MS15N50

N-Channel Enhancement Mode Power MOSFET

Description

The MS15N50 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

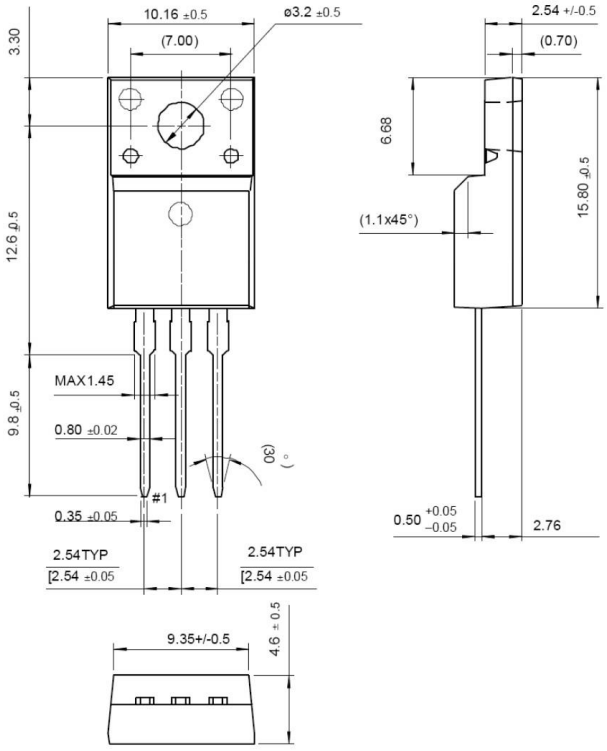
Application

- Power Factor Correction
- Flat Panel Power
- Full and Half Bridge Power Supplies
- Two-Transistor Forward Power Supplies

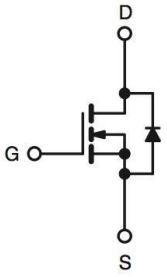
Packing & Order Information

50/Tube ; 1,000/Box

RoHS COMPLIANT



Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	500	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Drain Current -Continuous (TC=25°C)	15	A
	Drain Current -Continuous (TC=100°C)	9	A
I_{DM}	Drain Current -Pulsed	60	A
I_{AR}	Avalanche Current	15	A
E_{AS}	Single Pulsed Avalanche Energy	750	mJ
E_{AR}	Repetitive Avalanche Energy	25	mJ
dV/dt	Peak Diode Recovery dV/dt	4.5	V/ns
T_J	Storage Temperature	150	°C

• Drain current limited by maximum junction temperature

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Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
P_D	Power Dissipation (TC=25°C)	250	W
	Derate above 25C	2	W/°C
T_{STG}	Operating Junction and Storage Temperature	-55 to +150	°C
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

Note:

1. TJ=+25 to +150.
2. Repetitive rating; pulse width limited by maximum junction temperature.
3. I_{SD}=15A, dI/dt<100A/㎲, VDD<BVDSS, TJ=+150.
4. I_{AS}=15A, VDD=50V, L=6mH, RG=25", starting TJ=+25.

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance , Junction-to-Case	--	0.5	°C/W
$R_{\theta JA}$	Thermal Resistance , Junction-to-Ambient	--	62.5	

Static Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	--	4.0	V
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V , I_D = 250μA	500	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	I_D = 250μA, Referenced to 25°C	--	0.5	--	V/°C
I_{DSS}	Zero Gate Voltage Drain 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 Current, Forward	V_{DS} = ±30	--	--	±100	nA
*$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V , I_D = 7.5 A	--	0.38	0.42	Ω

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
$t_{d(on)}$	Turn-On Time	V_{DD} = 250 V, I_D = 15 A, V_{GS} = 10 V , R_G = 10 Ω	--	40	--	ns
t_r	Turn-On Time		--	140	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	100	--	ns
tf	Turn-Off Fall Time		--	85	--	ns

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Dynamic Characteristics						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
C_{ISS}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f=1.0MHz	--	3090	--	pF
C_{OSS}	Output Capacitance		--	250	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	120	--	pF
Q_g	Total Gate Charge	V_{DD} = 250 V,I_D = 15 A, V_{GS} = 10 V	--	45	--	nC
Q_{gs}	Gate-Source Charge		--	11	--	nC
Q_{gd}	Gate-Drain Charge		--	2	--	nC

Source-Drain Diode						
Symbol	**Parameter**	**Test Conditions**	**Min**	**Typ.**	**Max.**	**Units**
I_S		V_D = V_G = 0, V_S = 1.3V	--	--	15	A
I_{SM}			--	--	60	
V_{SD}		I_S = 15 A , V_{GS} = 0 V	--	--	1.5	V
t_{rr}		I_F = 15 A , V_{GS} = 0 V diF/dt=100A/μs	--	420	--	ns
Q_{rr}			--	5	--	μC

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

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