

### P & N-Channel 32-V (D-S) MOSFET

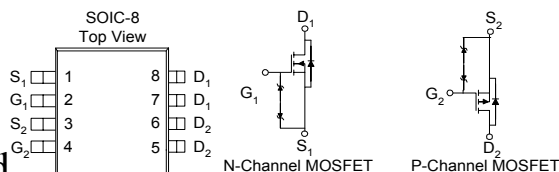
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low  $r_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ m( $\Omega$ )	$I_D$ (A)
30	82 @ $V_{GS} = 4.5V$	4.2
	50 @ $V_{GS} = 10V$	5.3
-30	80 @ $V_{GS} = -4.5V$	-4.2
	52 @ $V_{GS} = -10V$	-5.2

- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOIC-8 saves board space
- Fast switching speed
- High performance trench technology



ESD Protected  
2000V



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	N-Channel	P-Channel	Units	
Drain-Source Voltage	$V_{DS}$	30	-30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	$\pm 20$		
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A=25^\circ C$	5.3	-5.2	A
		$T_A=70^\circ C$	4.2	-4.1	
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	20	-20		
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.3	-1.3	A	
Power Dissipation <sup>a</sup>	$P_D$	$T_A=25^\circ C$	2.1	2.1	W
		$T_A=70^\circ C$	1.3	1.3	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150		$^\circ C$	

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	$t \leq 10$ sec	62.5	$^\circ C/W$
	Steady-State	110	$^\circ C/W$

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

SPECIFICATIONS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Conditions	Limits				Unit
			Ch	Min	Typ	Max	
<b>Static</b>							
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250 uA	N	1.2			V
		V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = -250 uA	P	-1.2		-2.5	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0 V	P			±100	nA
		V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0 V	N			±100	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -24 V, V <sub>GS</sub> = 0 V	P			-1	uA
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V	N			1	
On-State Drain Current <sup>A</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V	N	20			A
		V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -10 V	P	-20			
Drain-Source On-Resistance <sup>A</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 5.3 A	N			50	mΩ
		V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 4.2 A				82	
		V <sub>GS</sub> = -10 V, I <sub>D</sub> = -5.2 A	P			52	
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.2 A				80	
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 1.3 A	N		0.75		V
		V <sub>GS</sub> = 0 V, I <sub>S</sub> = -1.3 A	P		-0.88		
<b>Dynamic</b>							
Total Gate Charge	Q <sub>g</sub>	N-Channel V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =5.3A P-Channel V <sub>DS</sub> =-15V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-5.2A	N		2.2		nC
Gate-Source Charge	Q <sub>gs</sub>		P		10		
			N		0.5		
Gate-Drain Charge	Q <sub>gd</sub>		P		2.2		
			N		0.8		
Turn-On Delay Time	t <sub>d(on)</sub>		P		1.7		
		N		8			
Rise Time	t <sub>r</sub>	P		10		nS	
		N		5			
Turn-Off Delay Time	t <sub>d(off)</sub>	P		2.8			
		N		23			
Fall-Time	t <sub>f</sub>	P		53.6			
		N		3			
		P		46			

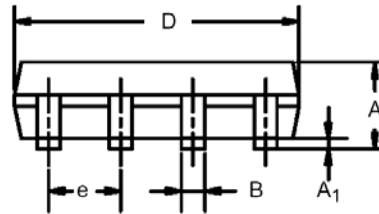
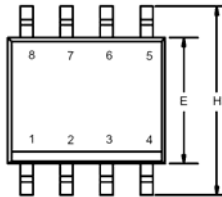
Notes

- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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Package Information

SO-8: 8LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A <sub>1</sub>	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°

