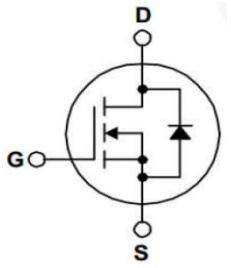
迈诺斯科技

IRFB4115PBF

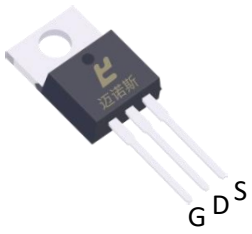
150V N-Channel Power MOSFET

Description

The IRFB4115PBF 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}=150V,I_D=140A
$R_{DS(ON)}$ < 11.8mΩ @ V_{GS}=10V
② High power and current handing capability
③ Lead free product is acquired
④ 100% avalanche tested
⑤ RoHS product

Application

① Load switch
② Power management

Package Marking And Ordering Information

Ordering Codes	Package	Product Code	Packing
IRFB4115PBF	TO-220	IRFB4115	Tube

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

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Voltage	150	V
I_D	Continuous Drain Current	140	A
	Continuous Drain Current,T_C = 100°C	72	A
I_{DM}	Pulsed Drain Current(Note1)	400	A
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS}	Single Pulse Avalanche Energy(Note2)	361	mJ
P_D	Power Dissipation	330	W
T_J， T_{stg}	Operating Junction and Storage Temperature Range	175，–55 to 175	℃
T_L	Maximum Temperature for Soldering	300	℃

Thermal Characteristic

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	0.45	℃/W

Electrical Characteristics (Tc=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Units
Off Characteristics						
B_{VDSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	150	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150V,V_{GS}=0V, T_j= 25℃	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	3.0	--	5.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance(Note 3)	V_{GS}=10V, I_D=30A	--	10	11.8	mΩ
Dynamic Characteristics						
R_g	Gate resistance	F=1.0MHz	--	1.5	--	Ω
C_{lss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	--	6230	--	pF
C_{oss}	Output Capacitance		--	590	--	pF
C_{rss}	Reverse Transfer Capacitance		--	330	--	pF
Switching Characteristics (Note 4)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=98V,I_D=62A, V_{GS}=10V,R_{GEN}=2.2Ω	--	18	--	nS
t_r	Turn-on Rise Time		--	72	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	40	--	nS
t_f	Turn-Off Fall Time		--	39	--	nS
Q_g	Total Gate Charge	V_{DS}=120V,I_D=62A V_{GS}=10V	--	152	--	nC
Q_{gs}	Gate-Source Charge		--	42	--	nC
Q_{gd}	Gate-Drain Charge		--	70	--	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage(Note 3)	V_{GS}=0V,I_S=30A	--	--	1.2	V
I_S	Continuous Source Current	T_j= 25℃	--	--	100	A

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.EAS condition :T_j=25℃,V_{DS}=50V,V_G=10V,L=0.5mH,I_{as}=38A

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

4.Guaranteed by design, not subject to production.

Characteristics Curves

Figure 1 Output Characteristics	Figure 2 Transfer Characteristics

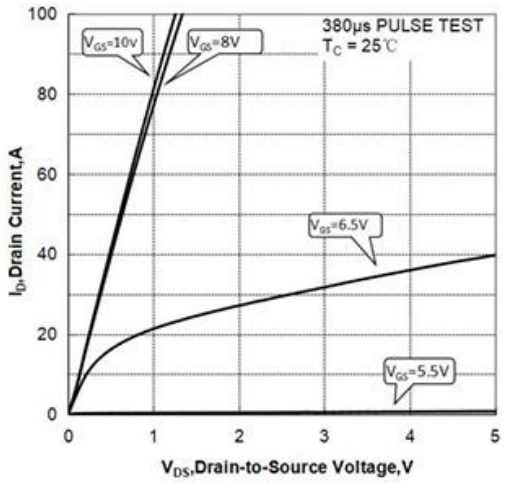
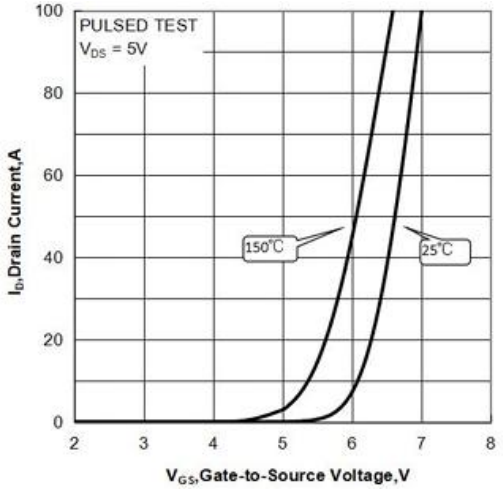

