

MS7N60

N-Channel Enhancement Mode Power MOSFET

Description

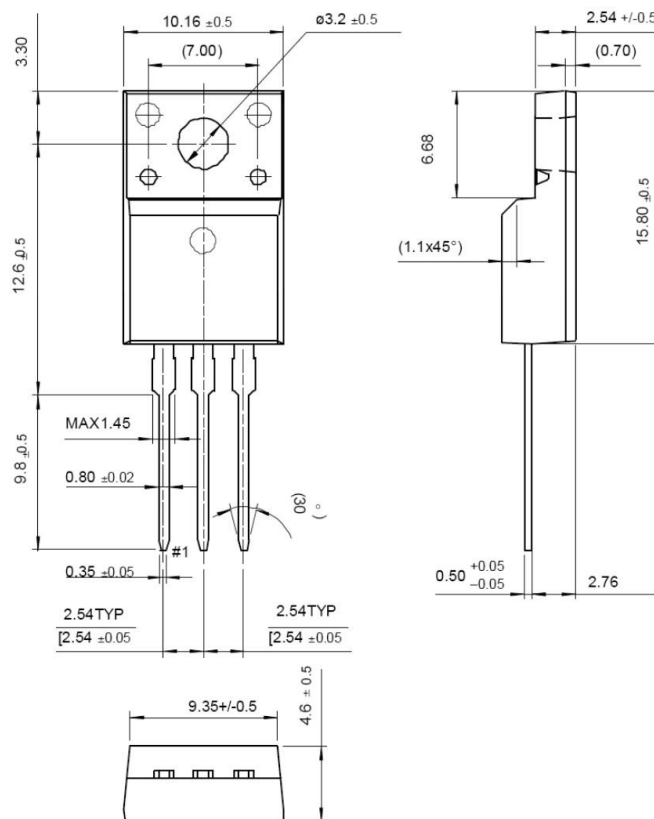
The MS7N60 is a N-channel enhancement-mode MOSFET , providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220 package is universally preferred for all commercial-industrial applications

Features

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

Application

- Adapter
- Switching Mode Power Supply



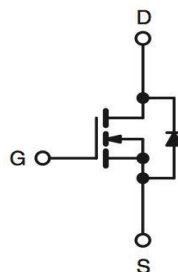
Packing & Order Information

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	600	V
V _{GS}	Gate-Source Voltage	±30	V
I _D	Drain Current -Continuous (TC=25°C)	7.0	A
	Drain Current -Continuous (TC=100°C)	4.4	A
I _{DM}	Drain Current Pulsed	28	A
I _{AR}	Avalanche Current	7.0	V
E _{AS}	Single Pulsed Avalanche Energy	187	mJ
E _{AR}	Repetitive Avalanche Energy	7.0	mJ
dv/dt	Peak Diode Recovery dv/dt	4.4	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 Derating Factor above 25 °C	44	W
		0.35	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. $I_{AS} \leq 7A$, $V_{DD} = 50V$, $L = 7mH$, $V_G = 10V$, starting $T_J = +25^\circ C$.
3. $I_{SD} \leq 7A$, $dI/dt \leq 200A/\mu s$, $V_{DD} \leq BVDSS$, starting $T_J = +25^\circ C$.

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	--	--	1.25	°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
$\Delta BV_{DSS} / \Delta T_J$	Breakdown Voltage Temperature Coefficient	$I_D = 250\mu A$, Referenced to 25°C	--	0.60	--	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	μA
I_{GSS}	Gate-Body Leakage, Forward	$V_{GS} = \pm 30$	--	--	± 100	nA
$R_{DS(on)}$	Static Drain-Source On-state Resistance	$V_{GS} = -10V$, $I_D = 3.5V$	--	1.08	1.2	Ω

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
C_{ISS}	Input Capacitance	$V_{DS} = 25V$, $V_{GS} = 0V$, $f = 1.0MHz$	--	1332	--	pF
C_{OSS}	Output Capacitance		--	114	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	61	--	pF

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Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$t_{d(on)}$	Turn-On Time	$V_{DS} = 300\text{ V}, I_D = 6\text{ A},$ $V_{GS} = 10\text{ V}, R_G = 25\ \Omega$	--	14.2	--	ns
t_r	Rise Time		--	40	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	31.5	--	ns
t_f	Fall Time		--	32.3	--	ns
Q_g	Total Gate Charge	$V_{DS} = 300\text{ V}, I_D = 6\text{ A},$ $V_{GS} = 10\text{ V}$	--	37	--	nC
Q_{gs}	Gate-Source Charge		--	6.0	--	nC
Q_{gd}	Gate-Drain Charge (Miller Charge)		--	17.9	--	nC

Source-Drain Diode						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
I_S		$V_D = V_G = 0,$ $V_S = 1.3\text{ V}$	--	--	7.0	A
I_{SM}			--	--	28	
V_{SD}		$I_S = 7\text{ A}, V_{GS} = 0\text{ V}$	--	--	1.5	V
t_{rr}		$I_S = 6\text{ A}, V_{GS} = 0\text{ V}$ $diF/dt = 100\text{ A}/\mu\text{s}$	--	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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