



# 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,  $I_{DSS} < 200nA$

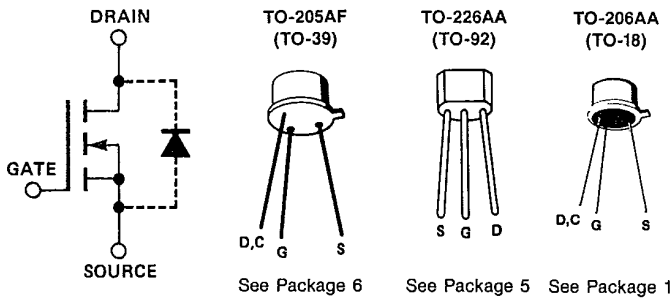
### APPLICATIONS

- Motor Controls
- Line Drivers
- Power Supplies

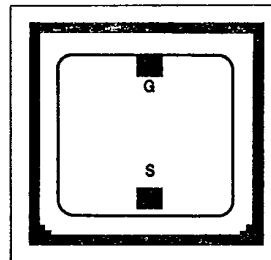
### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ C$ unless otherwise noted)

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			SD1102/1112/1113HD	2.75W	6.88W
	$T_C = +100^\circ C$	$T_C = +25^\circ C$	Linear Derating Factor	Junction to Ambient	Junction to Ambient
SD1102BD, SD1113BD	.17A	.28A	SD1102/1112/1113BD	6.66mW/ $^\circ C$	10.8mW/ $^\circ C$
SD1112BD	.20A	.33A	SD1102/1112/1113DD	9.33mW/ $^\circ C$	14.4mW/ $^\circ C$
SD1102DD, SD1113DD	.20A	.32A	SD1102/1112/1113HD	36.6mW/ $^\circ C$	55mW/ $^\circ C$
SD1112DD	.24A	.38A	Operating Junction and Storage Temperature Range	..... $-55^\circ C$ to $+150^\circ C$	
SD1102HD, SD1113HD	.40A	.63A	Lead Temperature (1/16" from mounting surface for 10 Sec)	..... $+260^\circ C$	
SD1112HD	.48A	.76A			
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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**ELECTRICAL CHARACTERISTICS** ( $T_C = +25^\circ\text{C}$  unless otherwise noted)

#	CHARACTERISTIC		SD1102			SD1112, SD1113			UNIT	TEST CONDITION				
			MIN	TYP	MAX	MIN	TYP	MAX						
1	$BV_{DSS}$	Drain Source Breakdown Voltage	250	270		200	250		V	$I_D = 10\mu\text{A}, V_{GS} = 0$				
2	$V_{GS(th)}$	Gate Source Threshold Voltage	1.0	3.0	5.0	1.0	3.0	5.0	V	$V_{DS} = V_{GS}, I_D = 10\mu\text{A}$				
3	$I_{GSSF}$	Gate Forward Leakage Current		.03	10		.03	10	nA	$V_{GS} = 20\text{V}$ $V_{DS} = 0$				
4	$I_{GSSR}$	Gate Reverse Leakage Current		-.03	-10		-.03	-10			$V_{GS} = -20\text{V}$			
5	STATIC	$I_{DSS}$	Drain-Source OFF Leakage Current		2.0	200			nA	$V_{DS} = 200\text{V}$ $V_{GS} = 0$	$T_C = +125^\circ\text{C}$			
6						2.0			$\mu\text{A}$					
7									2.0	200	nA	$V_{DS} = 160\text{V}$ $V_{GS} = 0$	$T_C = +125^\circ\text{C}$	
8										2.0	$\mu\text{A}$	$V_{GS} = 0$		
9	$I_{D(ON)}$	ON Drain Current <sup>1</sup>	0.8	1.0		0.5	1.0		A	$V_{DS} = 25\text{V}, V_{GS} = 10\text{V}$				
10		$r_{DS(ON)}$	Drain-Source ON Resistance <sup>(1)</sup>	SD1102		6.6	10			ohms	$V_{GS} = 10\text{V}$ $I_D = 100\text{mA}$	$T_C = 125^\circ\text{C}$		
11						12	17							
12									6.6			7.0		$T_C = +125^\circ\text{C}$
13									10			11.9		
14									6.6			10		
15						12	17		$T_C = +125^\circ\text{C}$					
16	$g_{fs}$	Common-Source Forward Transcond. <sup>(1)</sup>	200	300		200	300		mmhos	$V_{DS} = 25\text{V}, I_D = 0.5\text{A}$ $f = 1\text{KHz}$				
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						
20	$t_{on}$	Turn ON Time			10			10						
21	$t_{off}$	Turn OFF Time			18			18	ns	$V_{DD} = 60\text{V}, V_{G(on)} = 10\text{V}$ $R_G = 51\Omega, R_L = 68\Omega$				

Note 1: Pulse Test 80 $\mu\text{Sec}$ , 1% Duty Cycle



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

