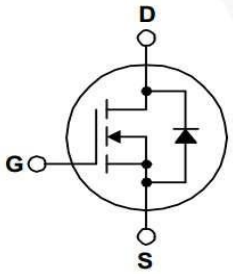
迈诺斯科技

IRLB8748PBF

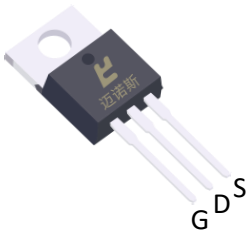
Silicon N-Channel Power MOSFET

Description

The IRLB8748PBF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.



Schematic diagram



TO-220

General Features

① V_{DS}=30V, I_D=100A
② Special process technology for high ESD capability
③ High density cell design for ultra low R_{dson}
④ Fully characterized avalanche voltage and current
⑤ Good stability and uniformity with high EAS
⑥ Excellent package for good heat dissipation

Application

① Power switching application
② Hard switched and High frequency circuits
③ Uninterruptible power supply

Package Marking And Ordering Information

Ordering Codes	Package	Product Code	Packing
IRLB8748PBF	TO-220	IRLB8748PBF	Tube

ABSOLUTE RATINGS (at T_C=25°C unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	30	V
I_D	Drain Current (continuous) at Tc=25℃	100	A
I_{DM}	Drain Current (pulsed)	400	A
V_{GS}	Gate to Source Voltage	+/-30	V
P_{tot}	Total Dissipation at Tc=25℃	120	W
T_j	Max. Operating Junction Temperature	175	℃
E_{AS}	Single Pulse Avalanche Energy	700	mJ

Thermal characteristics

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	2.5	℃/W

Electrical Characteristics (at T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	V_{GS} =0V, I_D=250μA	30	--	--	V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	V_{GS} =10V, I_D=20A	--	2.8	3.5	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.5	3.0	V
I_{DSS}	Drain to Source leakage Current	V_{DS}=30V, V_{GS} = 0V	--	--	1.0	μA
$I_{GSS(F)}$	Gated Body Foward Leakage	V_{GS} = +30V	--	--	100	nA
$I_{GSS(R)}$	Gated Body Reverse Leakage	V_{GS} = -30V	--	--	-100	nA
C_{iss}	Input Capacitance	V_{GS} =0V, V_{DS}=25V, f=1.0MHZ	--	2315	--	pF
C_{oss}	Output Capacitance		--	190	--	pF
C_{rss}	Reverse Transfer Capacitance		--	11	--	pF

Switching Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=20V,I_D=50A, R_G=10Ω	--	28	--	nS
t_r	Turn-on Rise Time		--	21	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	62	--	nS
t_f	Turn-off Fall Time		--	32	--	nS
Q_g	Total Gate Charge	V_{DS}=20V I_D=50A V_{GS}=10V	--	40	--	nC
Q_{gs}	Gate-Source Charge		--	9.2	--	nC
Q_{gd}	Gate-Drain Charge		--	14	--	nC

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{SD}	S-D Current(Body Diode)		--	--	100	A
I_{SDM}	Pulsed S-D Current(Body Diode)		--	--	400	A
V_{SD}	Diode Forward Voltage	V_{GS} =0V, I_{DS}=30A	--	--	1.5	V
t_{rr}	Reverse Recovery Time	T_J=25℃,I_F=30A di/dt=100A/us	--	--	555	nS
Q_{rr}	Reverse Recovery Charge		--	--	4550	μC
	*Pulse Test: Pulse Width <= 300μs, Duty Cycle< =2%					

