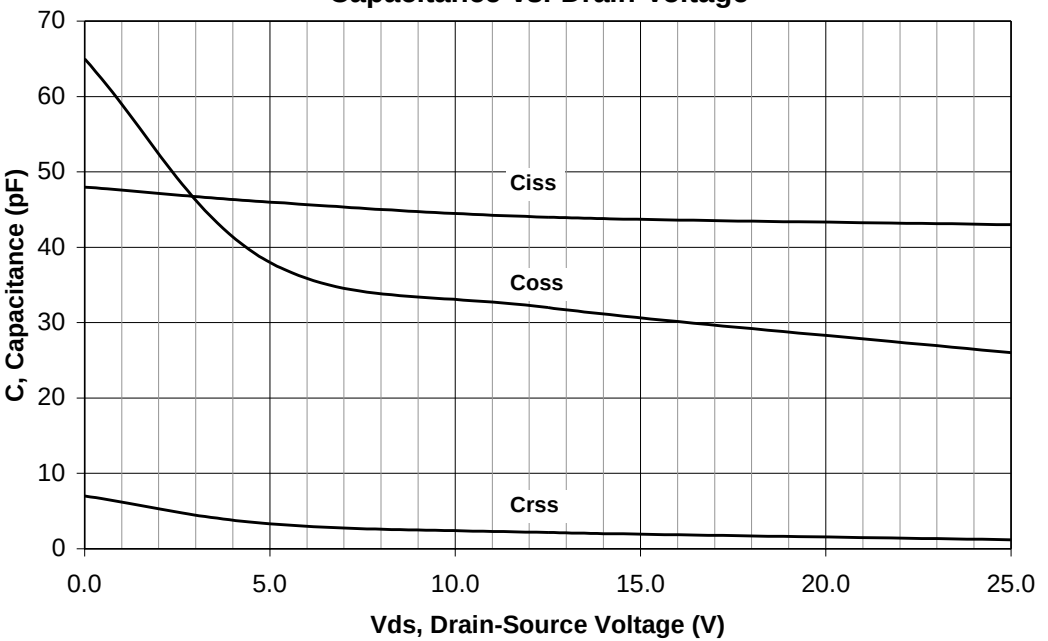




Power Gain & Efficiency vs. Frequency



Capacitance vs. Drain Voltage



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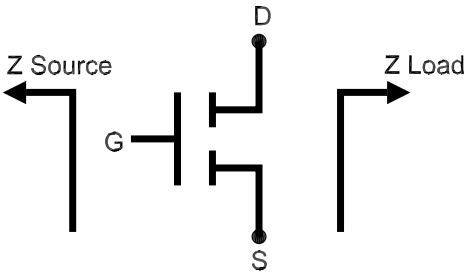
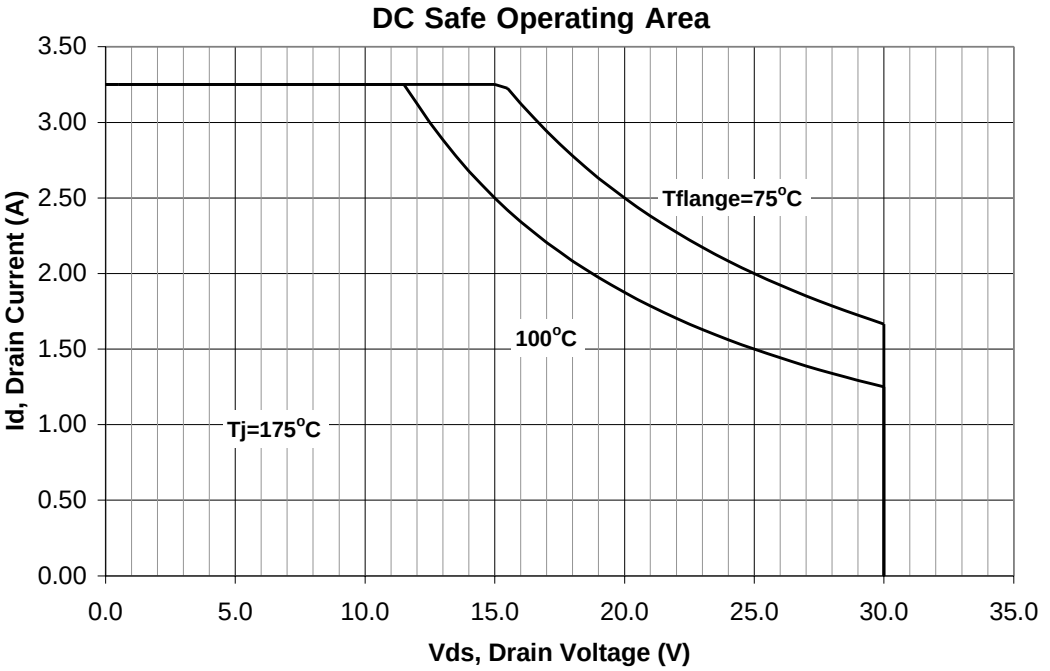
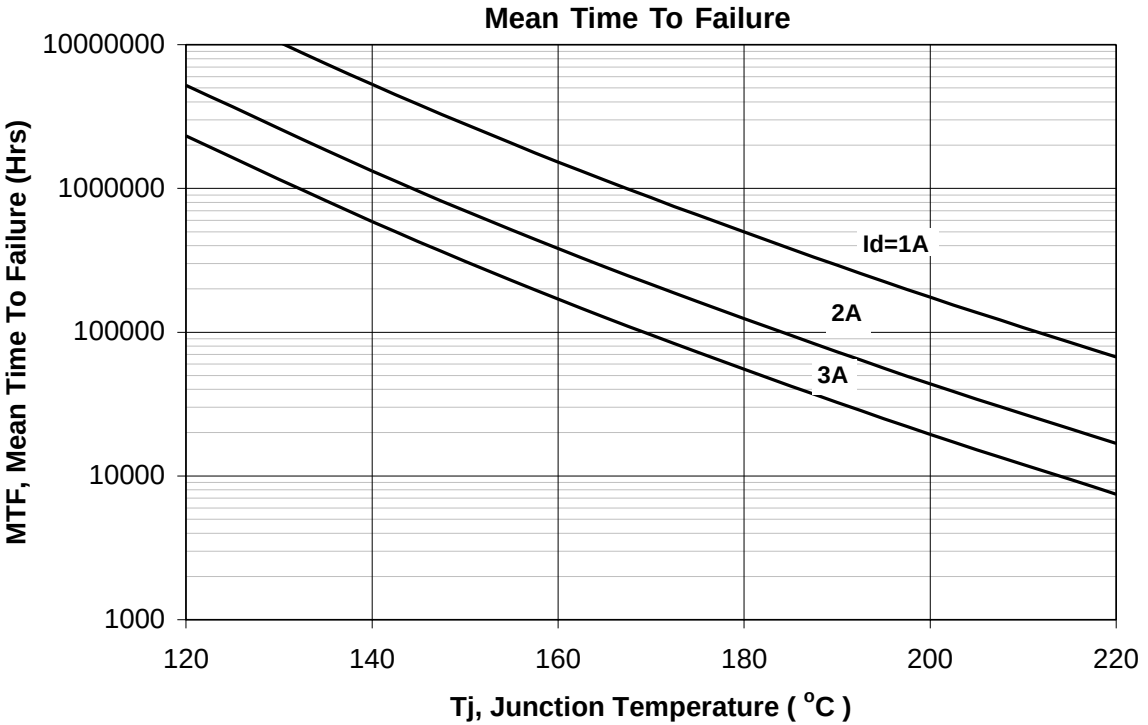


Frequency MHz	Z Source	Z Load
1800	1.30 - j0.80	1.00 - j1.80
1860	1.70 - j1.40	1.20 - j2.50
1930	2.60 - j2.00	1.50 - j3.40
1960	3.20 - j2.10	1.60 - j3.80
1990	3.90 - j2.00	1.80 - j3.80

Series Equivalent Input and Output Impedances, Vdd= 26V, Idq= 225mA




Mean Time To Failure
MTF, Mean Time To Failure (Hrs)
10000000
1000000
100000
10000
1000
120
