迈诺斯科技

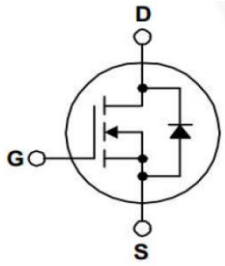
MPG4227

Silicon N-Channel Power MOSFET

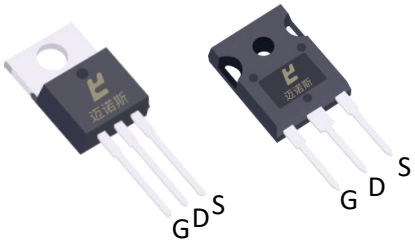
Description

The MPG4227 uses advanced trench technology and design to provide excellent RDS(ON). It can be used in a wide variety of applications.

This product can be widely used in power management for UPS and inverter systems.



Schematic diagram



TO-220 TO-247

General Features

① V_{DS}=200V, I_D=75A
R_{dson} ≦ 25mΩ @V_{GS}=10V (Typ:20mΩ)
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
MPG4227-P	TO-220	MPG4227	Tube
MPG4227-W	TO-247	MPG4227	Tube

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

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	200	V
I_D	Drain Current (continuous) at Tc=25℃	75	A
I_D	Drain Current (continuous) at Tc=100℃	56	A
I_{DM}	Drain Current (pulsed)	300	A
V_{GS}	Gate to Source Voltage	+/-20	V
P_{tot}	Total Dissipation at Tc=25℃	150	W
T_j	Max. Operating Junction Temperature	175	℃
Eas	Single Pulse Avalanche Energy（注 1）	256	mj

Thermal characteristics

Symbol	Paramter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.3	℃/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	200	--	--	V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	V_{GS}=10V, I_D=46A	--	20	25	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	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	--	4434	--	pF
C_{oss}	Output Capacitance		--	459	--	pF
C_{rss}	Reverse Transfer Capacitance		--	182	--	pF
Q_g	Total Gate Charge	V_{DS}=25V,I_D=46A V_{GS}=10V	--	88	--	nC
Q_{gs}	Gate-Source Charge		--	30	--	nC
Q_{gd}	Gate-Drain Charge		--	33	--	nC

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=25V,I_D=46A,R_L=0.3Ω V_{GS}=10V,R_G=6.8Ω	--	20	--	nS
t_r	Turn-on Rise Time		--	90	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	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)		--	75	--	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 (注2)	--	144	--	nS
Q_{rr}	Reverse Recovery Charge		--	0.6	--	μC

