

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

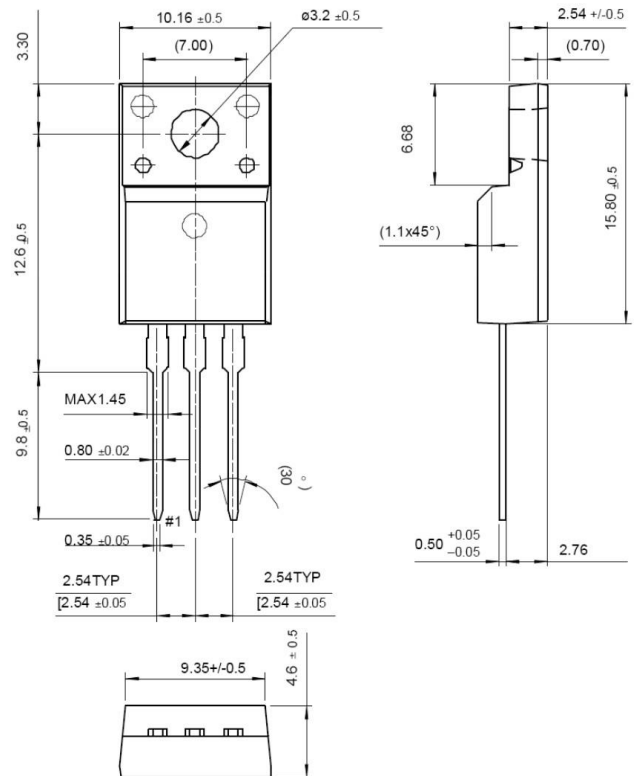
- Ballast
- Inverter

Packing & Order Information

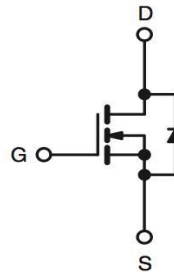
50/Tube ; 1,000/Box



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

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	--	--	1.0	°C/W
R _{θJA}	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
		T _j = 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	$V_{DD} = 250\text{ V}, I_D = 8\text{ A},$ $V_{GS} = 10\text{ V}$	--	30	--	nC
Q_{gs}	Gate-Source Charge		--	5	--	nC
Q_{gd}	Gate-Drain Charge (Miller Charge)		--	16	--	nC
C_{ISS}	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	1300	--	pF
C_{OSS}	Output Capacitance		--	310	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	120	--	pF
$t_{d(on)}$	Turn-On Time	$V_{DS} = 250\text{ V}, I_D = 8\text{ A},$ $V_{GS} = 10\text{ V}, R_G = 10\ \Omega$	--	14	--	ns
t_r	Rise Time		--	23	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	49	--	ns
t_f	Fall Time		--	20	--	ns

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

*Pulse Test : Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

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