

Silicon N-Channel Power MOSFET

Description

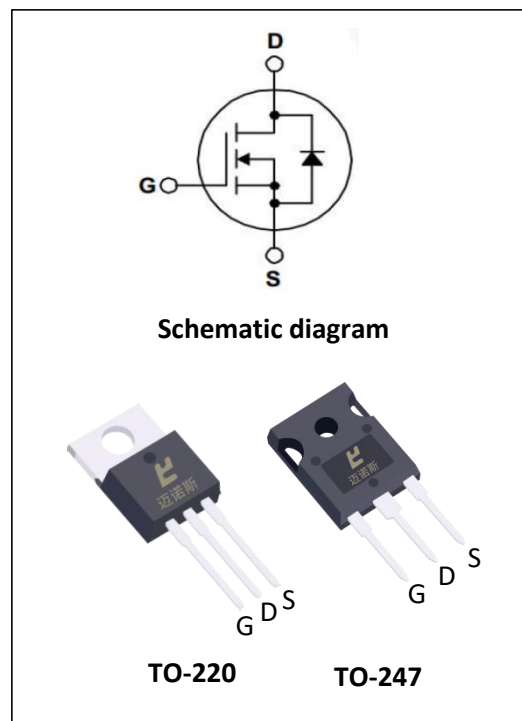
The IRFB4227 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$. It can be used in a wide variety of applications.

General Features

- ① $V_{DS}=200V$, $I_D=65A$
 $R_{ds(on)} \leq 25m\Omega$ @ $V_{GS}=10V$ (Typ:20m Ω)
- ② Low ON Resistance
- ③ Low Reverse transfer capacitance
- ④ 100% Single Pulse avalanche energy Test

Application

- ① Power Switching application
- ② Load switch



Package Marking And Ordering Information:

Ordering Codes	Package	Product Code	Packing
IRFB4227	TO-220	IRFB4227	Tube
IRFP4227	TO-247	IRFP4227	Tube

ABSOLUTE RATINGS (at $T_c=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Breakdown Voltage	200	V
I_D	Drain Current (continuous) at $T_c=25^\circ C$	65	A
I_{DM}	Drain Current (pulsed)	300	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at $T_c=25^\circ C$	150	W
T_j	Max. Operating Junction Temperature	175	$^\circ C$
Eas	Single Pulse Avalanche Energy	256	mj