	

Figure 3 On-Resistance vs. ID	**Figure 4 On-Resistance vs. Junction Temperature**

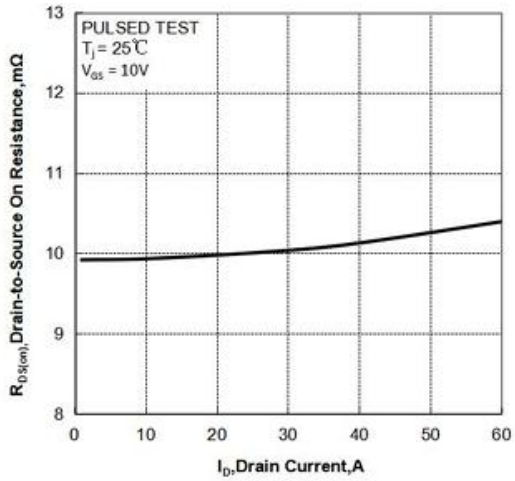
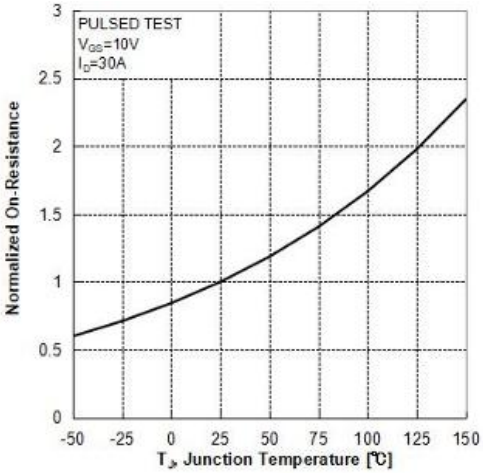

	

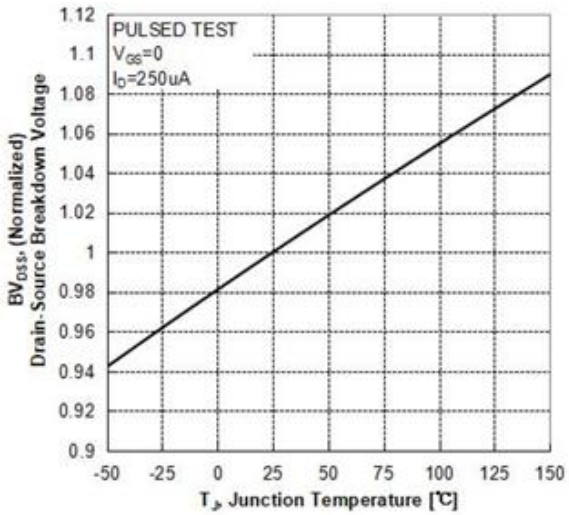
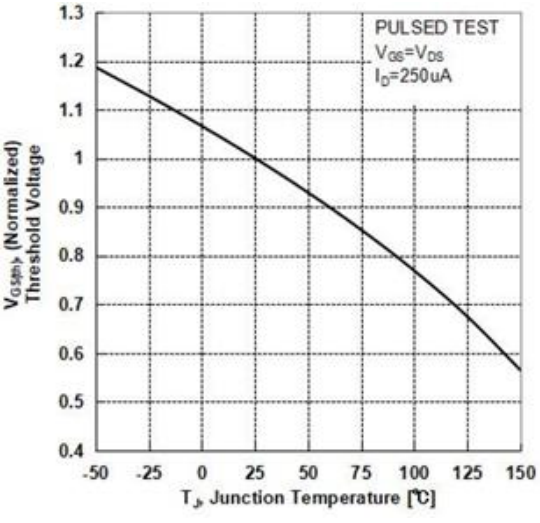
Figure5 B_V vs Junction Temperature	**Figure6 Vth vs Junction Temperature**
	