*注：

1. L=0.5mH，V_{DD}=100V，R_G=25Ω，开始温度T_J=25°C；
2. 脉冲测试：脉冲宽度≤300μs，占空比≤2%；
3. 基本上不受工作温度的影响。

Characteristics Curves

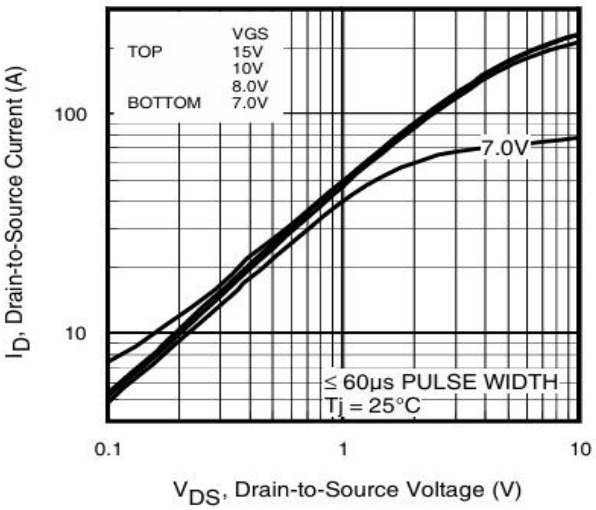


Fig 1. Typical Output Characteristics

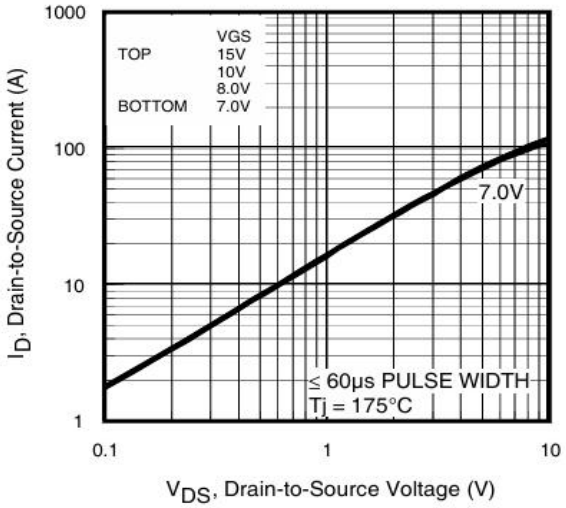


Fig 2. Typical Output Characteristics

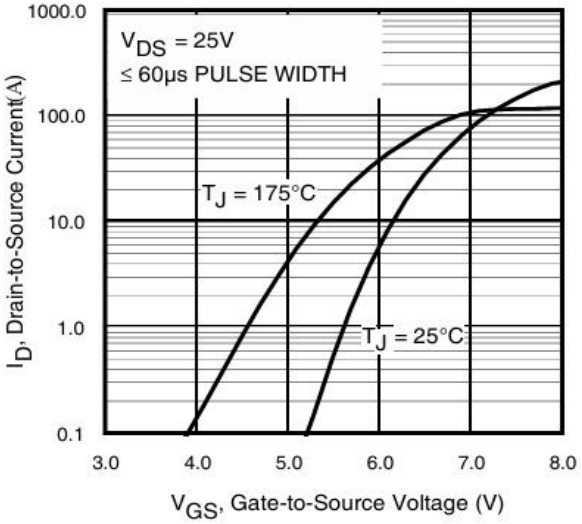


Fig 3. Typical Transfer Characteristics

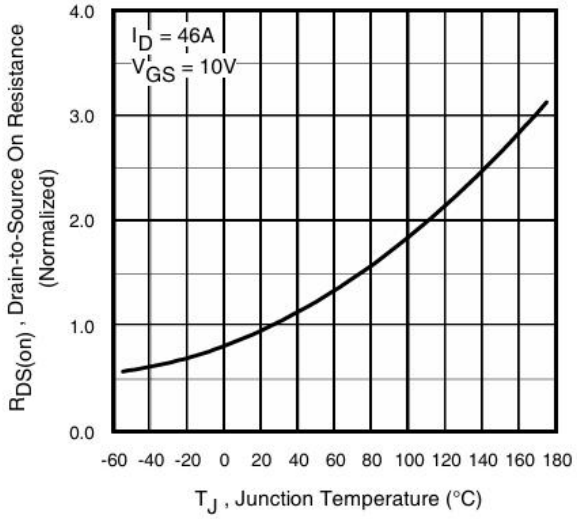


