

# MS 8N60

## N-Channel Enhancement Mode Power MOSFET

### Description

The MS8N60 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-220AB package is universally preferred for all commercial-industrial applications

### Features

- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

### Application

- Adapter
- Switching Mode Power Supply

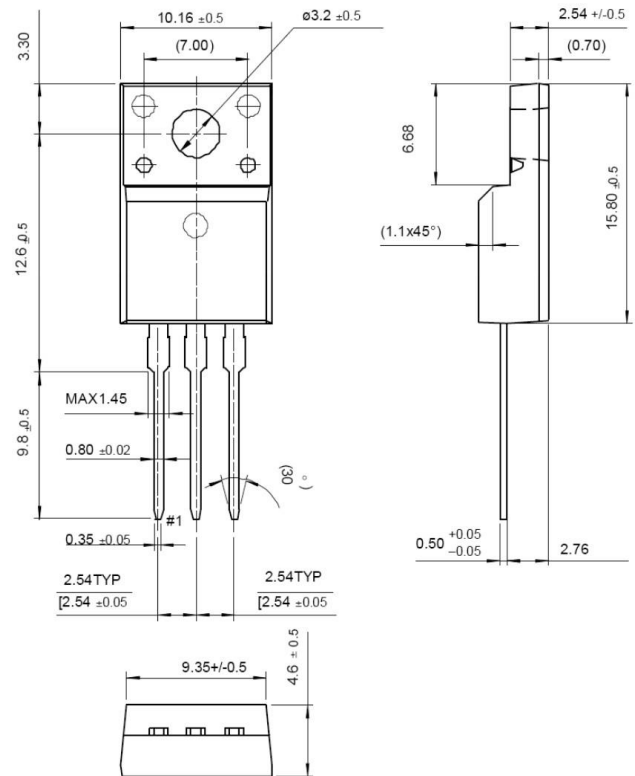
**Package type :** TO-220AB

### Packing & Order Information

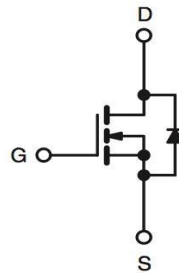
50/Tube ; 1,000/Box



**RoHS  
COMPLIANT**



### Graphic symbol



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

### Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V <sub>DSS</sub>	Drain-Source Voltage	600	V
V <sub>GS</sub>	Gate-Source Voltage	±30	V
I <sub>D</sub>	Drain Current -Continuous (TC=25°C)	7.5	A
	Drain Current -Continuous (TC=100°C)	4.5	A
I <sub>DM</sub>	Drain Current Pulsed	30	A
I <sub>AR</sub>	Avalanche Current	7.5	V
E <sub>AS</sub>	Single Pulsed Avalanche Energy	230	mJ
E <sub>AR</sub>	Repetitive Avalanche Energy	14.7	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns

- Drain current limited by maximum junction temperature

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#### Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$T_L$	Maximum Temperature for Soldering @ Lead at 0.125 in(0.318mm) from case for 10 seconds	300	°C
$P_D$	Total Power Dissipation(@TC = 25 °C) 44 W	147	W
	Derating Factor above 25 °C	1.18	W/°C
$T_{STG}$	Operating and Storage Temperature	-55 to +150	°C
$T_J$	Storage Temperature	150	°C

Note:

- 1.Repetitive rating; pulse width limited by maximum junction temperature.
2.  $I_{AS} \leq 7.5A$ ,  $V_{DD} = 50V$ ,  $L = 7.5mH$ ,  $V_G = 10V$ , starting  $T_J = +25^\circ C$ .
3.  $I_{SD} \leq 7.5A$ ,  $di/dt \leq 200A/\mu s$ ,  $V_{DD} \leq BV_{DSS}$ , starting  $T_J = +25^\circ C$ .

#### Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	--	--	0.85	°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	$V_{GS} = 0V$ , $I_D = 250\mu A$	600	--	--	V
		$T_j = 150^\circ C$	--	650	--	V
$\Delta BV_{DSS} / \Delta T_J$	Breakdown Voltage Temperature Coefficient	$I_D = 250\mu A$ , Referenced to 25°C	--	0.65	--	V/°C
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ , $I_D = 250\mu A$	2.0	--	4.0	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS} = 600V$ , $V_{GS} = 0V$ $V_{DS} = 480V$ , $T_C = 125^\circ C$	--	--	1 10	$\mu A$
$I_{GSS}$	Gate-Body Leakage, Forward	$V_{GS} = \pm 30$	--	--	$\pm 100$	nA
$R_{DS(on)}$	Static Drain-Source On-state Resistance	$V_{GS} = 10V$ , $I_D = 3.75V$	--	1.08	1.2	$\Omega$

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Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$Q_g$	Total Gate Charge	$V_{DD} = 300\text{ V}, I_D = 6\text{ A},$ $V_{GS} = 10\text{ V}$	--	31.3	--	nC
$Q_{gs}$	Gate-Source Charge		--	6.9	--	nC
$Q_{gd}$	Gate-Drain Charge (Miller Charge)		--	14	--	nC
$C_{ISS}$	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	1482	--	pF
$C_{OSS}$	Output Capacitance		--	121.7	--	pF
$C_{RSS}$	Reverse Transfer Capacitance		--	14	--	pF
$t_{d(on)}$	Turn-On Time	$V_{DS} = 300\text{ V}, I_D = 6\text{ A},$ $V_{GS} = 10\text{ V}, R_G = 10\ \Omega$	--	14.2	--	ns
$t_r$	Rise Time		--	11.8	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	40.1	--	ns
$t_f$	Fall Time		--	18.8	--	ns

Source-Drain Diode						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$I_S$		$V_D = V_G = 0,$ $V_S = 1.3\text{ V}$	--	--	7.5	A
$I_{SM}$			--	--	30	
$V_{SD}$		$I_S = 7.5\text{ A}, V_{GS} = 0\text{ V}$	--	--	1.5	V
$t_{rr}$		$I_F = 6\text{ A}, V_{GS} = 0\text{ V}$ $diF/dt = 100\text{ A}/\mu\text{s}$	--	504.9	--	ns
$Q_{rr}$			--	47.59	--	uC

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

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#### Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE

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