Characteristics Curves

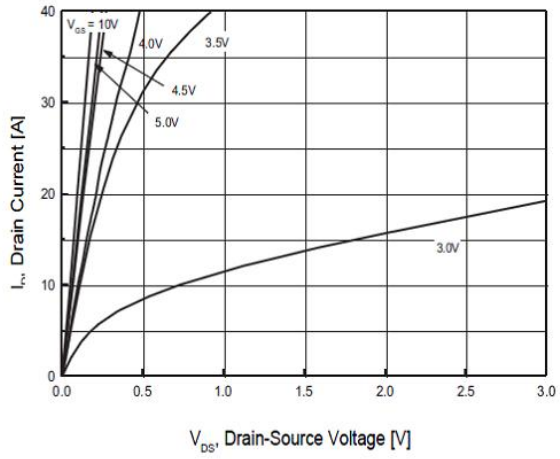


Fig.1 On-Region Characteristics

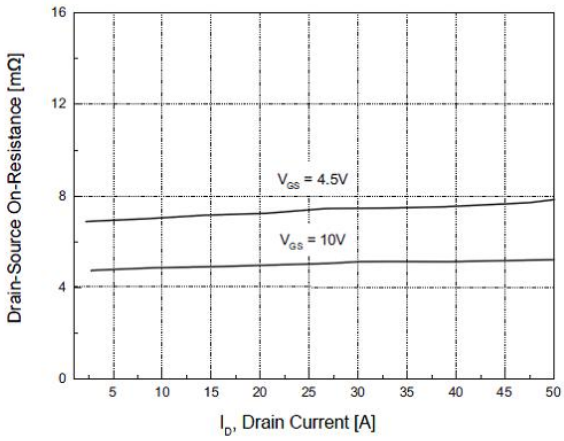


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

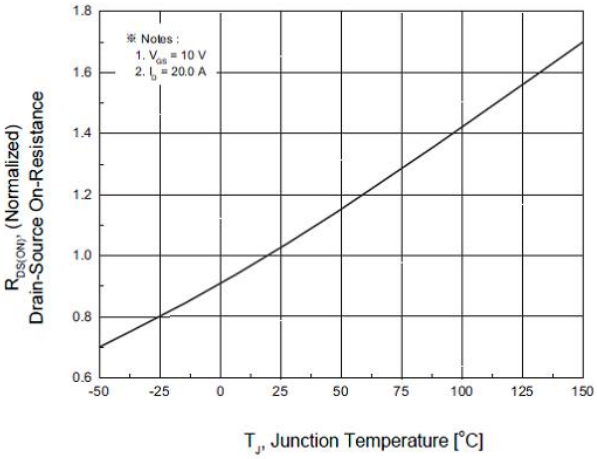


Fig.3 On-Resistance Variation with Temperature

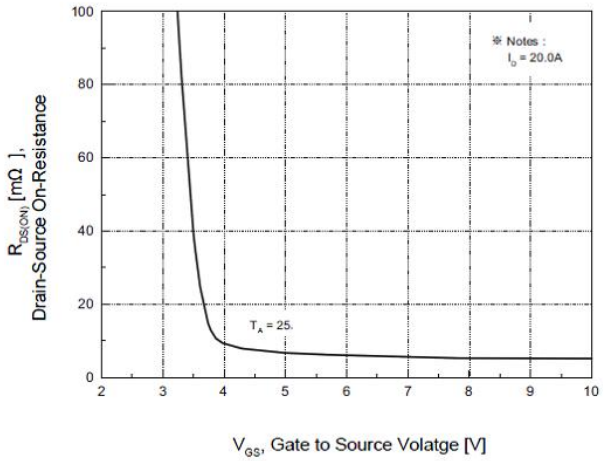


Fig.4 On-Resistance Variation with Gate to Source Voltage

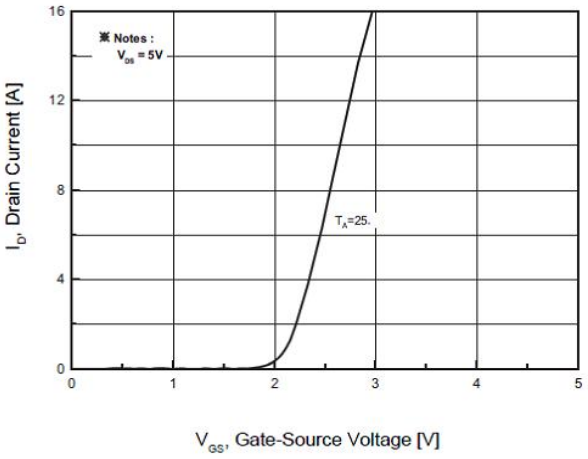


Fig.5 Transfer Characteristics