Figure 7 Gate-Charge Characteristics

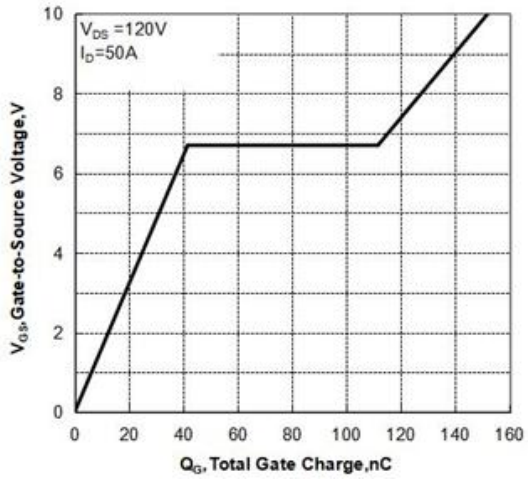


Figure 8 Capacitance Characteristics

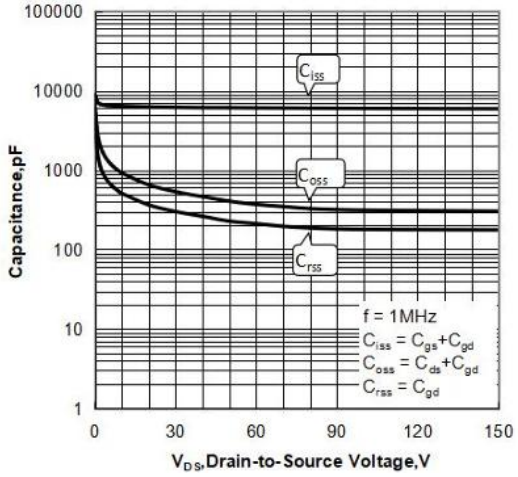


Figure 9 Body Diode Forward Voltage

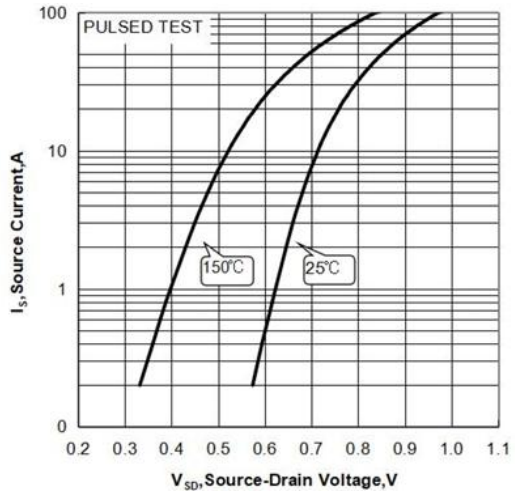


Figure 10 Maximum Safe Operating Area

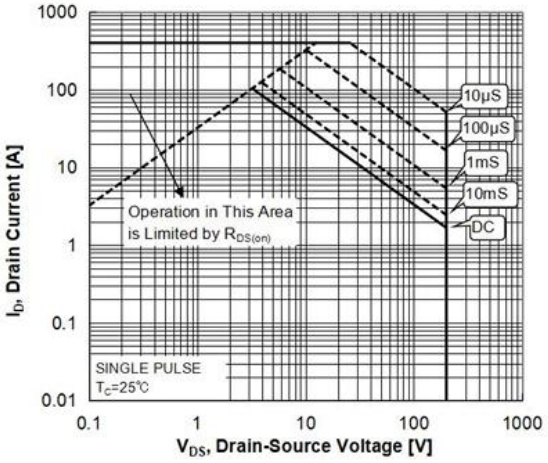
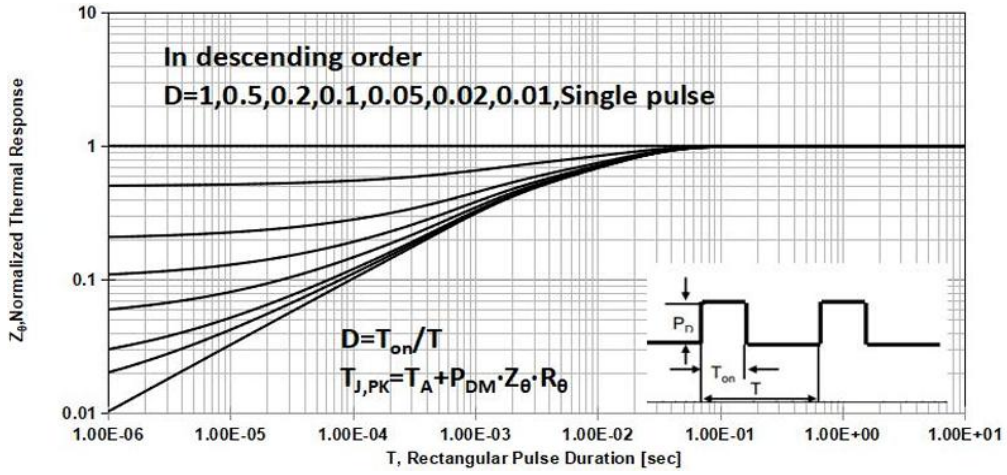
