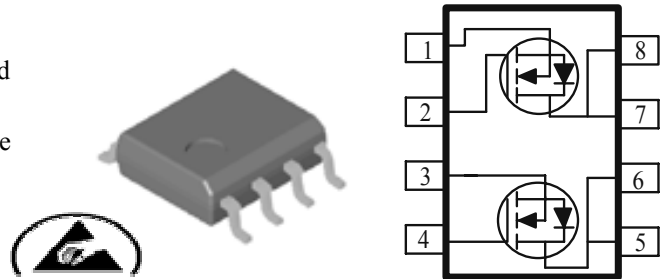


### N-Channel 60-V (D-S) MOSFET

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)
60	89 @ $V_{GS} = 10V$	$\pm 4.0$
	104 @ $V_{GS} = 4.5V$	$\pm 3.7$

- 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	Limit	Units
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A = 25^\circ C$	$\pm 4.0$
		$T_A = 70^\circ C$	$\pm 3.3$
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	$\pm 25$	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	2	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ C$	2.1
		$T_A = 70^\circ C$	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	$^\circ C/W$
	$t \leq 5$ sec	110	$^\circ C/W$

Notes

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

SPECIFICATIONS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1			
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = 20 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$			1	uA
		$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			10	
On-State Drain Current <sup>A</sup>	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 10 \text{ V}$	20			A
Drain-Source On-Resistance <sup>A</sup>	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 4.0 \text{ A}$			89	m $\Omega$
		$V_{GS} = 4.5 \text{ V}, I_D = 3.7 \text{ A}$			104	
Forward Transconductance <sup>A</sup>	$g_s$	$V_{DS} = 15 \text{ V}, I_D = 4.0 \text{ A}$		11		S
Diode Forward Voltage	$V_{SD}$	$I_S = 2.0 \text{ A}, V_{GS} = 0 \text{ V}$		1.1		V
Pulsed Source Current (Body Diode) <sup>A</sup>	$I_{SM}$			5		A
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 30 \text{ V}, V_{GS} = 4.5 \text{ V},$ $I_D = 4.0 \text{ A}$		3.6		nC
Gate-Source Charge	$Q_{gs}$			1.8		
Gate-Drain Charge	$Q_{gd}$			1.3		
<b>Switching</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30 \text{ V}, R_L = 30 \Omega, I_D = 1 \text{ A},$ $V_{GEN} = 10 \text{ V}$		9		nS
Rise Time	$t_r$			10		
Turn-Off Delay Time	$t_{d(off)}$			21		
Fall-Time	$t_f$			8		

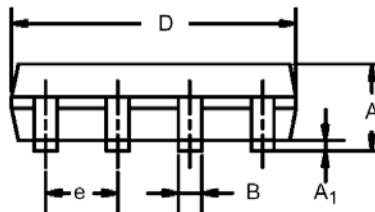
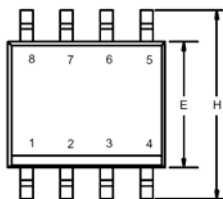
## Notes

- Pulse test:  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
- 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°

