

# MSF8N60

## N-Channel Enhancement Mode Power MOSFET

### Description

The MSF8N60 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-220F 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

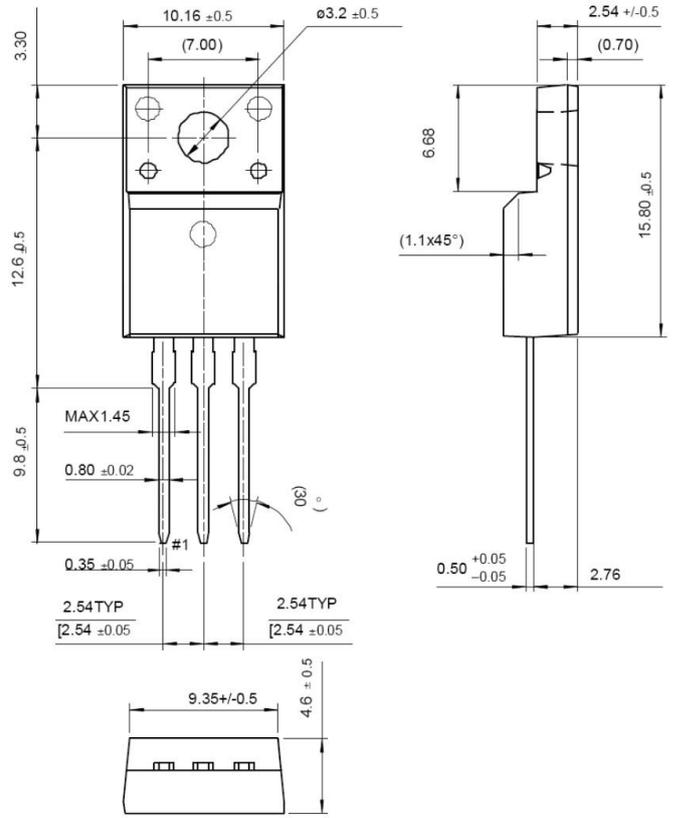
- Open Framed Power Supply
- Adapter
- STB

### Packing & Order Information

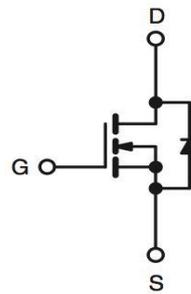
50/Tube ; 1,000/Box



**RoHS  
COMPLIANT**



### Graphic symbol



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

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
E <sub>AS</sub>	Single Pulsed Avalanche Energy	230	mJ
E <sub>AR</sub>	Repetitive Avalanche Energy	14.7	mJ

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

Symbol	Parameter	Value	Unit
P <sub>D</sub>	Power Dissipation (TC = 25 °C)	48	W
	Derating Factor above 25 °C	0.38	W/°C
dv/dt	Peak Diode Recovery dv/dt	4.5	V
T <sub>L</sub>	TL Maximum Temperature for Soldering @ Lead at 0.125 in(0.318mm) from case for 10 seconds	300	°C
T <sub>STG</sub>	Operating Junction Temperature	-55~+150	°C
T <sub>J</sub>	Storage Temperature	150	°C

#### Note:

- 1.Repetitive rating; pulse width limited by maximum junction temperature.
2. I<sub>AS</sub>≤7.5A, V<sub>DD</sub>=50V, L=7.5mH, V<sub>G</sub>=10V, starting T<sub>J</sub>=+25°C.
3. I<sub>SD</sub>≤7.5A, dI/dt≤200A/μs, V<sub>DD</sub>≤BV<sub>DSS</sub>, starting T<sub>J</sub>=+25°C.

#### Thermal characteristics

Symbol	Parameter	Max.	Units
R <sub>θJC</sub>	Thermal Resistance, Junction-to-Case	2.6	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	62.5	

#### Static Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2.0	--	4.0	V
*R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10 V , I <sub>D</sub> = 3.75 A	--	1.0	1.2	Ω
BV <sub>DSS</sub>	V <sub>GS</sub> = 0 V , I <sub>D</sub> = 250μA	600	--	--	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	I <sub>D</sub> = 250μA, Referenced to 25°C	--	0.65	--	V/°C
I <sub>DSS</sub>	V <sub>DS</sub> = 600 V , V <sub>GS</sub> = 0 V V <sub>DS</sub> = 480 V , T <sub>C</sub> = 125°C	--	--	1 10	uA
I <sub>GSS</sub>	V <sub>GS</sub> = ±30	--	--	±100	nA

#### Dynamic Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
Q <sub>g</sub>	V <sub>DD</sub> = 300 V, I <sub>D</sub> = 6 A, V <sub>GS</sub> = 10 V	--	31.3	--	nC
Q <sub>gs</sub>		--	6.9	--	nC
Q <sub>gd</sub>		--	14	--	nC
t <sub>d(on)</sub>	V <sub>DD</sub> = 300 V, I <sub>D</sub> = 6 A, R <sub>G</sub> = 10 Ω , V <sub>GS</sub> = 10 V	--	14.2	--	ns
t <sub>r</sub>		--	11.8	--	ns
t <sub>d(off)</sub>		--	40.1	--	ns
t <sub>f</sub>		--	18.8	--	ns

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#### Dynamic Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
$C_{ISS}$	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	1482	--	pF
$C_{OSS}$		--	121.7	--	pF
$C_{RSS}$		--	14	--	pF

#### Source-Drain Diode Characteristics

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

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

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