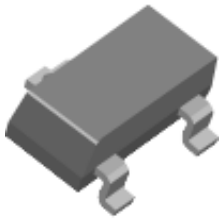
N-Channel 20-V (D-S) MOSFET

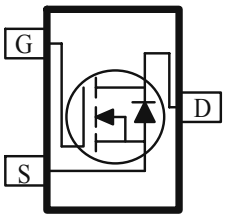
These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are DC-DC converters, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Miniature SOT-23 Surface Mount Package Saves Board Space

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.070 @ V_{GS} = 4.5V	2.2
	0.080 @ V_{GS} = 2.5V	2.0
	0.120 @ V_{GS} = 1.8V	1.8

1.8 V Rated





ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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°C	I_D	2.2	A
	T_A=70°C		1.8	
Pulsed Drain Current[b]		I_{DM}	8	
Continuous Source Current (Diode Conduction)[a]		I_S	0.6	A
Power Dissipation[a]	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS				
Parameter		**Symbol**	**Maximum**	**Units**
Maximum Junction-to-Ambient[a]	t <= 5 sec	R_{THJA}	100	°C/W
	Steady-State		166	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

b. Pulse width limited by maximum junction temperature

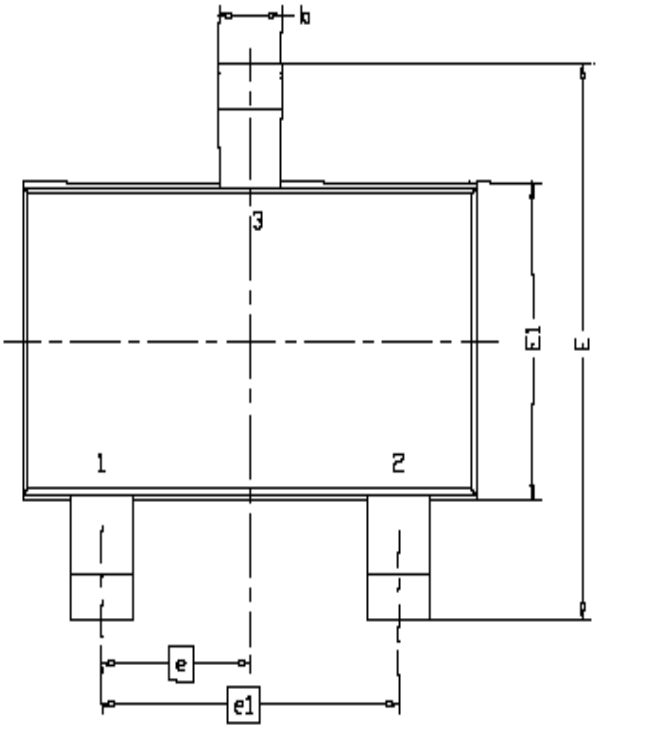
SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	**Symbol**	**Test Conditions**	**Limits**			**Unit**
			Min	**Typ**	**Max**	
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 uA	0.70			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = 12 V			1	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16 V, V_{GS} = 0 V			0.1	uA
		V_{DS} = 16 V, V_{GS} = 0 V, T_J = 55°C			1	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 4.5 V	5			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 2.2 A			70	mΩ
		V_{GS} = 2.5 V, I_D = 2.0 A			80	
		V_{GS} = 1.8 V, I_D = 1.8 A			120	
Forward Tranconductance[A]	g_{fs}	V_{DS} = 5 V, I_D = 2.0 A		11		S
Diode Forward Voltage	V_{SD}	I_S = 0.6 A, V_{GS} = 0 V		0.60		V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 2.0 A		4.5		nC
Gate-Source Charge	Q_{gs}			0.89		
Gate-Drain Charge	Q_{gd}			0.95		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, I_D = 1.0 A , R_G = 6 Ω, V_{GS} = 4.5 V		6		ns
Rise Time	t_r			6.5		
Turn-Off Delay Time	$t_{d(off)}$			14		
Fall-Time	t_f			2		

Notes

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

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

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	0.60REF		
L2	0.25BSC		
R	0.10	---	---
θ	0°	4°	8°
θ1	7°NOM