

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

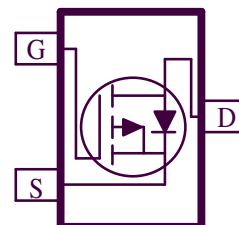
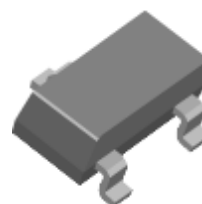
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, cellular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

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOT-23 saves board space
- Fast switching speed
- High performance trench technology

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (OHM)	I_D (A)
-20	0.026 @ $V_{GS} = -4.5V$	-5.7
	0.035 @ $V_{GS} = -2.5V$	-4.9



RoHS
COMPLIANT
HALOGEN
FREE



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Ratings	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current ^a	$T_A = 25^\circ C$	I_D	-5.7	A
	$T_A = 70^\circ C$		-4.7	
Pulsed Drain Current ^b		I_{DM}	-10	
Power Dissipation ^a	$T_A = 25^\circ C$	P_D	1.25	W
	$T_A = 70^\circ C$		0.8	
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 ^a	$t \leq 5$ sec	R_{THJA}	100	$^\circ C/W$
	Steady-State		150	

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	
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-0.3			
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 8 \text{ V}$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$			-1	μA
		$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			-10	
On-State Drain Current ^A	$I_{D(on)}$	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	-10			A
Drain-Source On-Resistance ^A	$r_{DS(on)}$	$V_{GS} = -4.5 \text{ V}, I_D = -1 \text{ A}$			26	m Ω
		$V_{GS} = -2.5 \text{ V}, I_D = -1 \text{ A}$			35	
Forward Transconductance ^A	g_{fs}	$V_{DS} = -5 \text{ V}, I_D = -1 \text{ A}$		12		S
Diode Forward Voltage	V_{SD}	$I_S = -0.46 \text{ A}, V_{GS} = 0 \text{ V}$		-0.6		V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V},$ $I_D = -1 \text{ A}$		10		nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10 \text{ V}, I_L = -1 \text{ A},$ $V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$		10		ns
Rise Time	t_r			10		
Turn-Off Delay Time	$t_{d(off)}$			30		
Fall-Time	t_f			20		

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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