Fig 4. Normalized On-Resistance vs. Temperature

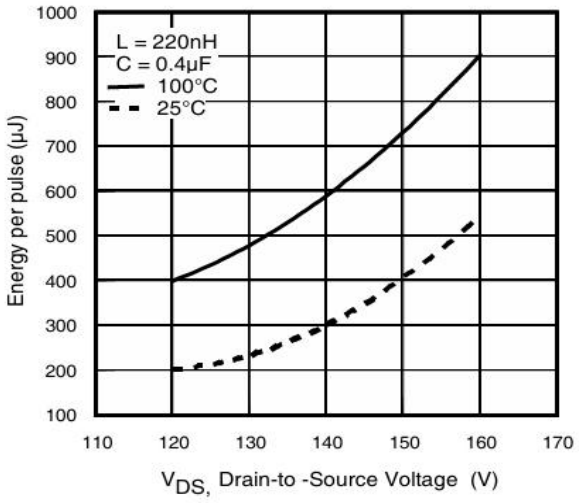


Fig 5. Typical E_{PULSE} vs. Drain-to-Source Voltage

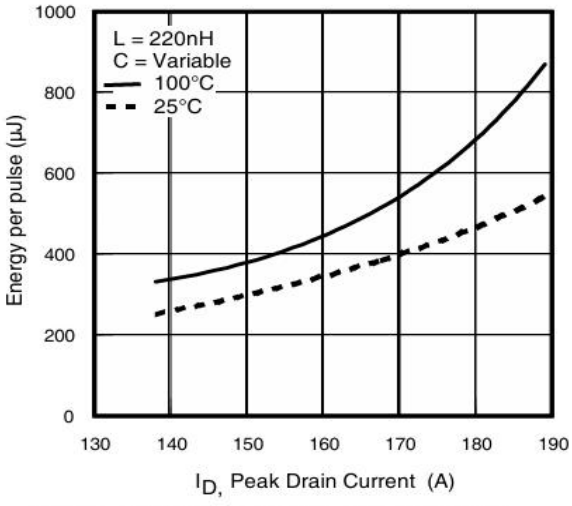


Fig 6. Typical E_{PULSE} vs. Drain Current

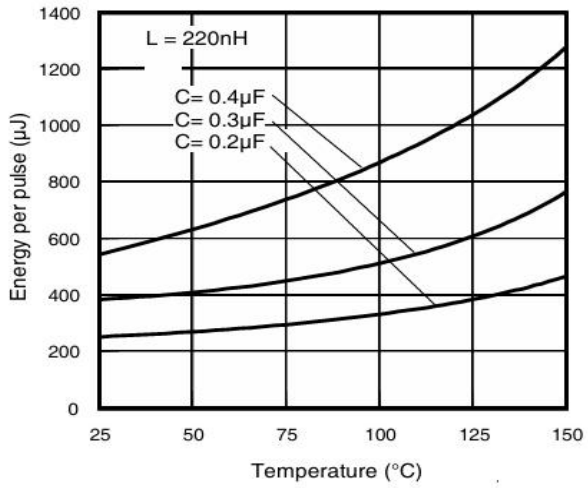


Fig 7. Typical E_{PULSE} vs.Temperature

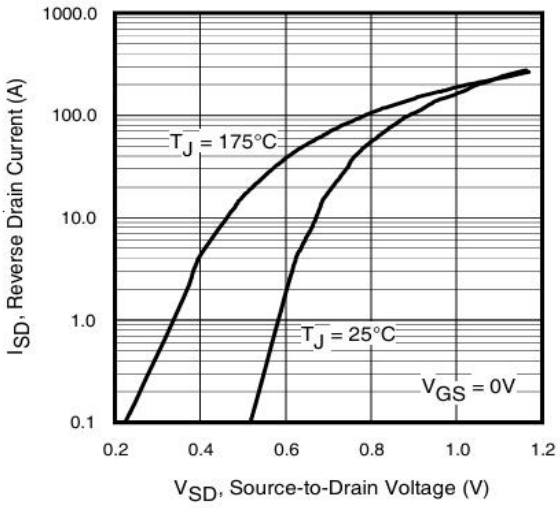


Fig 8. Typical Source-Drain Diode Forward Voltage