Thermal characteristics

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.3	$^\circ C/W$

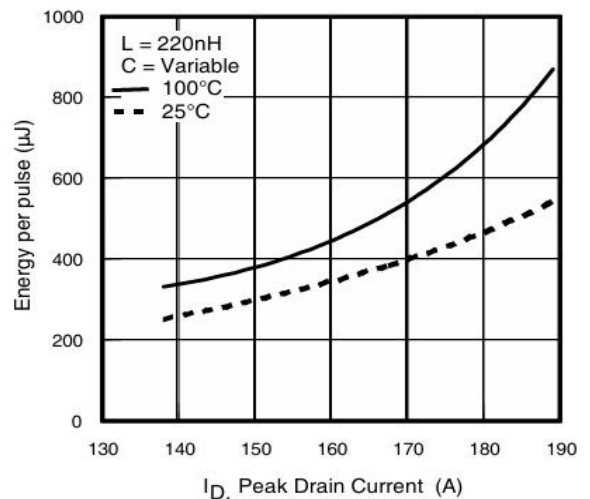
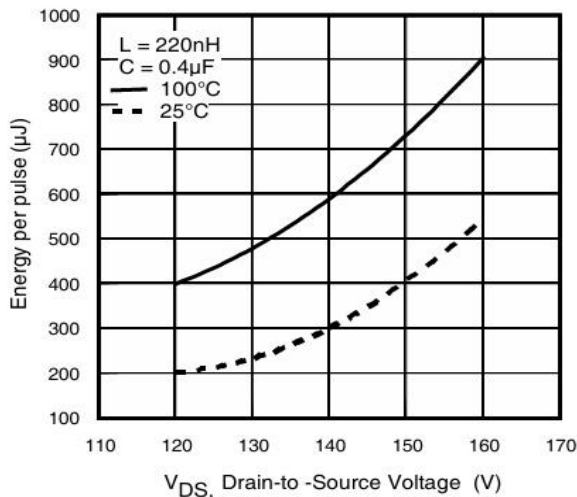
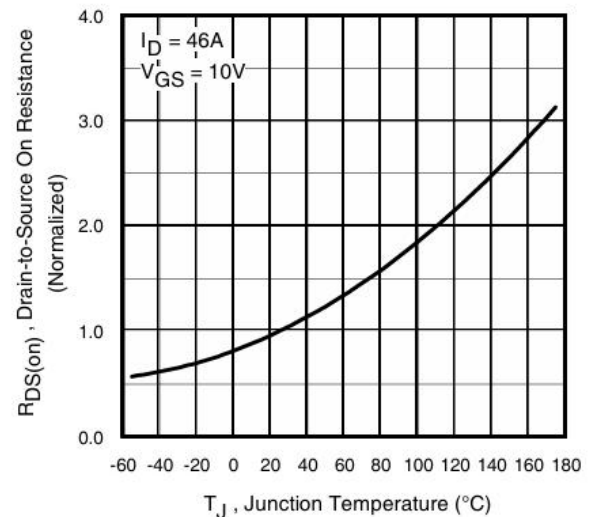
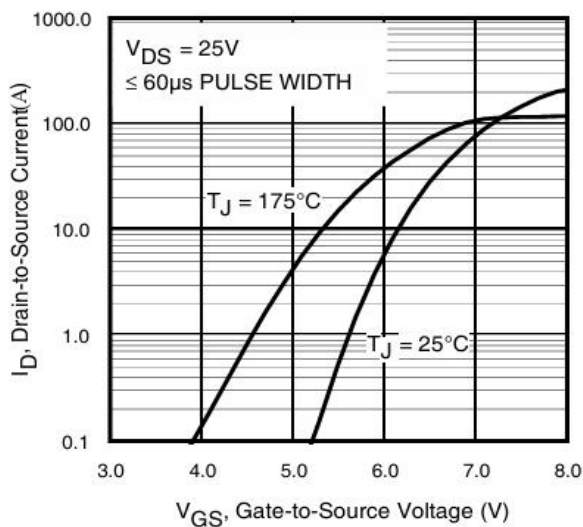
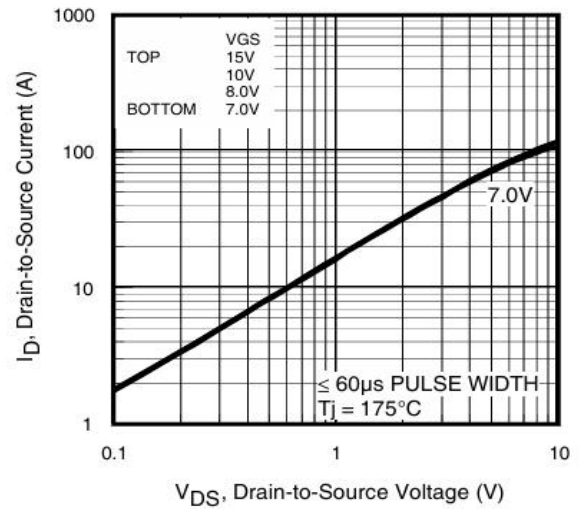
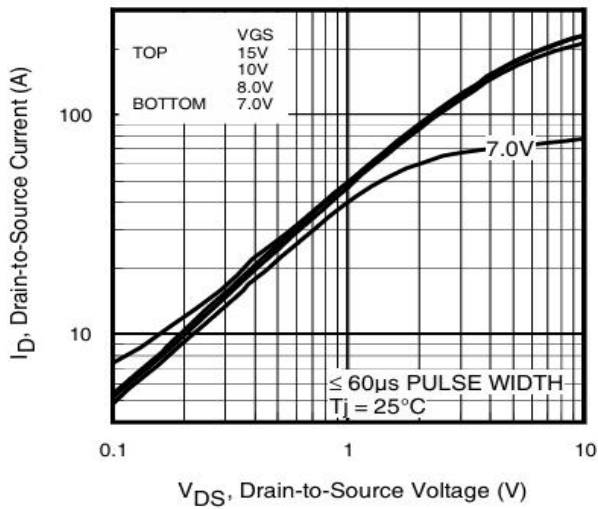
Electrical Characteristics (at $T_c=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{DS}	Drain-source Voltage	$V_{GS}=0V, I_D=250\mu A$	200	--	--	V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	$V_{GS}=10V, I_D=46A$	--	20	25	m Ω
$V_{GS(th)}$	Gated Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=200V, V_{GS}=0V$	--	--	1.0	μA
$I_{GSS(F)}$	Gated Body Leakage Current	$V_{GS}=+20V$	--	--	100	nA
$I_{GSS(R)}$	Gated Body Leakage Current	$V_{GS}=-20V$	--	--	-100	nA
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V, f=1.0MHz$	--	2200	--	pF
C_{oss}	Output Capacitance		--	225	--	pF
C_{rss}	Reverse Transfer Capacitance		--	165	--	pF
Q_g	Total Gate Charge	$V_{DS}=25V, I_D=46A$ $V_{GS}=10V$	--	58	--	nC
Q_{gs}	Gate-Source Charge		--	6	--	nC
Q_{gd}	Gate-Drain Charge		--	15	--	nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=25V, I_D=46A, R_L=0.3\Omega$	--	20	--	nS
t_r	Turn-on Rise Time		--	90	--	nS
$t_{d(off)}$	Turn-off Delay Time	$V_{GS}=10V, R_G=6.8\Omega$	--	45	--	nS
t_f	Turn-off Fall Time		--	90	--	nS

