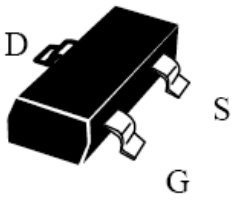
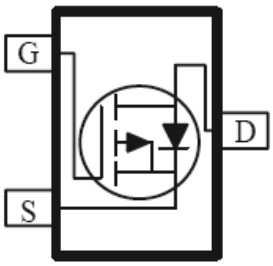
MS60P02NE
P-Channel 60V (D-S) MOSFET

SOT-23-3L





General Description

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low rDS(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.

FEATURES

- Low rDS(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)	$r_{DS(on)}$ (Ω)	I_D (A)
-60	0.770 @ V_{GS}=-10V	1.6
	1.200 @ V_{GS}=-4.5V	1.3

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Maximum**	**Units**
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current[a]	T_A=25°C	I_D	1.7	A
	T_A=70°C		1.4	
Pulsed Drain Current[b]		I_{DM}	±15	
Continuous Source Current (Diode Conduction)[a]		I_S	-1.7	A
Power Dissipation[a]	T_A=25°C	P_D	1.3	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	-1.2			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -48 V, V_{GS} = 0 V			-1	uA
		V_{DS} = -48 V, V_{GS} = 0 V, T_J = 55°C			-10	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = -5 V, V_{GS} = -10 V	-8			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = -10 V, I_D = -1.6 A			770	mΩ
		V_{GS} = -4.5 V, I_D = -1.3 A			1200	
Forward Tranconductance[A]	g_{fs}	V_{DS} = -15 V, I_D = -1.6 A		8		S
Diode Forward Voltage	V_{SD}	I_S = -2.5 A, V_{GS} = 0 V		0.8		V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = -30 V, V_{GS} = -4.5 V, I_D = -1.6 A		18		nC
Gate-Source Charge	Q_{gs}			5		
Gate-Drain Charge	Q_{gd}			2		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -30 V, R_L = 30 Ω , ID = -1 A, VGEN = -10 V, RG = 6Ω		8		nS
Rise Time	t_r			10		
Turn-Off Delay Time	$t_{d(off)}$			35		
Fall-Time	t_f			12		

Notes

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

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