

TOPAZ

SEMICONDUCTOR

T-31-25

SD3300, SD3301

N-CHANNEL ENHANCEMENT-MODE D-MOS POWER FETs

ORDERING INFORMATION

Sorted Chips in Waffle Pack	SD3300CHP	SD3301CHP
TO-205AF (TO-39) Hermetic Package	SD3300HD	SD3301HD
TO-226AA (TO-92) Plastic Package	SD3300BD	SD3301BD
TO-237 (TO-92+) Plastic Package	SD3300AD	SD3301AD
Description	100V, 0.6 ohm	60V, 0.4 ohm

FEATURES

- Gate Stand-off Voltage, $\pm 40V$ min.
- Continuous I_D of 1 Amp in small package
- 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	100V
SD3300	100V
SD3301	60V
Drain-Gate Voltage ($R_{GS} = 1M\Omega$)	100V
SD3300	100V
SD3301	60V
Gate-Source Voltage	$\pm 40V$
Continuous Drain Current	

 $T_C = +100^\circ C$ $T_C = +25^\circ C$

SD3300AD	1.2A	1.9A
SD3300BD	1.0A	1.6A
SD3300HD	2.25A	3.5A
SD3301AD	1.4A	2.3A
SD3301BD	1.2A	1.9A
SD3301HD	2.7A	4.3A

Peak Pulsed Drain Current 8.0A

Maximum Power Dissipation

	$T_C = +100^\circ C$	$T_C = +25^\circ C$
HD, TO-39 Pkg.	6.0W	15W
BD, TO-92 Pkg.	1.2W	3.0W
AD, TO-237 Pkg.	1.7W	4.3W

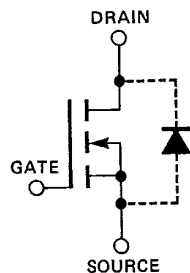
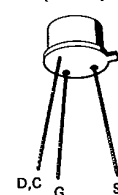
Linear Derating Factor

	Junction to Ambient (mW/ $^\circ C$)	Junction to Case (mW/ $^\circ C$)
HD, TO-39 Pkg.	8.0	120
BD, TO-92 Pkg.	3.2	24
AD, TO-237 Pkg.	4.8	34.4

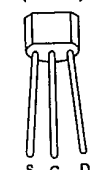
Operating Junction and Storage

Temperature Range	-55 to $+150^\circ C$
Lead Temperature (1/16" from mounting surface for 30 Sec)	$+260^\circ C$

PIN CONFIGURATIONS

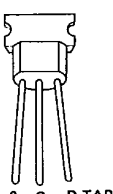
TO-205AF
(TO-39)

See Package 6

TO-226AA
(TO-92)

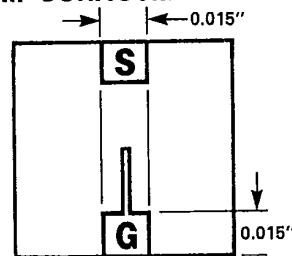
See Package 5

TO-237



See Package 7

CHIP CONFIGURATION



Dimensions: .078x.078x.020 in.
Drain is backside contact.

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SD3300, SD3301**ELECTRICAL CHARACTERISTICS** ($T_C = +25^\circ\text{C}$ unless otherwise noted)