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I _{SD}	S-D Current(Body Diode)		--	65	--	A
I _{SDM}	Pulsed S-D Current(BodyDiode)		--	300	--	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _{DS} =46A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	T _J =25℃, I _F =46A di/dt=100A/us	--	102	--	nS
Q _{rr}	Reverse Recovery Charge		--	50	--	nC
	*Pulse Test: Pulse Width <= 300μs, Duty Cycle< =2%					

Characteristics Curves



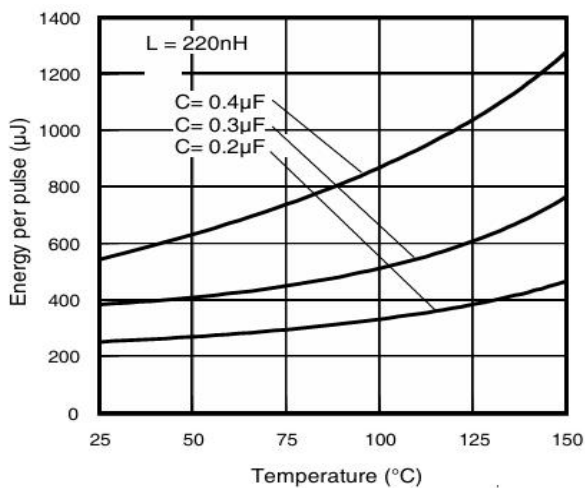
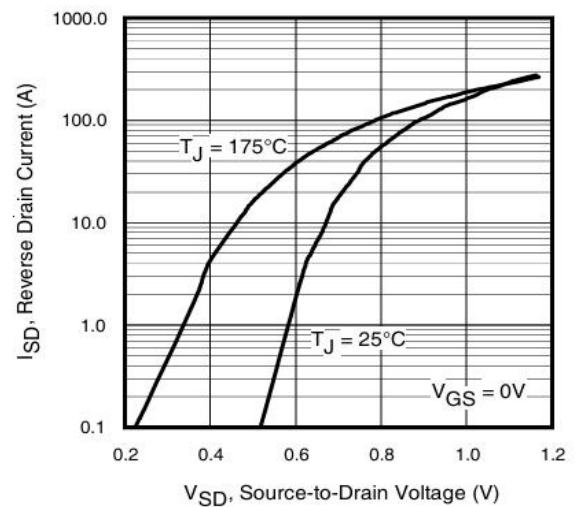