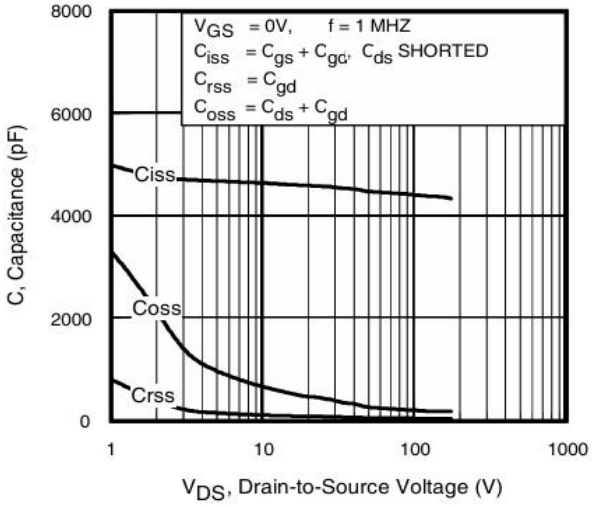


Fig 9. Typical Capacitance vs.Drain-to-Source Voltage

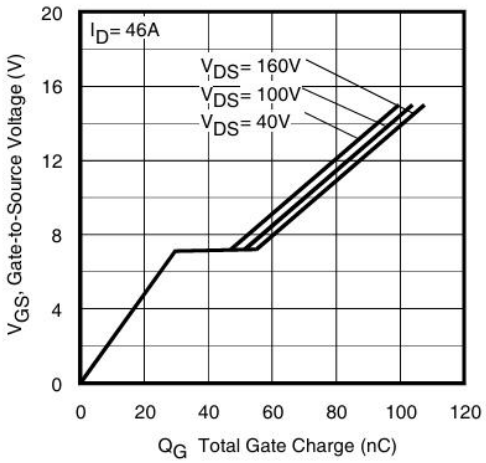


Fig 10. Typical Gate Charge vs.Gate-to-Source Voltage

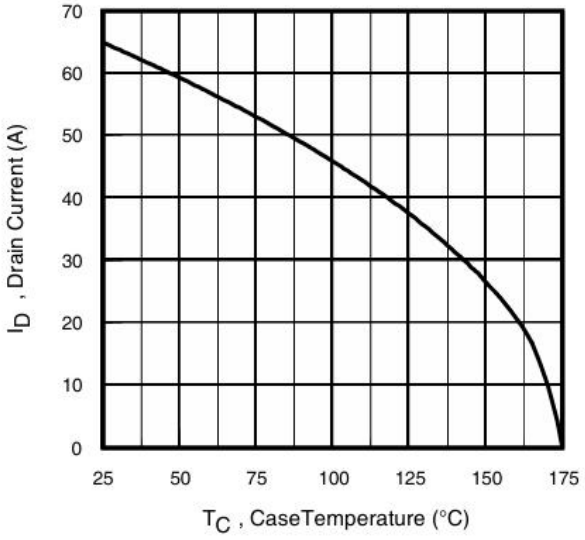


Fig 11. Maximum Drain Current vs. Case Temperature

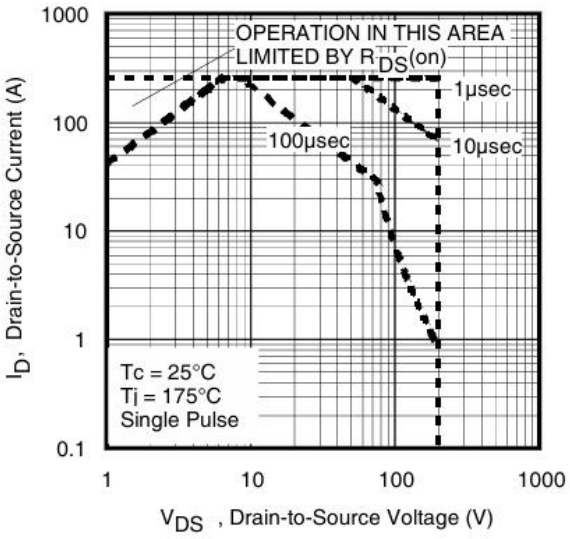


Fig 12. Maximum Safe Operating Area

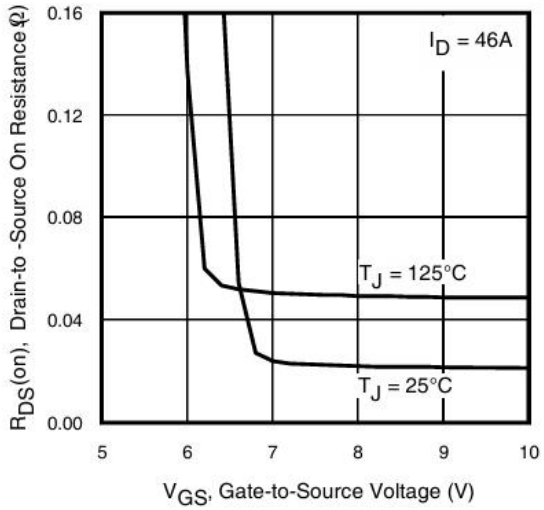


