



# N 沟道增强型场效应晶体管

## N-CHANNEL MOSFET

### FHP10N65B/FHF10N65B

#### 主要参数 MAIN CHARACTERISTICS

ID	10A
VDSS	650V
Rdson-typ( @Vgs=10V)	0.75Ω
Qg-typ	30nC

#### 产品特性 FEATURES

低栅极电荷	Low gate charge
低 Crss (典型值 18pF)	Low Crss (typical 18pF )
开关速度快	Fast switching
100%经过雪崩测试	100% avalanche tested
高抗 dv/dt 能力	Improved dv/dt capability
RoHS 产品	RoHS product

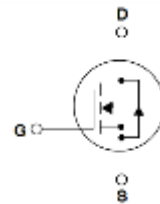
#### 用途 APPLICATION

高频开关电源	High efficiency switch mode power supplies
电子镇流器	Electronic ballast
LED 电源	LED power supply

#### 封装形式 Package



#### 等效电路 Equivalent Circuit



#### 绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项目 Parameter	符号 Symbol	数值 Value		单位 Unit
		FHP10N65B	FHF10N65B	
最高漏极-源极直流电压 Drain-Source Voltage	VDS	650		V
连续漏极电流* Drain Current -continuous *	ID (TC=25°C)	10*		A
	ID (TC=100°C)	6.2*		A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	IDM	40*		A
最高栅源电压 Gate-Source Voltage	VGS	±30		V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	EAS	720		mJ
雪崩电流 (注 1) Avalanche Current (note 1)	IAR	15		A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	EAR	15.5		mJ
二极管反向恢复最大电压变化速率 (注 3) Peak Diode Recovery dv/dt (note 3)	dv/dt	5.0		V/ns
耗散功率 Power Dissipation	PD (TC=25°C)	156	50	W
	-Derate above 25°C	1.43	0.48	W/°C
最高结温及存储温度 Operating and Storage Temperature Range	TJ, TSTG	150, -55 to 150		°C
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	TL	300		°C

\*漏极电流由最高结温限制 Drain current limited by maximum junction temperature

## 电特性 ELECTRICAL CHARACTERISTICS

项目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
<b>关态特性 Off –Characteristics</b>						
漏-源击穿电压 Drain-Source Voltage	BVDSS	ID=250μA, VGS=0V	650	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	ΔBVDSS/ΔTJ	ID=250μA, referenced to 25°C	-	0.67	-	V/°C
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	IDSS	VDS=650V, VGS=0V, TC=25°C	-	-	1	μA
		VDS=520V, TC=125°C	-	-	100	μA
栅极体漏电流 Gate-body leakage current	IGSS (F/R)	VDS=0V, VGS =±30V	-	-	±100	μA
<b>通态特性 On-Characteristics</b>						
阈值电压 Gate Threshold Voltage	VGS(th)	VDS = VGS, ID=250μA	3.0	-	5.0	V
静态导通电阻 Static Drain-Source On-Resistance	RDS(ON)	VGS =10V, ID=5A	-	0.75	0.9	Ω
正向跨导 Forward Transconductance	gfs	VDS = 40V, ID=5.0A (note 4)	-	5.7	-	S
<b>动态特性 Dynamic Characteristics</b>						
输入电容 Input capacitance	Ciss	VDS=25V, VGS =0V, f=1.0MHz	-	1450	-	pF
输出电容 Output capacitance	Coss		-	150	-	
反向传输电容 Reverse transfer capacitance	Crss		-	10	-	
<b>开关特性 Switching Characteristics</b>						
延迟时间 Turn-On delay time	td(on)	VDS=325V, ID=10A, RG=25Ω (note 4, 5)	-	23	-	ns
上升时间 Turn-On rise time	tr		-	69	-	ns
延迟时间 Turn-Off delay time	td(off)		-	144	-	ns
下降时间 Turn-Off Fall time	tf		-	77	-	ns
栅极电荷总量 Total Gate Charge	Qg	VDS =520V , ID=10A , VGS =10V (note 4, 5)	-	30	-	nC
栅-源电荷 Gate-Source charge	Qgs		-	6.8	-	nC
栅-漏电荷 Gate-Drain charge	Qgd		-	10.3	-	nC
<b>漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings</b>						
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current		IS	-	-	10	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		ISM	-	-	40	A
正向压降 Drain-Source Diode Forward Voltage	VSD	VGS=0V, IS=10A	-	-	1.4	V
反向恢复时间 Reverse recovery time	trr	VGS=0V, IS=10A ,dIF/dt=100A/μs (note 4)	-	360	-	ns
反向恢复电荷 Reverse recovery charge	Qrr		-	3.3	-	μC

## 热特性 THERMAL CHARACTERISTIC

项目 Parameter	符号 Symbol	FHP10N65B	FHF10N65B	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	0.8	2.5	°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	62.5	62.5	°C/W

注释:

Notes:

- 1: 脉冲宽度由最高结温限制
- 2: L=10mH, I<sub>AS</sub>=12A, V<sub>DD</sub>=48V, R<sub>G</sub>=25 Ω, 起始结温 T<sub>J</sub>=25°C
- 3: I<sub>SD</sub> ≤10A, di/dt ≤300A/μs, V<sub>DD</sub> ≤B<sub>V</sub>DSS, 起始结温 T<sub>J</sub>=25°C
- 4: 脉冲测试: 脉冲宽度 ≤300μs, 占空比 ≤2%
- 5: 基本与工作温度无关