Fig 7. Typical E_{PULSE} vs. Temperature


Fig 8. Typical Source-Drain Diode Forward Voltage

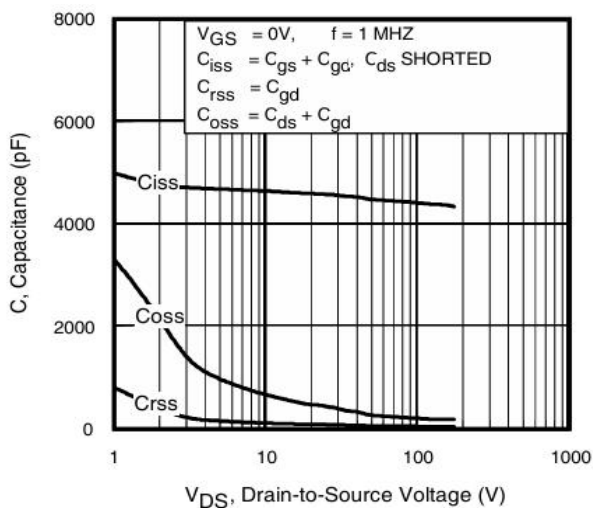


Fig 9. Typical Capacitance vs. Drain-to-Source Voltage

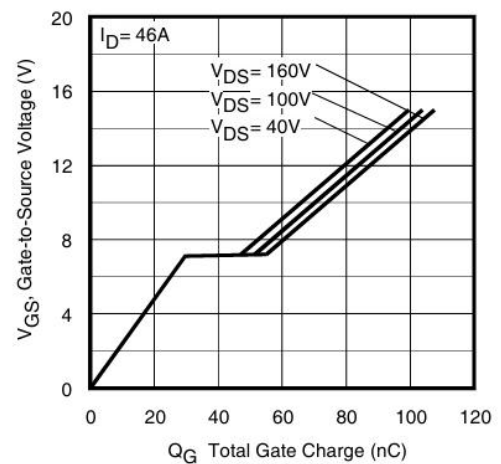


Fig 10. Typical Gate Charge vs. Gate-to-Source Voltage

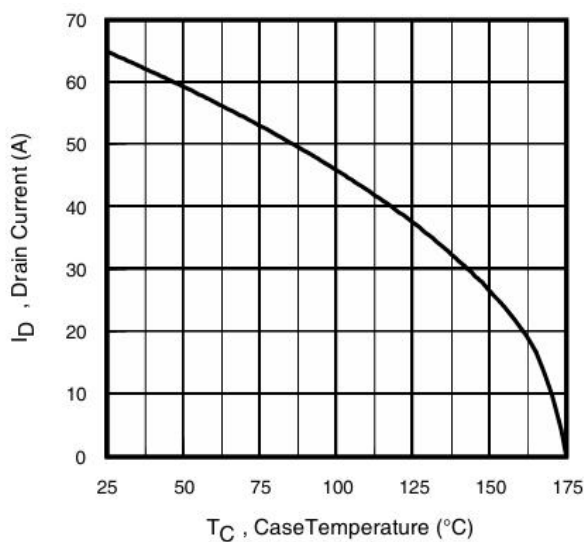


Fig 11. Maximum Drain Current vs. Case Temperature

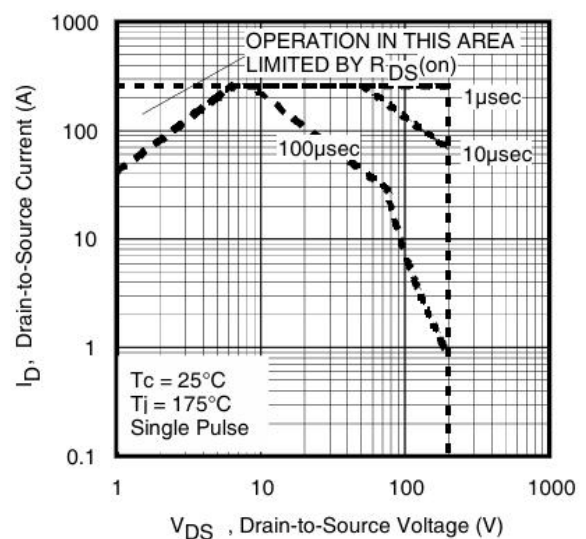


Fig 12. Maximum Safe Operating Area

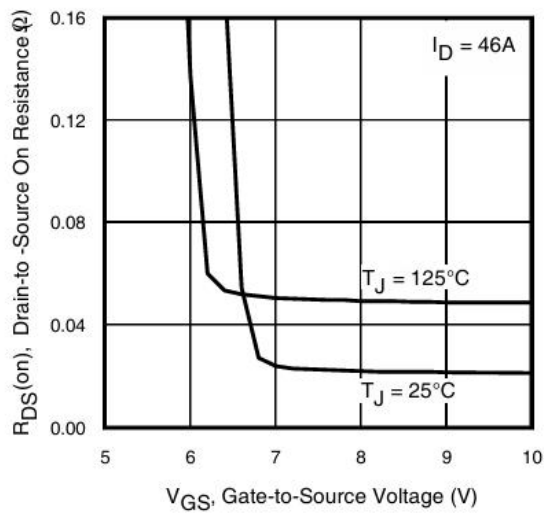


