



# SD1102, SD1112, SD1113

## N-CHANNEL ENHANCEMENT-MODE HIGH-VOLTAGE D-MOS POWER FETs

### ORDERING INFORMATION

Sorted Chips in Carriers	SD1102CHP	SD1112CHP	SD1113CHP
TO-206AA (TO-18) Package	SD1102DD	SD1112DD	SD1113DD
TO-205AF (TO-39) Package	SD1102HD	SD1112HD	SD1113HD
TO-226AA (TO-92) Package	SD1102BD	SD1112BD	SD1113BD
Description	250V, 10 ohms	200V, 7.0 ohms	200V, 10 ohms

### FEATURES

- Gate Stand-off,  $\pm 40V$  min.
- Wide variety of Packages
- Low Drain-Source Off Leakage,  $I_{DSS} < 200nA$

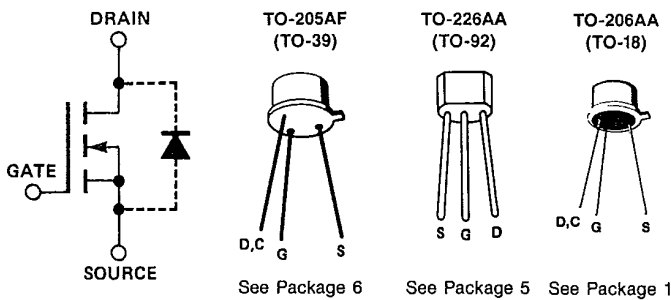
### APPLICATIONS

- Motor Controls
- Line Drivers
- Power Supplies

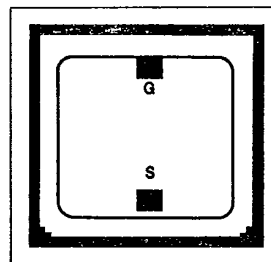
### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ C$ unless otherwise noted)

Drain-Source Voltage	SD1102 ..... 250V	SD1112, SD1113 ..... 200V	Continuous Device Dissipation	$T_C = +100^\circ C$	$T_C = +25^\circ C$
Drain-Gate Voltage	SD1102 ..... 250V	SD1112, SD1113 ..... 200V	SD1102/1112/1113BD	0.5W	1.35W
Gate-Source Voltage	..... $\pm 40V$		SD1102/1112/1113DD	0.7W	1.80W
Continuous Drain Current	$T_C = +100^\circ C$	$T_C = +25^\circ C$	SD1102/1112/1113HD	2.75W	6.88W
SD1102BD, SD1113BD	.17A	.28A	Linear Derating Factor	Junction to Ambient	Junction to Ambient
SD1112BD	.20A	.33A	SD1102/1112/1113BD	6.66mW/ $^\circ C$	10.8mW/ $^\circ C$
SD1102DD, SD1113DD	.20A	.32A	SD1102/1112/1113DD	9.33mW/ $^\circ C$	14.4mW/ $^\circ C$
SD1112DD	.24A	.38A	SD1102/1112/1113HD	36.6mW/ $^\circ C$	55mW/ $^\circ C$
SD1102HD, SD1113HD	.40A	.63A	Operating Junction and Storage Temperature Range	..... $-55^\circ C$ to $+150^\circ C$	
SD1112HD	.48A	.76A	Lead Temperature (1/16" from mounting surface for 10 Sec)	..... $+260^\circ C$	
Peak Pulsed Drain Current	..... 0.8A				

### PIN CONFIGURATIONS



### CHIP CONFIGURATION



Dimensions: .054 x .051 x .020 In.  
Drain is backside contact.



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SD1113**

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**ELECTRICAL CHARACTERISTICS** (T<sub>C</sub> = +25°C unless otherwise noted)

#	CHARACTERISTIC		SD1102			SD1112, SD1113			UNIT	TEST CONDITION		
			MIN	TYP	MAX	MIN	TYP	MAX				
1	BV <sub>DSS</sub>	Drain Source Breakdown Voltage	250	270		200	250		V	I <sub>D</sub> = 10μA, V <sub>GS</sub> = 0		
2	V <sub>GS(th)</sub>	Gate Source Threshold Voltage	1.0	3.0	5.0	1.0	3.0	5.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 10μA		
3	I <sub>GSSF</sub>	Gate Forward Leakage Current		.03	10		.03	10	nA	V <sub>GS</sub> = 20V V <sub>DS</sub> = 0		
4	I <sub>GSSR</sub>	Gate Reverse Leakage Current		-.03	-10		-.03	-10		V <sub>GS</sub> = -20V		
5	I <sub>DSS</sub>	Drain-Source OFF Leakage Current		2.0	200				nA	V <sub>DS</sub> = 200V V <sub>GS</sub> = 0		
6					2.0				μA	T <sub>C</sub> = +125°C		
7								2.0	200	nA	V <sub>DS</sub> = 160V V <sub>GS</sub> = 0	
8									2.0	μA	T <sub>C</sub> = +125°C	
9	I <sub>D(ON)</sub>	ON Drain Current <sup>1</sup>	0.8	1.0		0.5	1.0		A	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 10V		
10	r <sub>DS(ON)</sub>	Drain-Source ON Resistance <sup>(1)</sup>	SD1102	6.6	10				ohms	V <sub>GS</sub> = 10V I <sub>D</sub> = 100mA	T <sub>C</sub> = 125°C	
11				12	17							
12			SD1112	6.6	7.0							T <sub>C</sub> = +125°C
13				10	11.9							
14	SD1113	6.6	10						T <sub>C</sub> = +125°C			
15		12	17									
16	g <sub>fs</sub>	Common-Source Forward Transcond. <sup>(1)</sup>	200	300		200	300		mmhos	V <sub>DS</sub> = 25V, I <sub>D</sub> = 0.5A f = 1KHz		
17	C <sub>iss</sub>	Common-Source Input Capacitance		80	100		80	100	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0 f = 1MHz		
18	C <sub>rss</sub>	Common-Source Reverse Transfer Capacitance		1.3	2.5		1.3	2.5				
19	C <sub>oss</sub>	Common-Source Output Capacitance		10.5	15		10.5	15				
20	t <sub>on</sub>	Turn ON Time			10			10	ns	V <sub>DD</sub> = 60V, V <sub>G(on)</sub> = 10V R <sub>G</sub> = 51Ω, R <sub>L</sub> = 68Ω		
21	t <sub>off</sub>	Turn OFF Time			18			18				

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



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

