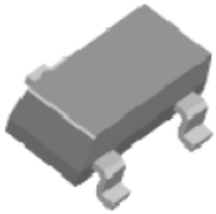
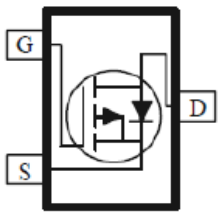
MS23P21 P-Channel 20-V (D-S) MOSFET

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, and PCMCIA cards, cellular and cordless telephones.





1.Gate 2. Drain 3. Source

RoHS
COMPLIANT

HALOGEN
FREE
Avaliable

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

Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	-20	V
Gate-Source Voltage	VGS	±8	V
Continuous Drain Current @ TC=25°C	ID	-4.1	A
Pulsed Drain Current	IDM	-10	A
Continuous Source Current (Diode Conduction)	IS	0.46	A
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C
Power Dissipation@ TC=25°C	Pd	1.25	W

NOTE:

1. Repetitive rating; pulse width limited by maximum junction temperature.

Thermal characteristics (Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Maximum Junction-to-Ambient	RθJA	100	°C/W
Maximum Junction-to-Case	RθJc	150	

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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		-1.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16 V, V_{GS} = 0 V			-1	uA
		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} = -4.5 V	-5			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = -4.5 V, I_D = -4.1 A			79	mΩ
		V_{GS} = -2.5 V, I_D = -3.2 A			110	
Forward Tranconductance[A]	g_{fs}	V_{DS} = -5 V, I_D = -1.25 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 = -4.1 A		7.2		nC
Gate-Source Charge	Q_{gs}			1.7		
Gate-Drain Charge	Q_{gd}			1.5		
Input Capacitance	C_{iss}	P-Channel1 VDS=-15V, VGS=0V, f=1MHz		500		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			60		
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

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

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

c. Repetitive rating, pulse width limited by junction temperature.