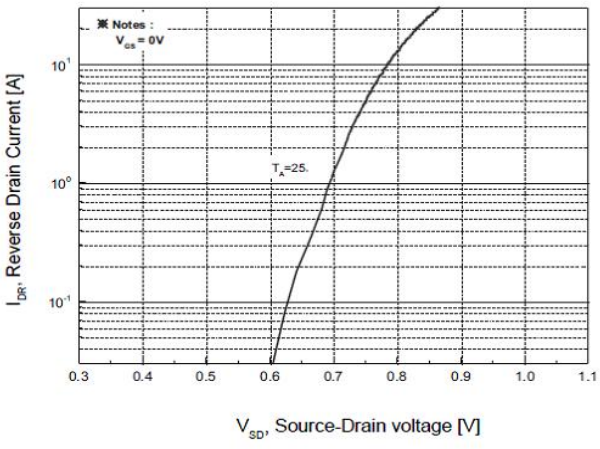


Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature

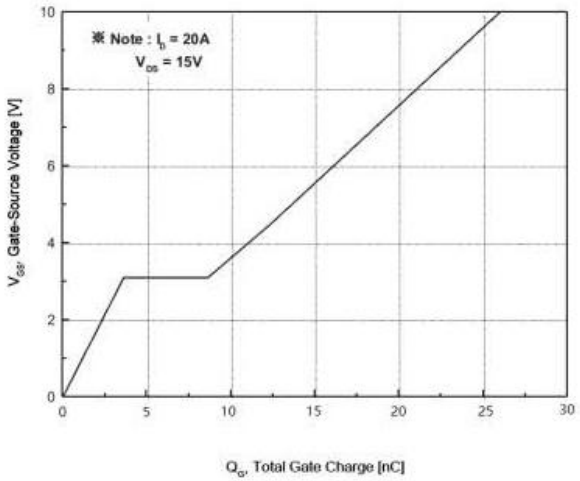


Fig.7 Gate Charge Characteristics

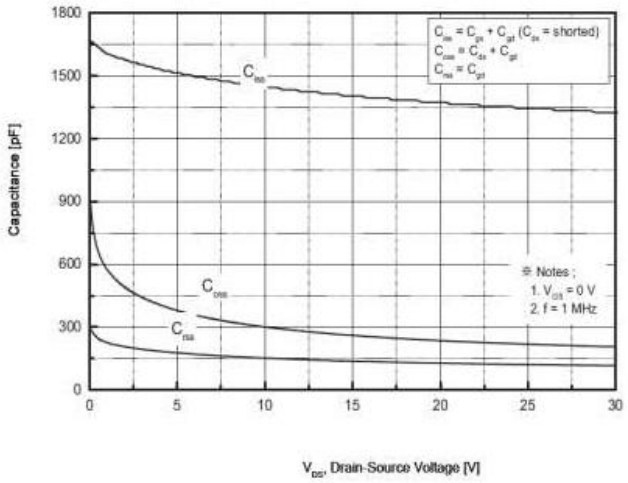


Fig.8 Capacitance Characteristics

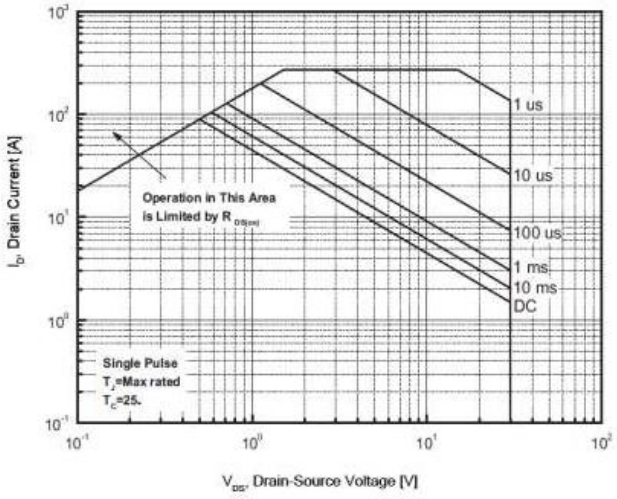


Fig.9 Maximum Safe Operating Area

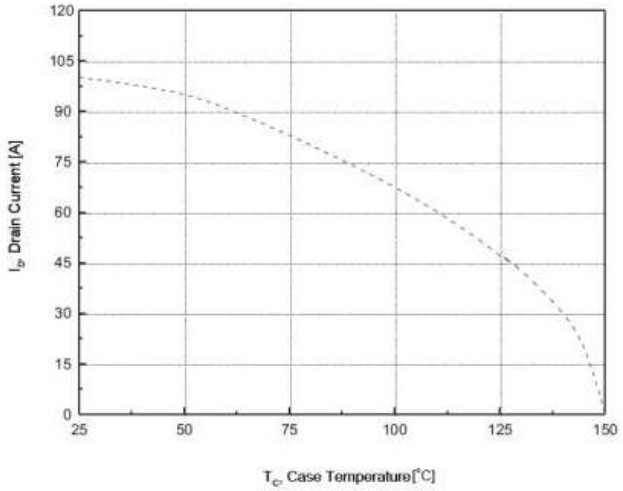


Fig.10 Maximum Drain Current vs. Case Temperature

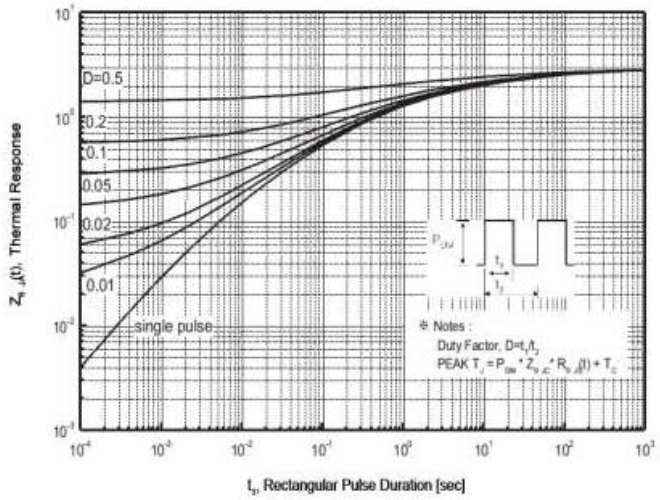
