

**P-Channel 30-V (D-S) MOSFET**

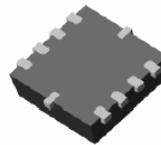
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low  $r_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA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

- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DFN3x3-8PP saves board space
- Fast switching speed
- High performance trench technology

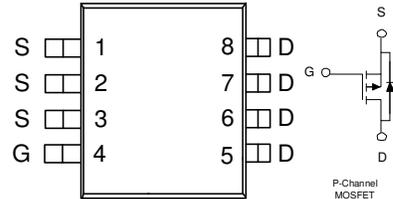
PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ m( $\Omega$ )	$I_D$ (A)
-30	60 @ $V_{GS} = -10V$	-5.9
	90 @ $V_{GS} = -4.5V$	-4.8



RoHS COMPLIANT HALOGEN FREE



DFN3x3 Top View



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current <sup>a</sup>	$I_D$	$T_A=25^\circ C$	-5.9
		$T_A=70^\circ C$	-4.8
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	$\pm 50$	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	-2.1	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A=25^\circ C$	3.1
		$T_A=70^\circ C$	2.0
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>	$R_{\theta JA}$	$t \leq 10$ sec	35
		Steady State	81

Notes

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

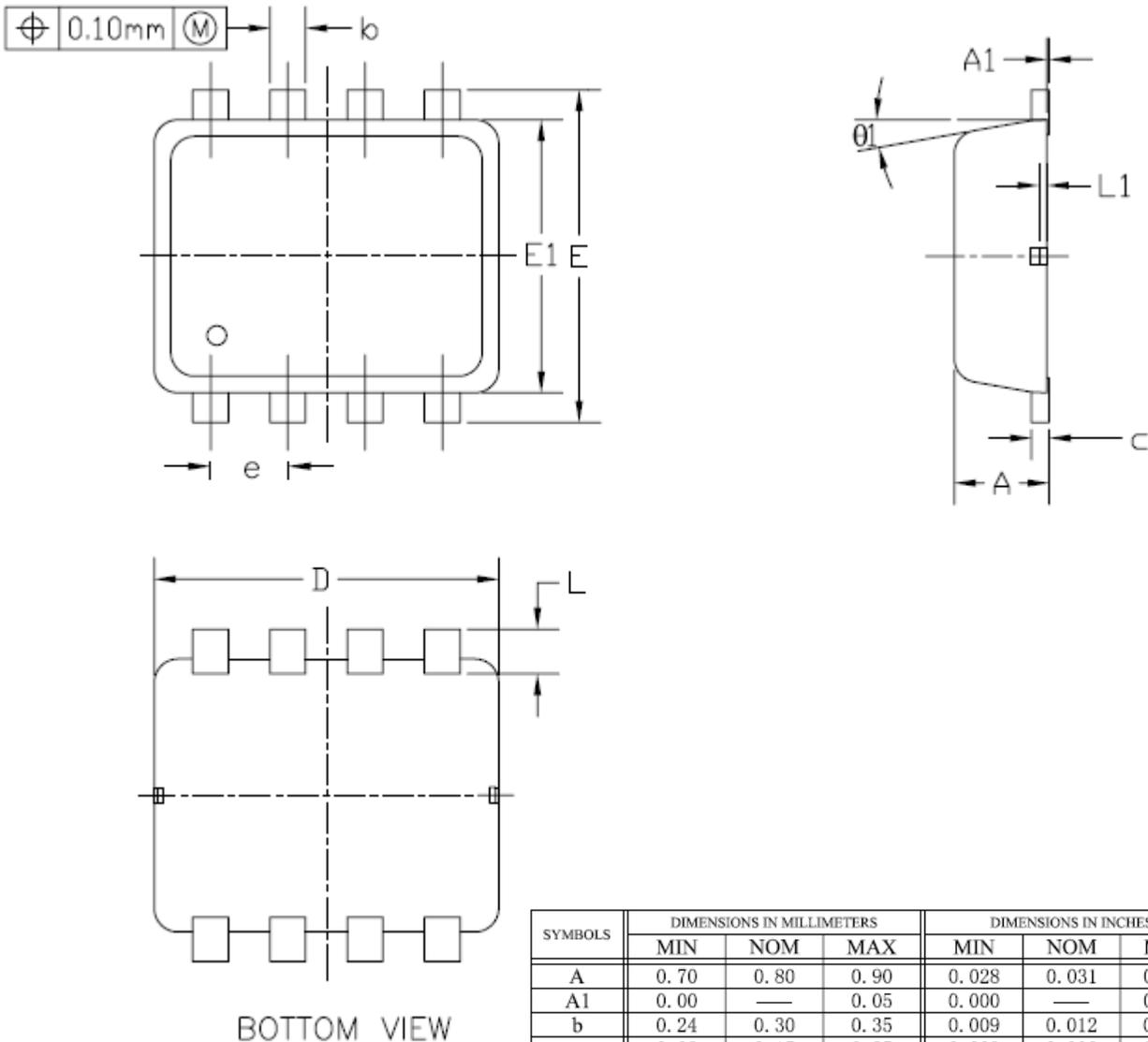
SPECIFICATIONS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-1			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -24 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-5	
On-State Drain Current <sup>A</sup>	$I_{D(on)}$	$V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$	-50			A
Drain-Source On-Resistance <sup>A</sup>	$r_{DS(on)}$	$V_{GS} = -10 \text{ V}, I_D = -1 \text{ A}$			60	m $\Omega$
		$V_{GS} = -4.5 \text{ V}, I_D = -1 \text{ A}$			90	
Forward Transconductance <sup>A</sup>	$g_{fs}$	$V_{DS} = -15 \text{ V}, I_D = -1 \text{ A}$		29		S
Diode Forward Voltage	$V_{SD}$	$I_S = 1 \text{ A}, V_{GS} = 0 \text{ V}$		-0.8		V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -15 \text{ V}, V_{GS} = -5 \text{ V},$ $I_D = -1 \text{ A}$		14		nC
Gate-Source Charge	$Q_{gs}$			4		
Gate-Drain Charge	$Q_{gd}$			8		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -15 \text{ V}, R_L = 6 \Omega,$ $I_D = -1 \text{ A}, V_{GEN} = -10 \text{ V}$		4		nS
Rise Time	$t_r$			5		
Turn-Off Delay Time	$t_{d(off)}$			80		
Fall-Time	$t_f$			40		

## 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



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.80	0.90	0.028	0.031	0.035
A1	0.00	—	0.05	0.000	—	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.08	0.15	0.25	0.003	0.006	0.010
D	2.90 BSC			0.114 BSC		
E	2.80 BSC			0.110 BSC		
E1	2.30 BSC			0.091 BSC		
e	0.65 BSC			0.026 BSC		
L	0.20	0.38	0.45	0.008	0.015	0.018
L1	0.05	—	—	0.002	—	—
$\theta 1$	0°	10°	12°	0°	10°	12°