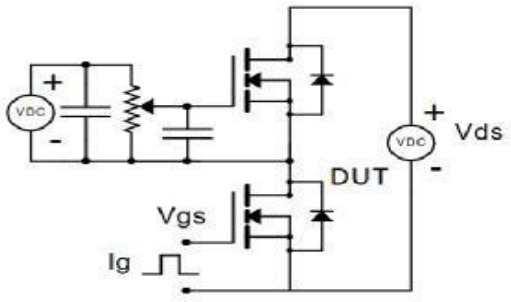
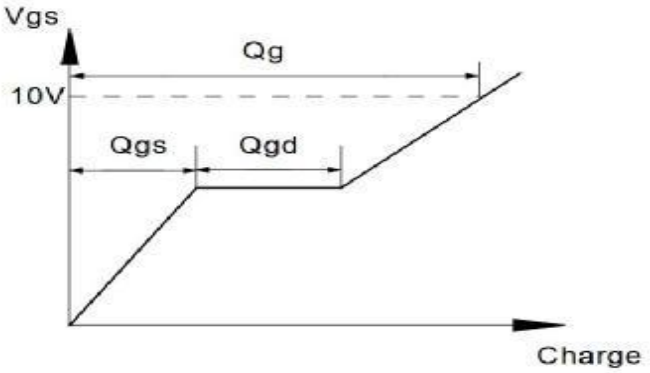
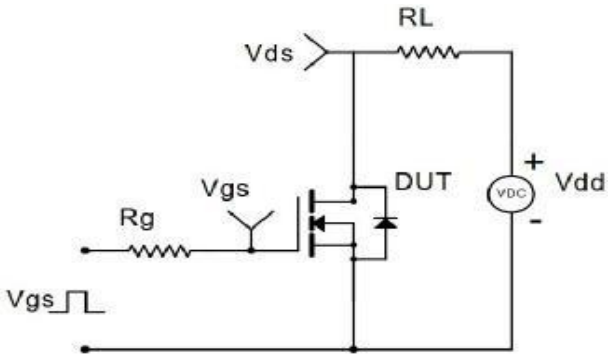
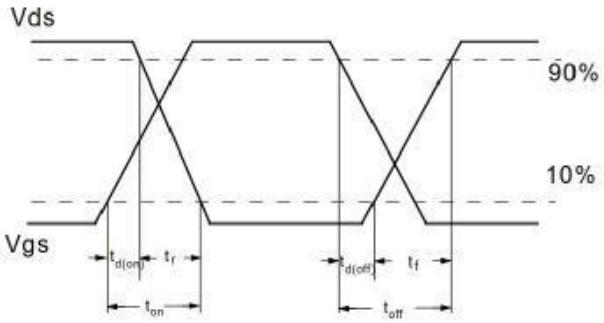
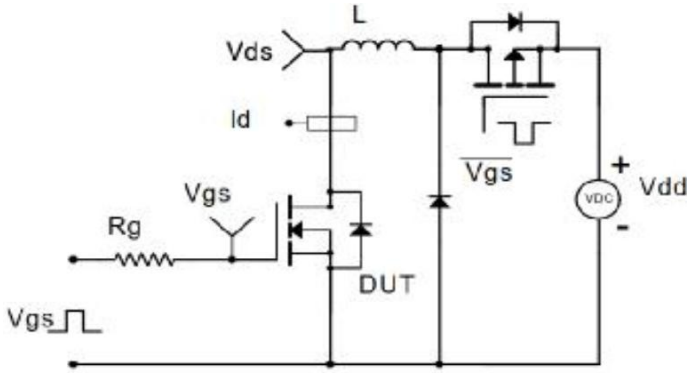
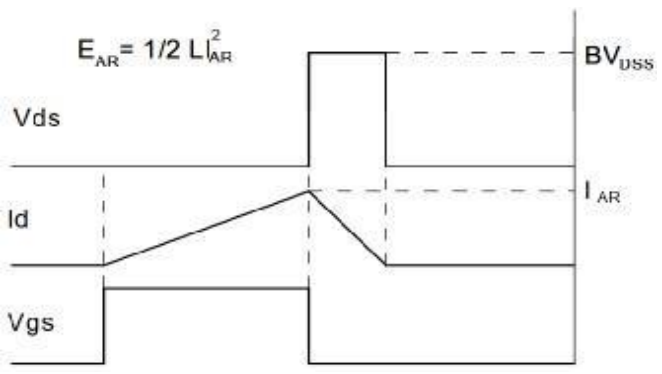
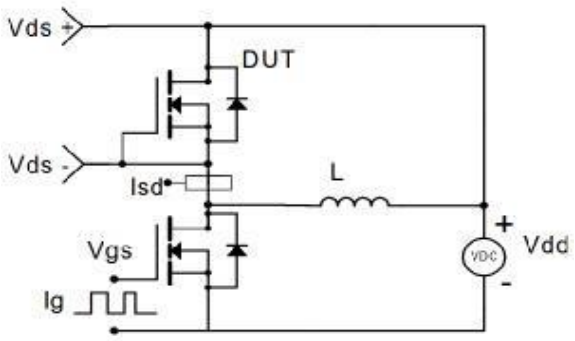
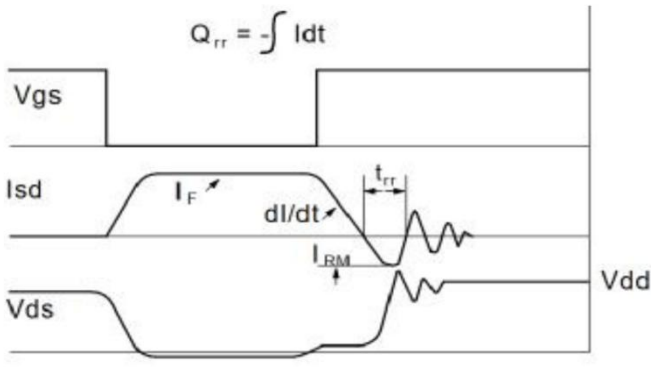


