

MS50N06

N-Channel Enhancement Mode Power MOSFET

Description

The MS50N60 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

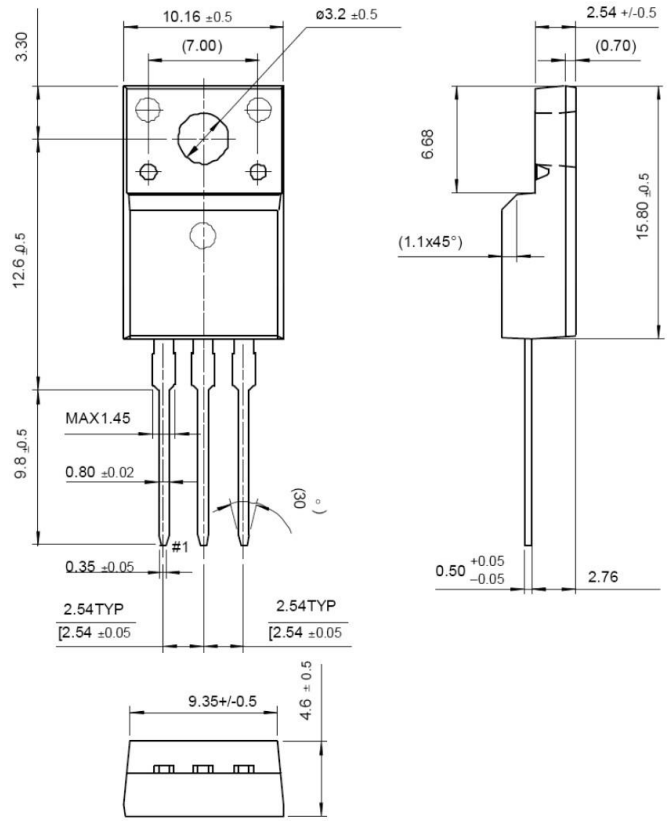
- Power Factor Correction
- LCD TV Power
- Full and Half Bridge Power
- E-bike Charger

Packing & Order Information

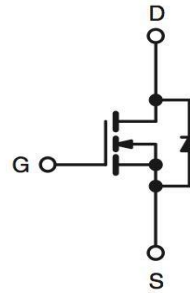
50/Tube ; 1,000/Box



RoHS
COMPLIANT



Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

Symbol	Parameter	Value	Unit
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current @ TC=25°C	50	A
	Continuous Drain Current @ TC=100°C	35	A
I _{DM} *1	Pulsed Drain Current	200	A
I _{AS}	Avalanche Current	50	A
E _{AS}	Avalanche Energy	500	mJ

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

Symbol	Parameter	Value	Unit
E _{AR} *2	Repetitive Avalanche Energy	12	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
P _D	Power Dissipation (TC=25°C)	120	W
	Power Dissipation (TC=100°C)	0.8	W
T _J /T _{STG}	Operating Junction and Storage Temperature	-55 to +175	°C

NOTE:

1. Pulse width limited by maximum junction temperature.
2. L=200μH, I_{AS}=50A, V_{DD}=30V, starting T_J=+25°
3. I_{SD}≤50A, di/dt<100A/μs, V_{DD}≤BVDSS, T_J≤T_j(max).

Thermal Resistance Ratings(Tc=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
R _{thjc}	Typical thermal resistance	1.24	°C/W
R _{θJA}		62.5	

Static Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
BDVSS	V _{GS} = 0 V, I _D = -250μA	60	--	--	V
V _{GS}	V _{DS} = V _{GS} , I _D = -250μA	2.0	2.8	4.0	V
g _{fs}	V _{DS} = 5 V, I _D = 20 A	--	28	--	S
I _{GSS}	V _{GS} = ±20	--	--	±100	nA
I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V V _{DS} = 48 V, V _{GS} = 0 V, T _J = 125°C	--	--	5 25	uA
I _{D(on)}	V _{DS} = 10 V, V _{GS} = 10 V	50	--	--	A
*R _{DS(on)}	V _{GS} = 10 V, I _D = 30 A V _{GS} = 15 mV, V _{SD} = 0, f = 1MHz	--	19 28	22	mΩ

Dynamic Characteristics

Symbol	Test Conditions	Min	Typ.	Max.	Units
t _{d(on)}	V _{DS} = 50 V, R _D = 6 Ω, V _{GS} = 10 V, I _D = 1 A	--	--	--	ns
t _r		--	--	--	ns
t _{d(off)}		--	--	--	ns
t _f		--	--	--	ns
C _{ISS}	V _{DS} = 25 V, V _{GS} = 0 V f = 1MHz	--	--	--	pF
C _{OSS}		--	--	--	pF
C _{RSS}		--	--	--	pF

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Dynamic Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
R _g	V _{DS} = 80 V , I _D = 30 A, V _{GS} = 10 V	--	--	--	Ω
Q _g		--	--	--	nC
Q _{gs}		--	--	--	nC
Q _{gd}		--	--	--	nC

NOTE:

1. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
2. Independent of operating temperature
3. Pulse width limited by maximum junction temperature.

Source-Drain Diode Characteristics					
Symbol	Test Conditions	Min	Typ.	Max.	Units
I _S		--	--	50	A
I _{SM}		--	--	140	
V _{SD}	I _S = 25 A , V _{GS} = 0	--	--	1.3	V
t _{rr}	I _F = 50 A , V _{GS} = 0 , dI _F /dt = 100A/μs	--	22	--	ns
Q _{rr}		--	180	--	uC

Ordering Information	
Parameter	Shipping
TO-220	50 pcs/tube, 20 tubes/box, 4 boxes / carton

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