

TOPAZ
SEMICONDUCTOR

T-29-25
SD1100, SD1101

**N-CHANNEL ENHANCEMENT-MODE
HIGH-VOLTAGE D-MOS POWER FETS**

ORDERING INFORMATION

| Sorted Chips In Conductive Waffle Pack | SD1100CHP | SD1101CHP |
|--|--------------|--------------|
| TO-226AA (TO-92) Package | — | SD1101BD |
| TO-206AA (TO-18) Package | SD1100DD | SD1101DD |
| TO-205AF (TO-39) Package | SD1100HD | SD1101HD |
| Description | 450V, 35 ohm | 400V, 25 ohm |

FEATURES

- Gate Stand-off, $\pm 40V$ min.
- P-channel complements available, VP0540 series
- Wide variety of Packages

APPLICATIONS

- Motor Controls
- Line Drivers
- Power Supplies

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ C$ unless otherwise noted)

Drain-Source Voltage

| | |
|--------|------|
| SD1100 | 450V |
| SD1101 | 400V |

Drain-Gate Voltage ($R_{GS} = 1M\Omega$)

| | |
|--------|------|
| SD1100 | 450V |
| SD1101 | 400V |

Gate-Source Voltage

$\pm 40V$

Continuous Drain Current

| | $T_C = +100^\circ C$ | $T_C = +25^\circ C$ |
|----------|----------------------|---------------------|
| SD1100DD | .10A | .17A |
| SD1100HD | .21A | .33A |
| SD1101BD | .11A | .18A |
| SD1101DD | .13A | .21A |
| SD1101HD | .26A | .41A |

Peak Pulsed Drain Current 0.25A

Maximum Power Dissipation

| | $T_C = +100^\circ C$ | $T_C = +25^\circ C$ |
|----------------|----------------------|---------------------|
| HD, TO-39 Pkg. | 2.75W | 6.88W |
| BD, TO-92 Pkg. | 0.5W | 1.35W |
| DD, TO-18 Pkg. | 0.7W | 1.80W |

Linear Derating Factor

| | Junction to Ambient ($mW/^\circ C$) | Junction to Ambient ($mW/^\circ C$) |
|----------------|---------------------------------------|---------------------------------------|
| HD, TO-39 Pkg. | 36.6 | 55 |
| BD, TO-92 Pkg. | 6.66 | 10.8 |
| DD, TO-18 Pkg. | 9.33 | 14.4 |

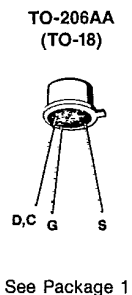
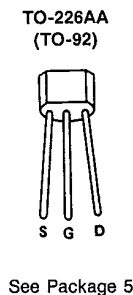
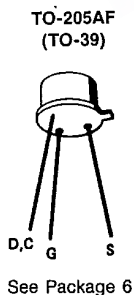
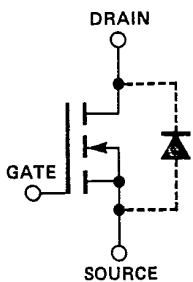
Operating Junction and

Storage Temperature Range $-55^\circ C$ to $+150^\circ C$

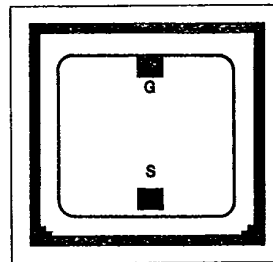
Lead Temperature ($1/16"$ from mounting

surface for 10 Sec) $+260^\circ C$

PIN CONFIGURATIONS



CHIP CONFIGURATION



Dimensions: $.054 \times .051 \times .020$ in.
Drain is backside contact.



SD1100, SD1101

T-29-25

ELECTRICAL CHARACTERISTICS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

| # | CHARACTERISTIC | SD1100 | | | SD1101 | | | UNIT | TEST CONDITIONS |
|----|--|--------|------|-----|--------|------|-----|---------------|---|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | |
| 1 | BV_{DSS} Drain Source Breakdown Voltage | 450 | 475 | | 400 | 425 | | V | $I_D = 10\mu\text{A}, V_{GS} = 0$ |
| 2 | I_{GSSF} Gate Forward Leakage Current | | .03 | 10 | | .03 | 10 | nA | $V_{GS} = 20\text{V}$ $V_{DS} = 0$ |
| 3 | I_{GSSR} Gate Reverse Leakage Current | | -.03 | -10 | | -.03 | -10 | nA | |
| 4 | I_{DSS} Drain-Source OFF Leakage Current | | 2.0 | 200 | | | | nA | $V_{DS} = 360\text{V}$ $V_{GS} = 0$ |
| 5 | | | | 2.0 | | | | μA | |
| 6 | | | | | | 2.0 | 200 | nA | $V_{DS} = 320\text{V}$ $V_{GS} = 0$ |
| 7 | | | | | | | 2.0 | μA | |
| 8 | $V_{GS(th)}$ Gate Source Threshold Voltage | 1.0 | 3.0 | 5.0 | 1.0 | 3.0 | 5.0 | V | $I_D = 10\mu\text{A}, V_{DS} = V_{GS}$ |
| 9 | $I_{D(ON)}$ ON Drain Current ⁽¹⁾ | 250 | 750 | | 250 | 750 | | mA | $V_{DS} = 25\text{V}, V_{GS} = 10\text{V}$ |
| 10 | $r_{DS(ON)}$ Drain-Source ON Resistance ⁽¹⁾ | | 13 | 35 | | 13 | 25 | ohms | $V_{GS} = 10\text{V}$ $I_D = 10\text{mA}$ $T_C = 125^\circ\text{C}$ |
| 11 | | | 19 | 60 | | 19 | 42 | | |
| 12 | g_{fs} Forward Transconductance ⁽¹⁾ | 250 | 400 | | 250 | 400 | | | $V_{DS} = 25\text{V}, I_D = 250\text{mA}$ $f = 1\text{KHz}$ |
| 17 | C_{iss} Common-Source Input Capacitance | | 80 | 100 | | 80 | 100 | pF | $V_{DS} = 25\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$ |
| 18 | C_{rss} Common-Source Reverse Transfer Capacitance | | 1.3 | 2.5 | | 1.3 | 2.5 | | |
| 19 | C_{oss} Common-Source Output Capacitance | | 10.5 | 15 | | 10.5 | 15 | | |

Note 1: Pulse Test 80 μSec , 1% Duty Cycle

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = +25^\circ\text{C}$ unless otherwise specified)