Fig 13. On-Resistance Vs. Gate Voltage

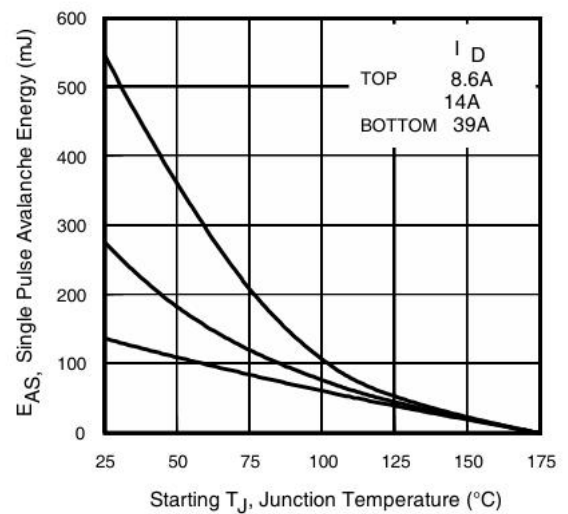


Fig 14. Maximum Avalanche Energy Vs. Temperature

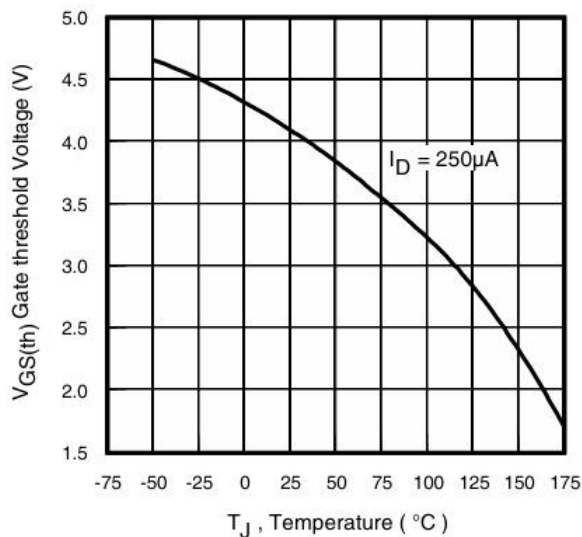


Fig 15. Threshold Voltage vs. Temperature

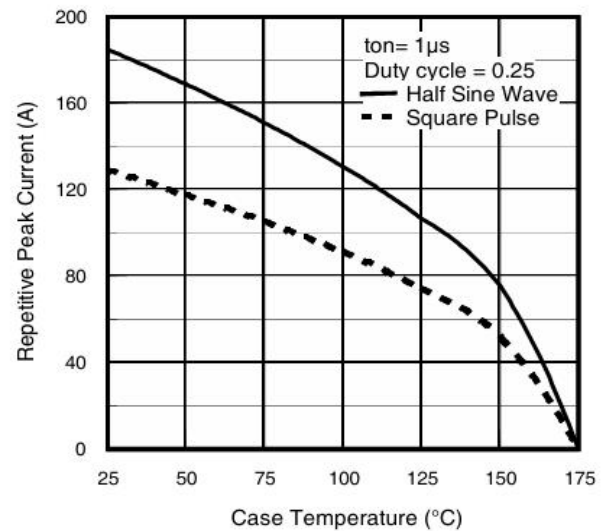


Fig 16. Typical Repetitive peak Current vs. Case temperature

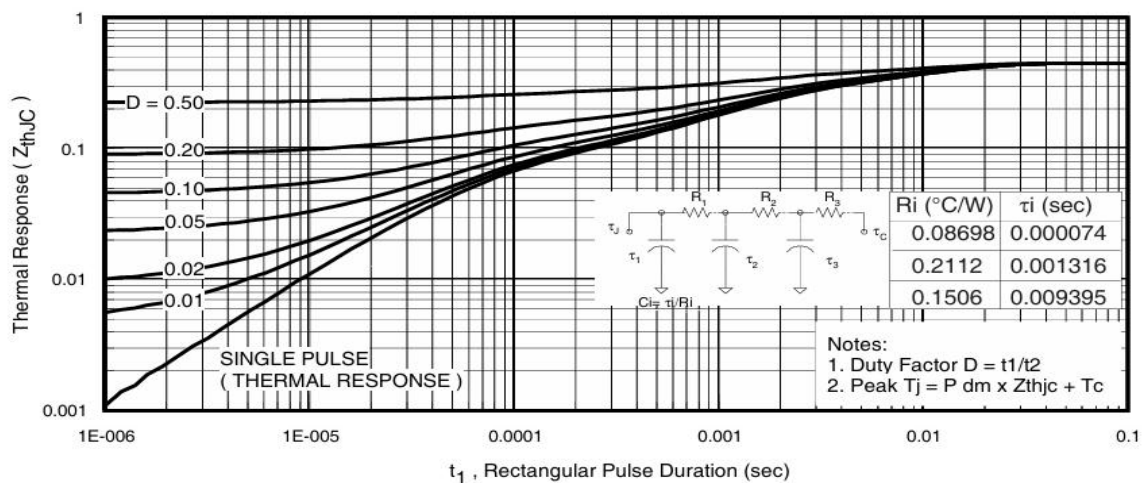
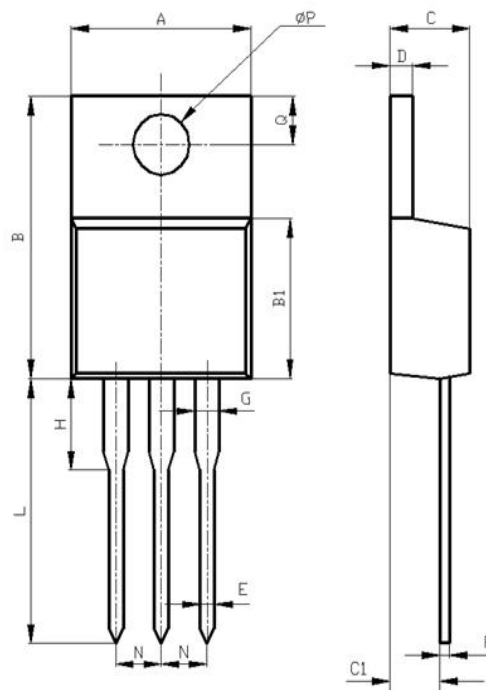


Fig 17. Maximum Effective Transient Thermal Impedance, Junction-to-Case