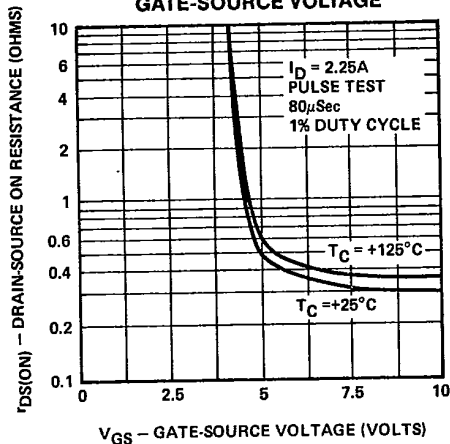
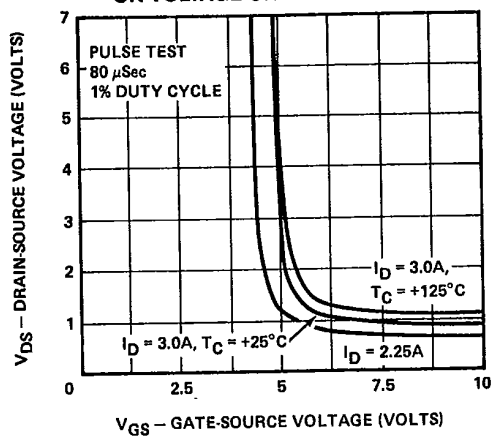
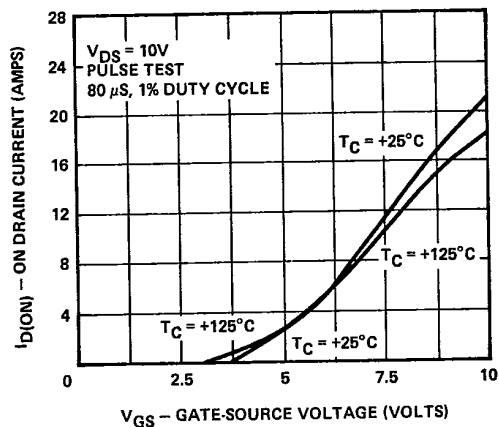
#	CHARACTERISTIC	SD3300			SD3301			UNIT	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX		
1	BV_{DSS} Drain-Source Breakdown Voltage	100	125		60	90		V	$I_D = 250\mu\text{A}$, $V_{GS} = 0$
2	$V_{GS(th)}$ Gate-Source Threshold Voltage	1.0		3.0	1.0		3.0	V	$V_{DS} = V_{GS}$
3		0.4			0.4				$I_D = 250\mu\text{A}$, $T_C = +125^\circ\text{C}$
4	I_{GSS} Gate-Body Leakage Current			100			100	nA	$V_{GS} = 20\text{V}$, $V_{DS} = 0$
5				200			200		$T_C = +125^\circ\text{C}$
6				-100			-100		$V_{GS} = -20\text{V}$, $V_{DS} = 0$
7	I_{DSS} Drain-Source OFF Leakage Current			1.0				μA	$V_{DS} = 80\text{V}$, $V_{GS} = 0$
8				1000					$T_C = +125^\circ\text{C}$
9							1.0		$V_{DS} = 48\text{V}$, $V_{GS} = 0$
10							1000		$T_C = +125^\circ\text{C}$
11	$I_{D(on)}$ ON Drain Current ⁽¹⁾	3.0			3.5			A	$V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$
12	$V_{DS(on)}$ Drain-Source ⁽¹⁾ ON Voltage			1.8				V	$V_{GS} = 10\text{V}$, $I_D = 3.0\text{A}$
13	$V_{DS(on)}$ ON Voltage						1.4		$V_{GS} = 10\text{V}$, $I_D = 3.5\text{A}$
14	$r_{DS(on)}$ Drain-Source ⁽¹⁾ ON Resistance			0.6			0.4	ohms	$V_{GS} = 10\text{V}$
15				1.08			0.72		$I_D = 2.25\text{A}$, $T_C = +125^\circ\text{C}$
16	g_{fs} Common-Source ⁽¹⁾ Forward Transcond.	1.0		3.0	1.0		3.0	S(Ω)	$V_{DS} = 10\text{V}$, $I_D = 2.25\text{A}$, $f = 1\text{KHz}$
17	C_{iss} Common-Source Input Capacitance			200			200	pF	$V_{DS} = 25\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$
18	C_{rss} Common-Source Reverse Transfer Capacitance			25			25		
19	C_{oss} Common-Source Output Capacitance			100			100		
20	$t_{d(on)}$ Turn-ON Delay Time			15			15	nsec	$V_{DD} = 34\text{V}$, $R_L = 15\text{ ohms}$, $R_G = 25\text{ ohms}$, $V_{G(on)} = 10\text{V}$
21	t_r Rise Time			25			25		
22	$t_{d(off)}$ Turn-OFF Delay Time			25			25		
23	t_f Fall Time			20			20		
24	I_S Continuous Source Current ⁽¹⁾	3.0			3.5			A	
25	I_{SM} Peak Source Current ⁽¹⁾	8.0			8.0				
26	V_{SD} Source-Drain ⁽¹⁾ Forward Voltage			2.0				V	$V_{GS} = 0$, $I_S = 3.0\text{A}$
27							2.0		$I_S = 3.5\text{A}$

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

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SD3300, SD3301
TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = +25^\circ\text{C}$ unless otherwise specified)

DRAIN-SOURCE ON RESISTANCE

 —vs—
GATE-SOURCE VOLTAGE

ON VOLTAGE CHARACTERISTICS

ON DRAIN CURRENT
 —vs—
GATE-SOURCE VOLTAGE

FORWARD TRANSCONDUCTANCE
 —vs—
ON DRAIN CURRENT
