MSB15N60

N-Channel Enhancement Mode Power MOSFET

Description

The MSB15N60 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-263 package is universally preferred for all commercial-industrial applications

Features

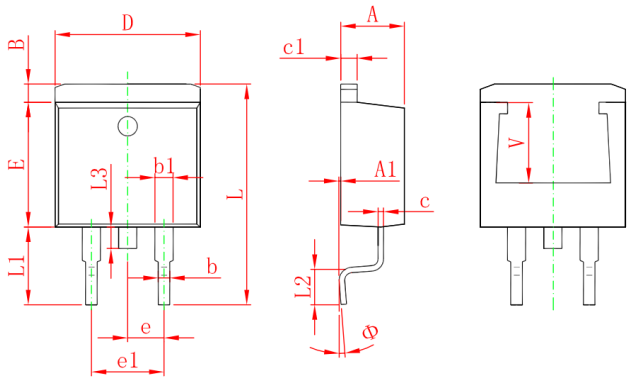
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

Application

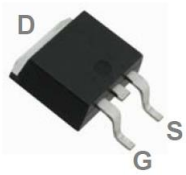
- Adapter
- Switching Mode Power Supply

Packing & Order Information

3,000/Reel

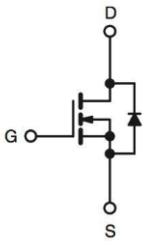


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220 REF.	



RoHS COMPLIANT

Graphic symbol



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

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)	15	A
	Drain Current -Continuous (TC=100°C)	9.5	A
I_{DM}	Drain Current -Pulsed	60	A
I_{AR}	Avalanche Current	15	A
E_{AS}	Single Pulsed Avalanche Energy	245	mJ
E_{AR}	Repetitive Avalanche Energy	24	mJ
dV/dt	Peak Diode Recovery dV/dt	9.8	V/ns
T_J	Storage Temperature	150	°C

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Absolute Maximum Ratings			
Symbol	Parameter	Value	Unit
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C
P_D	Total Power Dissipation(@TC = 25 °C) 245 W	245	W
	Derating Factor above 25 °C	2	W/°C
T_{STG}	Operating Junction and Storage Temperature	-55 to +150	°C

Note:

1.Repetitive rating; pulse width limited by maximum junction temperature.

2. I_{AS}=15A, V_{DD}=50V, L=0.5mH, R_G=25Ω, starting TJ=+25°C.

3. I_{SD}≤7.5A, dI/dt≤100A/μs, VDD≤BVDSS, starting TJ=+25°C.

Thermal Resistance Characteristics				
Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	--	0.93	°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	600	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	I_D = 250μA, Referenced to 25°C	--	0.7	--	V/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 600 V , V_{GS} = 0 V V_{DS} = 480 V , T_C = 125°C	--	--	1 10	uA
I_{GSS}	Gate-Body Leakage Current, Forward	V_{GS} = ±30	--	--	±100	nA
*$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} =10 V , I_D = 7.5 A	--	0.45	0.52	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 = 9.1 Ω	--	50	101	ns
t_r	Turn-On Time		--	78	162	ns
$t_{d(off)}$	Turn-Off Delay Time		--	120	261	ns
tf	Turn-Off Fall Time		--	66	128	ns
C_{ISS}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0MHz	--	2270	3000	pF
C_{OSS}	Output Capacitance		--	300	405	pF
C_{RSS}	Reverse Transfer Capacitance		--	23	37	pF

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Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
Q_g	Total Gate Charge	V_{DD} = 250 V, I_D = 15 A, V_{GS} = 10 V	--	36	60	nC
Q_{gs}	Gate-Source Charge		--	9	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC

Source-Drain Diode						
Symbol	Parameter	Test Conditions	Min	Typ.	Max.	Units
I_S		V_D = V_G = 0, V_S = 1.3 V	--	--	14	A
I_{SM}			--	--	60	
V_{SD}		I_S = 15 A , V_{GS} = 0 V	--	--	1.4	V
t_{rr}		I_F = 15 A , V_{GS} = 0 V diF/dt=100A/us	--	600	--	ns
Q_{rr}			--	7.2	--	uC

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

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