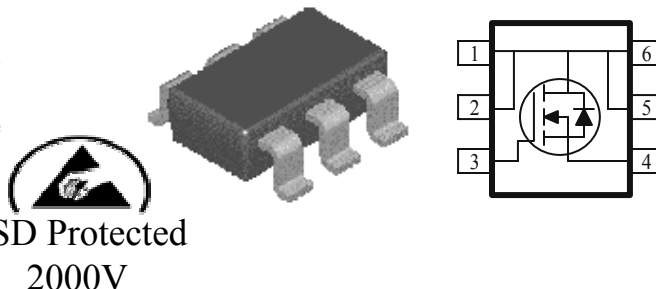


### N-Channel 30V (D-S) MOSFET

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 TSOP-6 saves board space
- Fast switching speed
- High performance trench technology

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.032 @ $V_{GS} = 10$ V	5.3
	0.044 @ $V_{GS} = 4.5$ V	4.5



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ 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>	$T_A = 25^\circ\text{C}$	5.5	A
	$T_A = 70^\circ\text{C}$	4.4	
Pulsed Drain Current <sup>b</sup>	$I_{DM}$	$\pm 20$	
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	1.3	A
Power Dissipation <sup>a</sup>	$T_A = 25^\circ\text{C}$	2.0	W
	$T_A = 70^\circ\text{C}$	1.3	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	$t \leq 5$ sec	85	$^\circ\text{C}/\text{W}$
	Steady-State	62.5	

## Notes

- Surface Mounted on 1" x 1" FR4 Board.
- 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>Switch Off Characteristics</b>						
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$			1	uA
		$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			10	
<b>Switch On Characteristics</b>						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ uA}$	1.0			V
Drain-Source On-Resistance <sup>A</sup>	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 5.3\text{ A}$			32	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 4.5\text{ A}$			44	
Forward Transconductance <sup>A</sup>	$g_{fs}$	$V_{DS} = 10\text{ V}, I_D = 5.3\text{ A}$		45		S
On-State Drain Current <sup>A</sup>	$I_{D(on)}$	$V_{DS} = 5\text{ V}, V_{GS} = 10\text{ V}$	20			A
Diode Forward Voltage	$V_{SD}$	$I_S = 1.3\text{ A}, V_{GS} = 0\text{ V}$		0.75		V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15\text{ V}, V_{GS} = 5\text{ V}, I_D = 5.3\text{ A}$ $R_L = 6\text{ }\Omega$		4.0		nC
Gate-Source Charge	$Q_{gs}$			1.1		
Gate-Drain Charge	$Q_{gd}$			1.4		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 15\text{ V}, R_L = 6\text{ }\Omega, I_D = 1\text{ A},$ $V_{GEN} = 10\text{ V}$		6		ns
Rise Time	$t_r$			10		
Turn-Off Delay Time	$t_{d(off)}$			18		
Fall-Time	$t_f$			5		

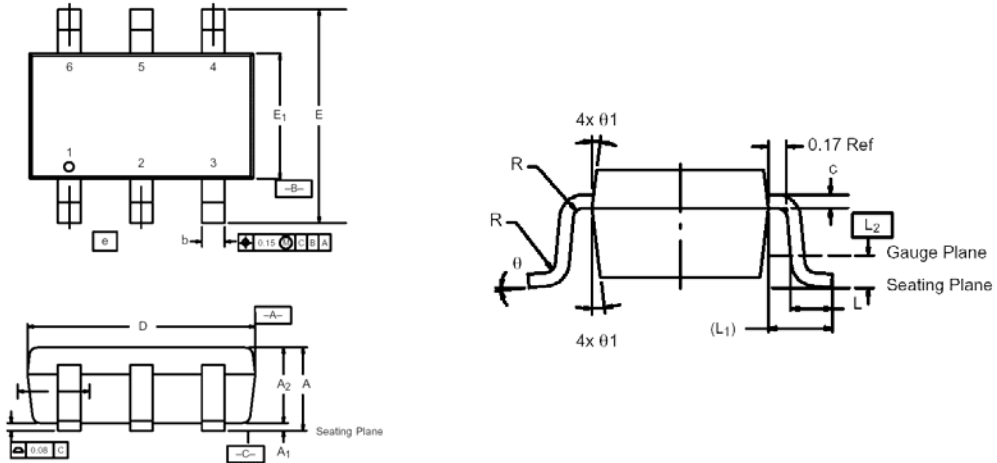
## Notes

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