

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.

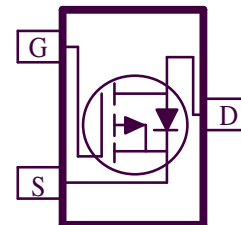
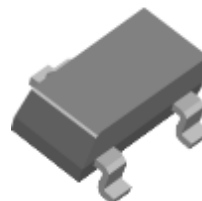
- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOT-23 saves board space
- Fast switching speed
- High performance trench technology



Protected



RoHS
COMPLIANT
HALOGEN
FREE



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (OHM)	I_D (A)
-20	0.079 @ $V_{GS} = -4.5V$	-4.1
	0.110 @ $V_{GS} = -2.5V$	-3.2

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	-4.1	A
	$T_A = 70^\circ\text{C}$		-3.3	
Pulsed Drain Current ^b		I_{DM}	-10	
Continuous Source Current (Diode Conduction) ^a		I_S	± 0.46	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	1.25	W
	$T_A = 70^\circ\text{C}$		0.8	
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 ^a	$t \leq 5 \text{ sec}$	R_{THJA}	100	$^\circ\text{C/W}$
	Steady-State		150	

Notes

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

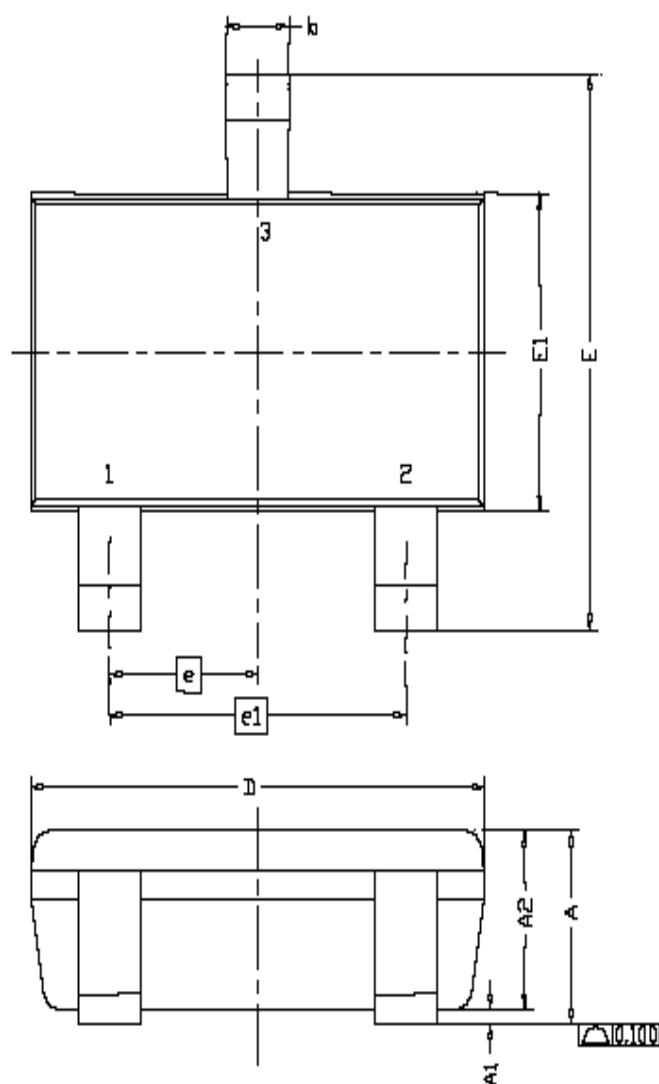
SPECIFICATIONS (T _A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Static						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 uA	-0.4			V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8 V			±10	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -16 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -16 V, V _{GS} = 0 V, T _J = 55°C			-10	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -1 V	-5			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = -4.5 V, I _D = -1 A			79	mΩ
		V _{GS} = -2.5 V, I _D = -1 A			110	
Forward Tranconductance ^A	g _{fs}	V _{DS} = -5 V, I _D = -1 A		9		S
Diode Forward Voltage	V _{SD}	I _S = -0.46 A, V _{GS} = 0 V		-0.65		V
Pulsed Body-Diode Current ^C	I _{SM}				-10	A
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -10 V, V _{GS} = -4.5 V, I _D = -1 A		7.2		nC
Gate-Source Charge	Q _{gs}			1.7		
Gate-Drain Charge	Q _{gd}			1.5		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -10 V, I _L = -1 A, V _{GEN} = -4.5 V, R _G = 6 Ω		10		ns
Rise Time	t _r			9		
Turn-Off Delay Time	t _{d(off)}			27		
Fall-Time	t _f			11		

Notes

- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Repetitive rating, pulse width limited by junction temperature.

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Package Information



DIM.	MILLIMETERS		
	MIN	NOM	MAX
A	0.935	0.95	1.10
A1	0.01	---	0.10
A2	0.85	0.90	0.925
b	0.30	0.40	0.50
c	0.10	0.15	0.25
D	2.70	2.90	3.10
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.40	0.60
L1	0.60 REF		
L2	0.25 BSC		
R	0.10	---	---
θ	0°	4°	8°
θ1	7° NOM		