140
160
180
200
220
Id=1A
2A
3A
Tj, Junction Temperature (°C)

SL-3020 30W, 26V N-Channel Enhancement Mode LDMOS

Absolute Maximum Ratings

Rating	Symbol	Value	Unit
Drain to Source, gate connected to source	BVdss	65	Volts
Gate to Source Voltage	BVgs	+/- 20	Volts
Total Device Dissipation @Tcase=70°C Derate above 70°C	Pd	65 0.5	Watts W/°C
Storage Temperature Range	Tstg	-65 to +150	°C
Operating Junction Temperature	T_J	200	°C

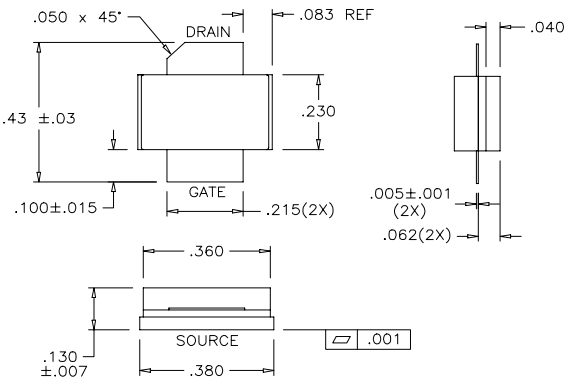
Part Number Ordering Information

Part Number	Package
SL-30201	Pill
SL-30202	Flange

Caution:

MOS Devices are susceptable 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