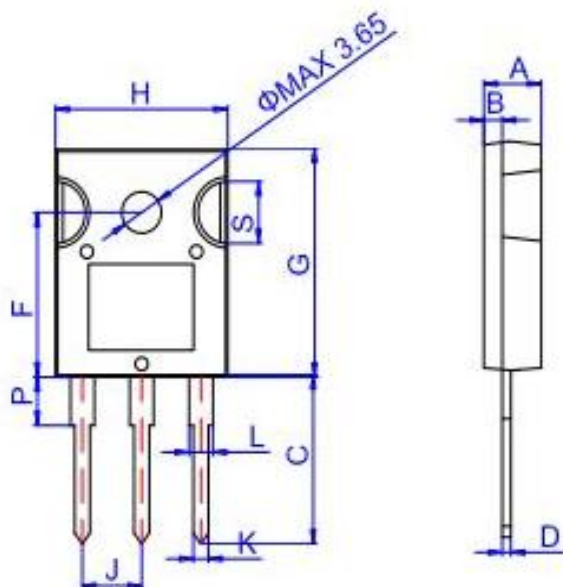
Package Description



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
Ø P	3.50	3.90

TO-220 Package

Package Information



Symbol	Values(mm)	
	MIN	MAX
A	4.9	5.4
B	1.6	2.0
C	14.35	15.4
D	0.5	0.8
F	14.4	15.1
G	19.7	20.6
H	15.4	16.2
J	5.3	5.6
K	1.3	1.5
L	2.8	3.3
ϕp	3.7	4.2
S	5.35	5.65



迈诺斯科技

IRFB4227

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 without prior notice.

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