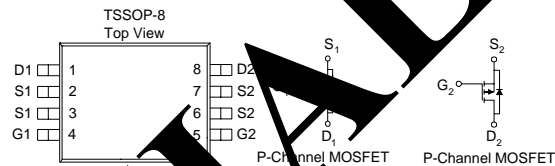


**P-Channel 20-V (D-S) MOSFET**

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 TSSOP-8 saves board space
- Fast switching speed
- High performance trench technology

PRODUCT SUMMARY		
$V_{DS}$ (V)	$r_{DS(on)}$ (OHM)	$I_D$ (A)
-20	0.050 @ $V_{GS} = -4.5V$	-4.0
	0.060 @ $V_{GS} = -2.5V$	-3.6
	0.075 @ $V_{GS} = -1.8V$	-3.2



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		$V_{DS}$	-20	V
Gate-Source Voltage		$V_{GS}$	$\pm 8$	
Continuous Drain Current <sup>a</sup>	$T_A = 25^\circ C$	$I_D$	-4.0	A
	$T_A = 70^\circ C$		-3.2	
Pulsed Drain Current <sup>b</sup>		$I_{DM}$	-10	
Continuous Source Current (Diode Conduction) <sup>a</sup>		$I_S$	$\pm 1.6$	A
Power Dissipation <sup>a</sup>	$T_A = 25^\circ C$	$P_D$	1.15	W
	$T_A = 70^\circ C$		0.7	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	$^\circ C$

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typ	Max	
Maximum Junction-to-Ambient <sup>a</sup>	$t \leq 10$ sec	$R_{thJA}$	93	110	$^\circ C/W$
	Steady State		130	150	

Notes

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

SPECIFICATIONS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
<b>Static</b>						
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 uA	-0.40			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = +/-12 V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V			-1	uA
		V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C			-10	
On-State Drain Current <sup>A</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -4.5 V	-3			A
Drain-Source On-Resistance <sup>A</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.0 A			0.050	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -3.6 A			0.060	
		V <sub>GS</sub> = -1.5 V, I <sub>D</sub> = -3.2 A			0.075	
Forward Transconductance <sup>A</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -5 V, I <sub>D</sub> = -4.0 A		3		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> = -1.6 A, V <sub>GS</sub> = -5 V		-0.70		V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.0 A		12.2		nC
Gate-Source Charge	Q <sub>gs</sub>			1.1		
Gate-Drain Charge	Q <sub>gd</sub>			1.5		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -5 V, R <sub>L</sub> = 5 OHM, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 OHM		6.5		ns
Rise Time	t <sub>r</sub>			20		
Turn-Off Delay Time	t <sub>d(off)</sub>			31		
Fall-Time	t <sub>f</sub>			21		

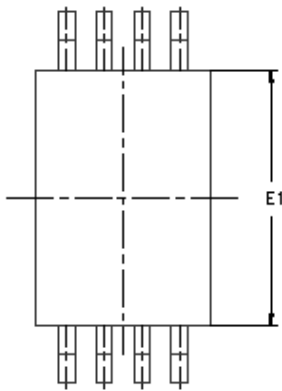
Notes

- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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Package Information

TSSOP-8: 8LEAD



DIM.	MILLIMETERS		
	MIN.	NDM.	MAX.
A	1.05	1.10	1.20
A(1)	0.05	0.10	0.15
A(2)	0.99	1.02	1.05
B	0.19	0.25	0.30
C	---	0.127	---
D	2.90	3.00	3.10
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
b	0.6595C		
L	0.45	0.60	0.75
L1	0.90	1.00	1.10
Y	---	---	0.10
Ø1	D'	F'	B'
R	0.09	---	---
S	0.20	---	---

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