Fig 13. On-Resistance Vs. Gate Voltage

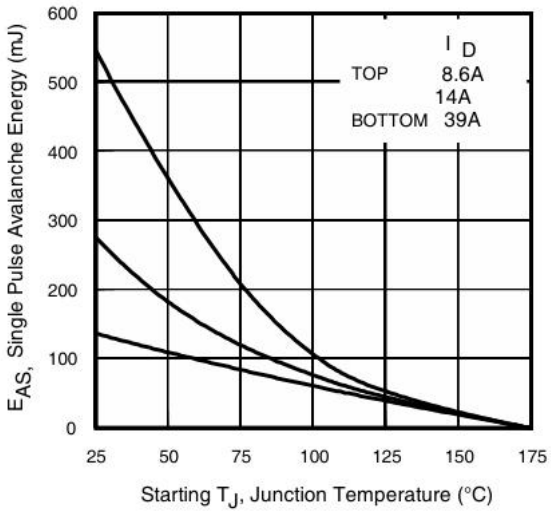


Fig 14. Maximum Avalanche Energy Vs. Temperature

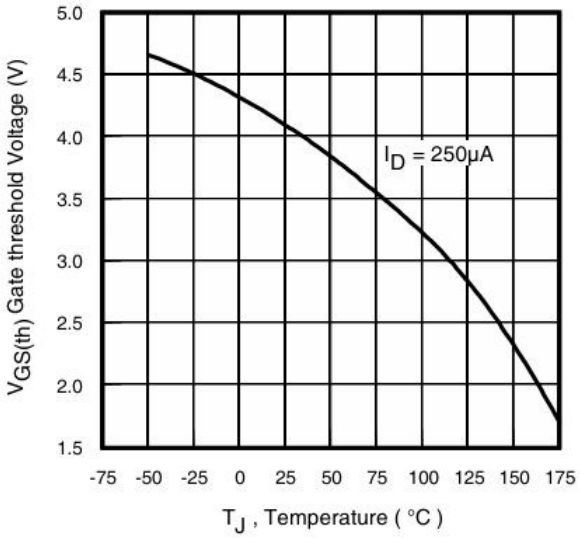


Fig 15. Threshold Voltage vs. Temperature

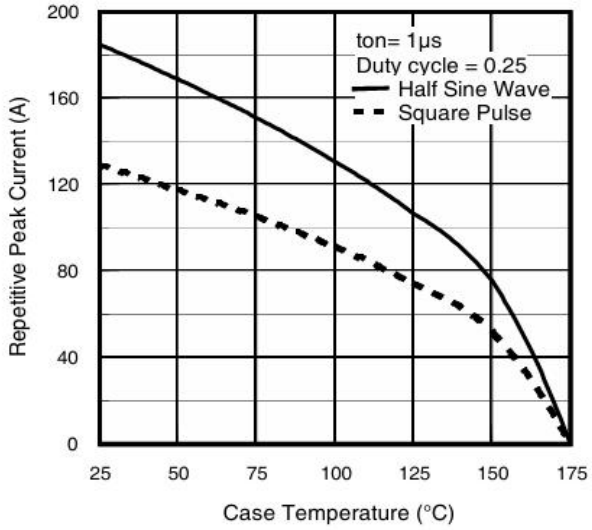


Fig 16. Typical Repetitive peak Current vs. Case temperature

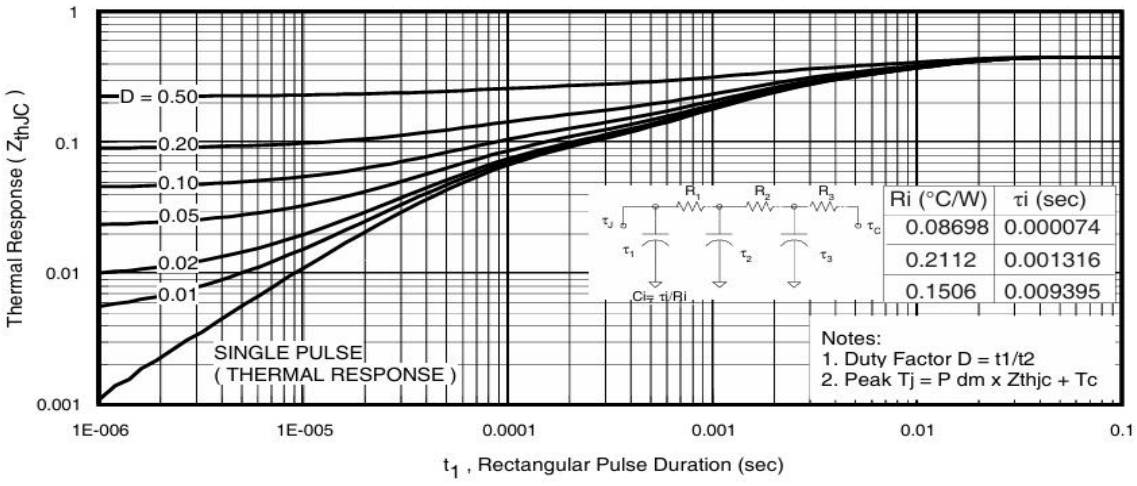
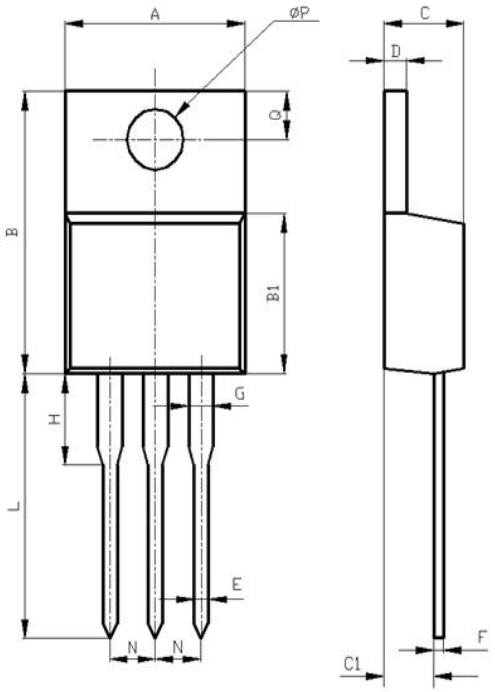


