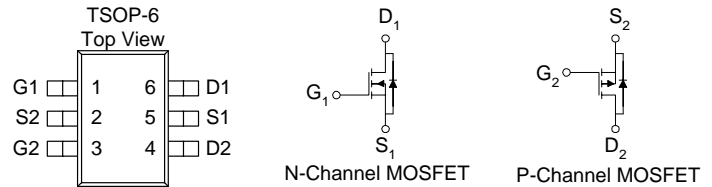## N & P-Channel 30-V (D-S) MOSFET

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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.058 @ V_{GS} = 4.5V	3.7
	0.082 @ V_{GS} = 2.5V	3.1
-26.5	0.112 @ V_{GS} = -4.5V	-2.7
	0.172 @ V_{GS} = -2.5V	-2.2

TSOP-6 Top View

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G1 ▯ 1    6 ▯ D1
S2 ▯ 2    5 ▯ S1
G2 ▯ 3    4 ▯ D2
```

N-Channel MOSFET

P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 ^{o}C UNLESS OTHERWISE NOTED)				
Parameter	**Symbol**	**N-Channel**	**P-Channel**	**Units**
Drain-Source Voltage	V_{DS}	30	-26.5	V
Gate-Source Voltage	V_{GS}	±12	±12	
Continuous Drain Current[a] T_A=25^{o}C	I_D	3.7	-2.7	A
Continuous Drain Current[a] T_A=70^{o}C		2.9	-2.1	
Pulsed Drain Current[b]	I_{DM}	8	-8	
Continuous Source Current (Diode Conduction)[a]	I_S	1.05	-1.05	A
Power Dissipation[a] T_A=25^{o}C	P_D	1.15		W
Power Dissipation[a] T_A=70^{o}C		0.7		
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		^{o}C

THERMAL RESISTANCE RATINGS		N-Channel		P-Channel		Unit
Parameter	**Symbol**	**Typ**	**Max**	**Typ**	**Max**	
Maximum Junction-to-Ambient[a] t <= 10 sec	R_{thJA}	93	110	93	110	^{o}C/W
Maximum Junction-to-Ambient[a] Steady State		130	150	130	150	

Notes

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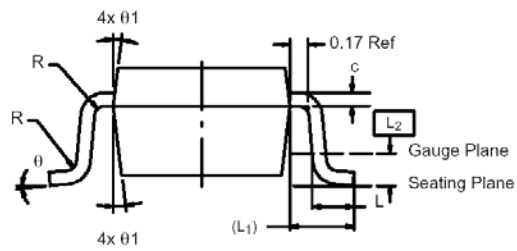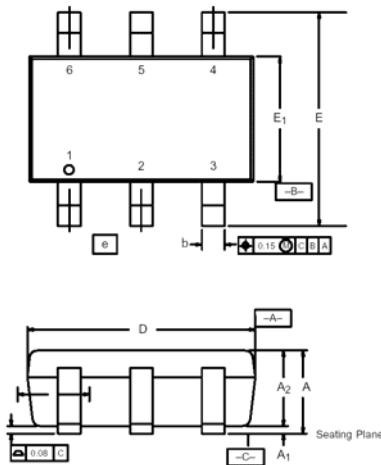
b. Pulse width limited by maximum junction temperature

SPECIFICATIONS ($T_A = 25^oC$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions	Ch	Min	Typ	Max	Unit
Static							
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{GS} = V_{DS}$, $I_D = 250$ uA	N	0.6			V
		$V_{GS} = V_{DS}$, $I_D = -250$ uA	P	-0.6			
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = 12$ V	N			100	uA
		$V_{DS} = 0$ V, $V_{GS} = -12$ V	P			-100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 21$ V, $V_{GS} = 0$ V	N			1	uA
		$V_{DS} = -21$ V, $V_{GS} = 0$ V	P			-1	
		$V_{DS} = 21$ V, $V_{GS} = 0$ V, $T_J = 55^oC$	N			10	uA
		$V_{DS} = -24$ V, $V_{GS} = 0$ V, $T_J = 55^oC$	P			-10	
On-State Drain Current[A]	$I_{D(on)}$	$V_{DS} = 5$ V, $V_{GS} = 4.5$ V	N	5			A
		$V_{DS} = -5$ V, $V_{GS} = -4.5$ V	P	-5			
Drain-Source On-Resistance[A]	$r_{DS(on)}$	$V_{GS} = 4.5$ V, $I_D = 3.7$ A	N		0.058		Ω
		$V_{GS} = -4.5$ V, $I_D = 3.1$ A	P		0.112		
		$V_{GS} = 2.5$ V, $I_D = 2.7$ A	N		0.08		
		$V_{GS} = -2.5$ V, $I_D = -2.2$ A	P		0.17		
Forward Tranconductance[A]	g_{fs}	$V_{DS} = 5$ V, $I_D = 3.7$ A	N		10		S
		$V_{DS} = -5$ V, $I_D = 3.1$ A	P		5		
Diode Forward Voltage[A]	V_{SD}	$I_S = 1.05$ A, $V_{GS} = 0$ V	N		0.80		S
		$I_S = -1.05$ A, $V_{GS} = 0$ V	P		-0.83		
Dynamic[b]							
Total Gate Charge	Q_g	N-Channel $V_{DS}=15$V, $V_{GS}=4.5$V, $I_D=2.7$A P-Channel $V_{DS}=-15$V, $V_{GS}=-4.5$V, $I_D=-3.1$A	N		6.3		nC
			P		3.8		
Gate-Source Charge	Q_{gs}		N		0.9		
			P		0.6		
Gate-Drain Charge	Q_{gd}		N		1.9		
			P		1.5		
Turn-On Delay Time	$t_{d(on)}$	N-Chaneel $V_{DD}=15$V, $V_{GS}=4.5$V, $I_D=1$A , $R_{GEN}=15$Ω, P-Channel $V_{DD}=-15$V, $V_{GS}=-4.5$V, $I_D=-1$A $R_{GEN}=15$Ω	N		5		nS
			P		5		
Rise Time	t_r		N		12		
			P		15		
Turn-Off Delay Time	$t_{d(off)}$		N		13		
			P		20		
Fall Time	t_f		N		7		
			P		20		

Notes

a.   Pulse test: PW <= 300us duty cycle <= 2%.

b.   Guaranteed by design, not subject to production testing.

Package Information

TSOP-6: 6LEAD

Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	–	1.10	0.036	–	0.043
A_1	0.01	–	0.10	0.0004	–	0.004
A_2	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_1	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_1	0.60 Ref			0.024 Ref		
L_2	0.25 BSC			0.010 BSC		
R	0.10	–	–	0.004	–	–
θ	0°	4°	8°	0°	4°	8°
θ_1	7° Nom			7° Nom		