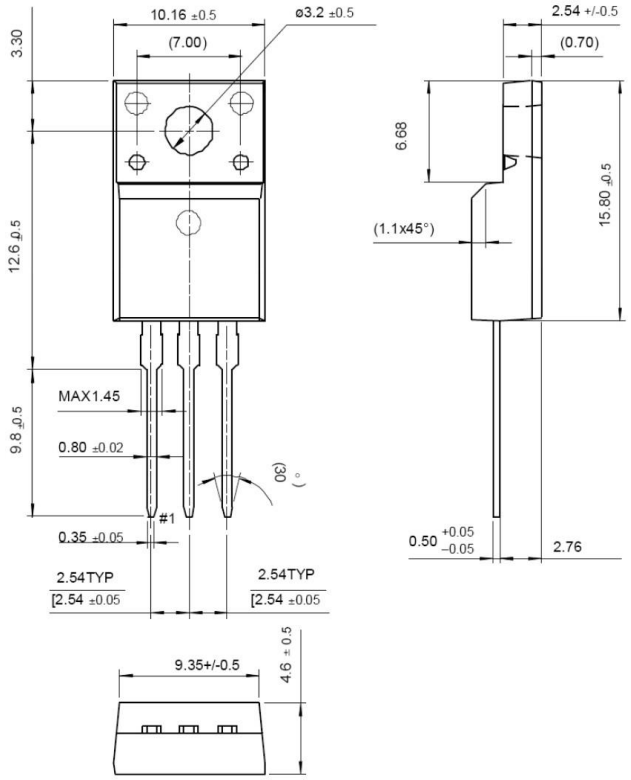
MS8N50

N-Channel Enhancement Mode Power MOSFET

Description

The MS8N50 is a N-channel enhancement-mode MOSFET , providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220 package is universally preferred for all commercial-industrial applications



Features

- BVDSS=550V typically @ Tj=150°C
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

Application

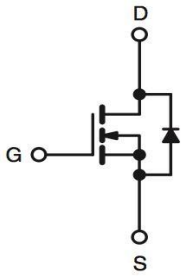
- Ballast
- Inverter

Packing & Order Information

50/Tube ; 1,000/Box

RoHS
COMPLIANT

Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Drain Current -Continuous (TC=25°C)	8.0	A
	Drain Current -Continuous (TC=100°C)	4.8	A
I_{DM}	Drain Current Pulsed	32	A
I_{AR}	Avalanche Current	8.0	V
E_{AS}	Single Pulsed Avalanche Energy	290	mJ
E_{AR}	Repetitive Avalanche Energy	12.5	mJ
dv/dt	Peak Diode Recovery dv/dt	3.5	V/ns

• Drain current limited by maximum junction temperature

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Absolute Maximum Ratings (Tc=25°C unless otherwise specified)			
Symbol	**Parameter**	**Value**	**Unit**
T_L	Maximum Temperature for Soldering @ Lead at 0.125 in(0.318mm) from case for 10 seconds	300	°C
T_{PKG}	Maximum Temperature for Soldering @ Package Body for 10 seconds	260	°C
P_D	Total Power Dissipation(@TC = 25 °C) 44 W	125	W
	Derating Factor above 25 °C	1.0	W/°C
T_{STG}	Operating and Storage Temperature	-55 to +150	°C
T_J	Storage Temperature	150	°C

Note:

1. TJ=+25°C to +150°C.
2. Repetitive rating; pulse width limited by maximum junction temperature.
3. I_{SD}=8A, dI/dt<100A/μs, VDD<BVDSS, TJ=+150°C.
4. I_{AS}=8A, V_{DD}=50V, L=8mH, R_G=25Ω, starting TJ=+25°C.

Thermal Characteristics					
Symbol	**Parameter**	**Min.**	**Typ.**	**Max.**	**Units**
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	--	--	1.0	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	--	--	62.5	

Static Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V , I_D = 250μA	500	--	--	V
		Tj = 150°C	--	550	--	V
ΔBV_{DSS} /ΔT_J	Breakdown Voltage Temperature Coefficient	I_D=250μA, Referenced to 25°C	--	0.60	--	V/°C
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 uA	2.0	--	4.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS} = 500 V , V_{GS} = 0 V V_{DS} = 400 V , T_C= 125°C	--	--	1 25	uA
I_{GSS}	Gate-Body Leakage, Forward	V_{GS} = ±30	--	--	±100	nA
$R_{DS(ON)}$	Static Drain-Source On-state Resistance	V_{GS} =10 V , I_D = 4.0 V	--	0.70	0.85	Ω

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Dynamic Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
Q_g	Total Gate Charge	V_{DD} = 250 V,I_D = 8 A, V_{GS} = 10 V	--	30	--	nC
Q_{gs}	Gate-Source Charge		--	5	--	nC
Q_{gd}	Gate-Drain Charge (Miller Charge)		--	16	--	nC
C_{ISS}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f=1.0MHz	--	1300	--	pF
C_{OSS}	Output Capacitance		--	310	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	120	--	pF
$t_{d(on)}$	Turn-On Time	V_{DS} = 250 V, I_D = 8 A, V_{GS} = 10 V, R_G = 10 Ω	--	14	--	ns
t_r	Rise Time		--	23	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	49	--	ns
tf	Fall Time		--	20	--	ns

Source-Drain Diode						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
I_S		V_D = V_G = 0, V_S = 1.3 V	--	--	8.0	A
I_{SM}			--	--	32	
V_{SD}		I_S = 8 A , V_{GS} = 0 V	--	--	1.5	V
t_{rr}		I_S = 8 A , V_{GS} = 0 V diF/dt=100A/μs	--	460	--	ns
Q_{rr}			--	4.2	--	uC

*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

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