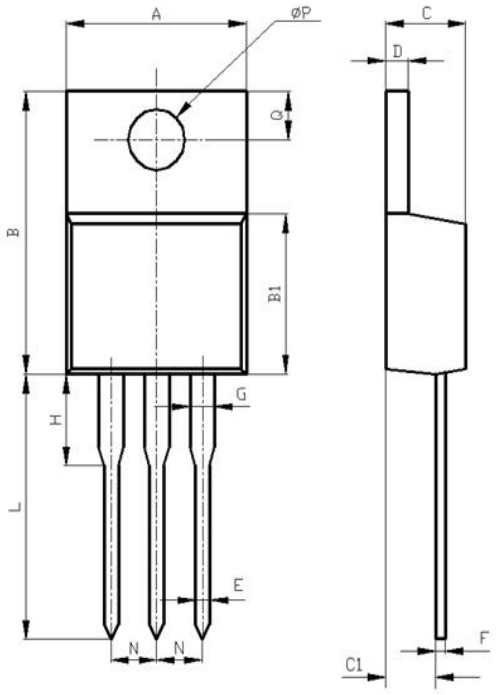


Fig.11 Transient Thermal Response Curve

Package Description



Items	Values(mm)	
	MIN	MAX
A	9.60	10.6
B	15.0	16.0
B1	8.90	9.50
C	4.30	4.80
C1	2.30	3.10
D	1.20	1.40
E	0.70	0.90
F	0.30	0.60
G	1.17	1.37
H	2.70	3.80
L	12.6	14.8
N	2.34	2.74
Q	2.40	3.00
ΦP	3.50	3.90

TO-220 package

NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change withoutprior notice.

CONTACT:

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