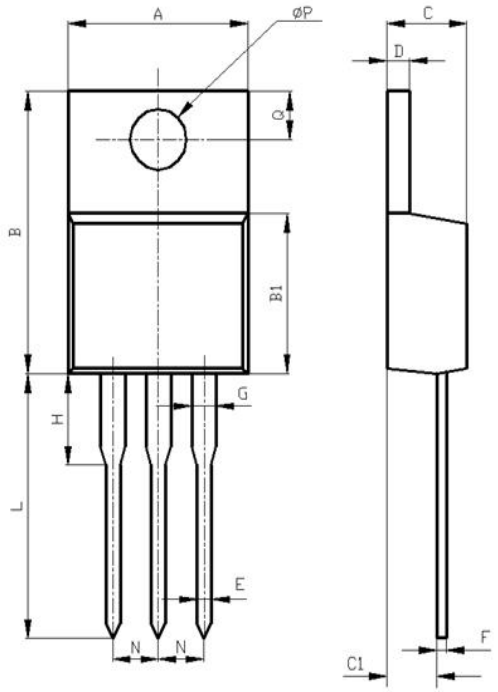
Figure 11 Transient Thermal Impedance



Test Circuit and Waveforms

Gate Charge Test Circuit	Gate Charge Test Waveform
	
Resistive Switching Test Circuit	**Resistive Switching Test Waveforms**
	
Unclamped Inductive Switching (UIS) Test Circuit	**Unclamped Inductive Switching (UIS) Test Waveforms**
	
Diode Recovery Test Circuit	**Diode Recovery Test Waveforms**
	

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:

深圳市迈诺斯科技有限公司（总部）

地址：深圳市福田区华富街道田面社区深南中路4026号田面城市大厦16D
邮编：518025
电话：0755-83273777