Fig 17. Maximum Effective Transient Thermal Impedance, Junction-to-Case

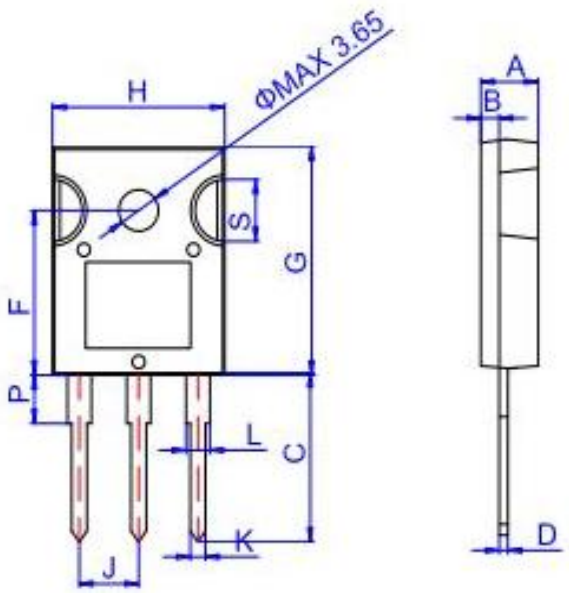
Package Description



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
ΦP	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

TO-247 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 without prior notice.

CONTACT:

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