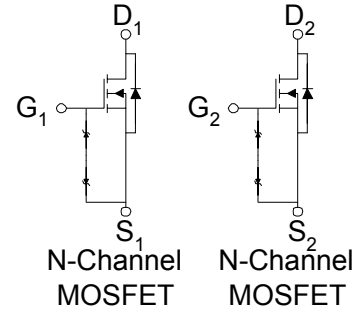
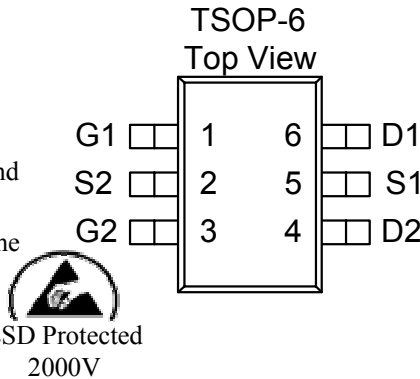


### N-Channel 60-V (D-S) MOSFET

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)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
60	0.153 @ $V_{GS} = 10V$	2.3
	0.185 @ $V_{GS} = 4.5V$	2.1

- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe TSOP-6 saves board space
- Fast switching speed
- High performance trench technology



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>	$I_D$	$T_A = 25^\circ C$	2.3
		$T_A = 70^\circ C$	1.9
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	8	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.05	A
Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ C$	1.15
		$T_A = 70^\circ C$	0.7
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	100	$^\circ C/W$
	Steady-State	166	$^\circ C/W$

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	$V_{GS(th)}$	$V_{GS} = V_{DS}, I_D = 250 \mu\text{A}$	1			V
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = 20 \text{ V}$			100	$\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 48 \text{ V}, V_{GS} = 0 \text{ V}$			1	$\mu\text{A}$
		$V_{DS} = 48 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			10	$\mu\text{A}$
On-State Drain Current <sup>A</sup>	$I_{D(on)}$	$V_{DS} = 5 \text{ V}, V_{GS} = 10 \text{ V}$	5			A
Drain-Source On-Resistance <sup>A</sup>	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 2.3 \text{ A}$			0.153	$\Omega$
		$V_{GS} = 4.5 \text{ V}, I_D = 2.1 \text{ A}$			0.185	
Forward Transconductance <sup>A</sup>	$g_{fs}$	$V_{DS} = 5 \text{ V}, I_D = 2.3 \text{ A}$		10		S
Diode Forward Voltage <sup>A</sup>	$V_{SD}$	$I_S = 1.05 \text{ A}, V_{GS} = 0 \text{ V}$		0.80		S
<b>Dynamic<sup>B</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS}=15\text{V}, V_{GS}=4.5\text{V}, I_D=2.3\text{A}$		3		nC
Gate-Source Charge	$Q_{gs}$			0.6		
Gate-Drain Charge	$Q_{gd}$			1.0		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15\text{V}, V_{GS}=4.5\text{V}, I_D=1\text{A},$ $R_{GEN}=15\Omega$		5		nS
Rise Time	$t_r$			12		
Turn-Off Delay Time	$t_{d(off)}$			13		
Fall-Time	$t_f$			7		

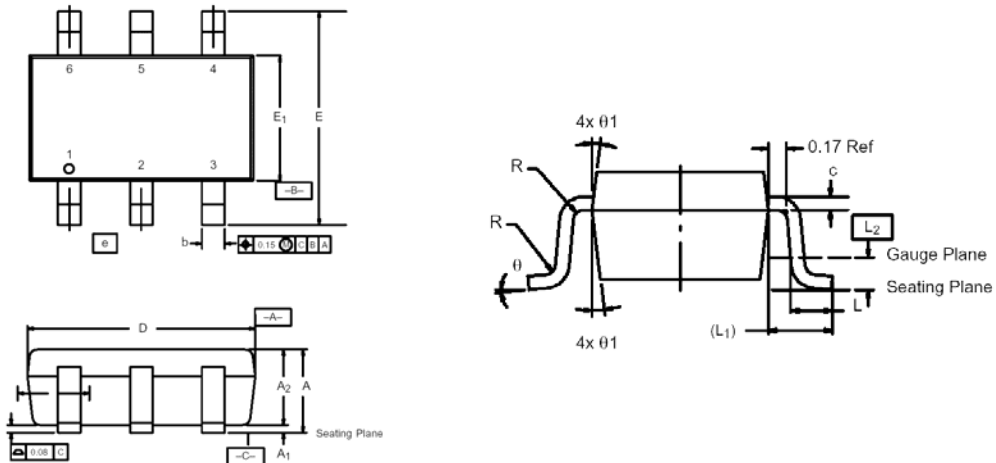
## Notes

- 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

## TSOP-6: 6LEAD



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
<b>A</b>	0.91	–	1.10	0.036	–	0.043
<b>A<sub>1</sub></b>	0.01	–	0.10	0.0004	–	0.004
<b>A<sub>2</sub></b>	0.84	–	1.00	0.033	0.038	0.039
<b>b</b>	0.30	0.32	0.45	0.012	0.013	0.018
<b>c</b>	0.10	0.15	0.20	0.004	0.006	0.008
<b>D</b>	2.95	3.05	3.10	0.116	0.120	0.122
<b>E</b>	2.70	2.85	2.98	0.106	0.112	0.117
<b>E<sub>1</sub></b>	1.55	1.65	1.70	0.061	0.065	0.067
<b>e</b>	1.00 BSC			0.0394 BSC		
<b>L</b>	0.35	–	0.50	0.014	–	0.020
<b>L<sub>1</sub></b>	0.60 Ref			0.024 Ref		
<b>L<sub>2</sub></b>	0.25 BSC			0.010 BSC		
<b>R</b>	0.10	–	–	0.004	–	–
<b>θ</b>	0°	4°	8°	0°	4°	8°
<b>θ<sub>1</sub></b>	7° Nom			7° Nom		