- 1: Pulse width limited by maximum junction temperature
- 2: L=10mH, I<sub>D</sub>=12A, V<sub>DD</sub>=48V, R<sub>G</sub>=25 Ω, Start T<sub>J</sub>=25°C.
- 3: I<sub>SD</sub> ≤10A, di/dt ≤300A/μs, V<sub>DD</sub> ≤B<sub>V</sub>DSS, Starting T<sub>J</sub>=25°C
- 4: Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2%
- 5: Essentially independent of operating temperatur

特性曲线

ELECTRICAL CHARACTERISTICS (curves)

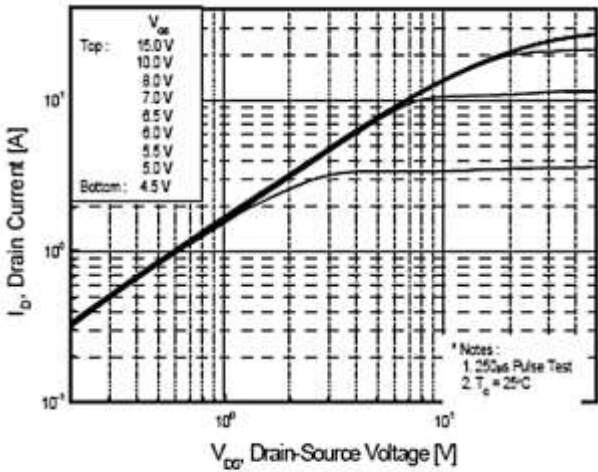


图 1 输出特性曲线, Tc=25°C

Fig1 Typical Output Characteristics, Tc=25°C

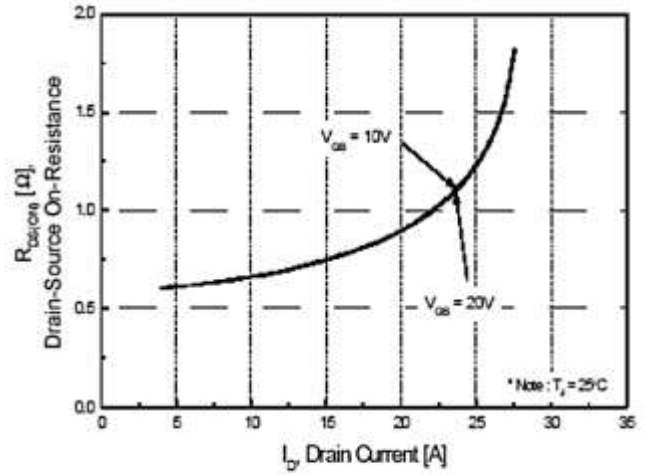


图 2 导通电阻与漏极电流和栅极电压曲线

Fig2 On-Resistance Vs.Drain Current and Gate Voltage

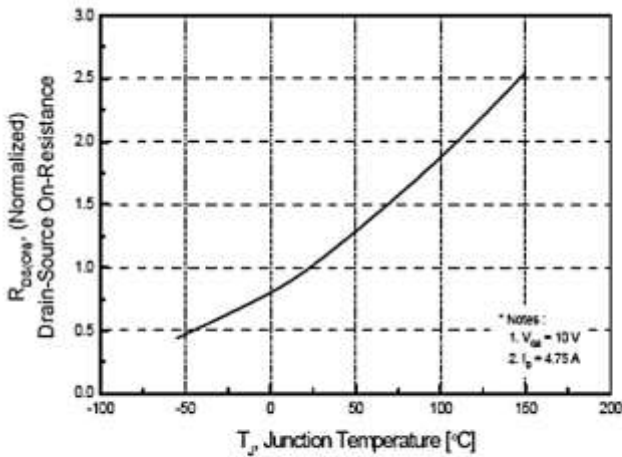


图 3 导通电阻与温度曲线

Fig3 Normalized On-Resistance Vs.Temperature

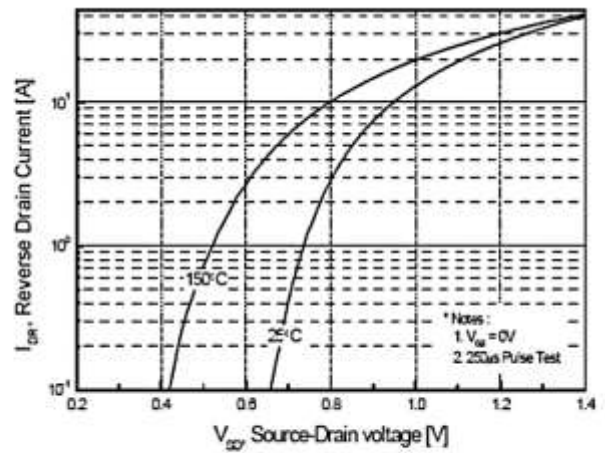


图 4 二极管正向电压曲线

Fig4 Typical Source-Drain Diode Forward Voltage

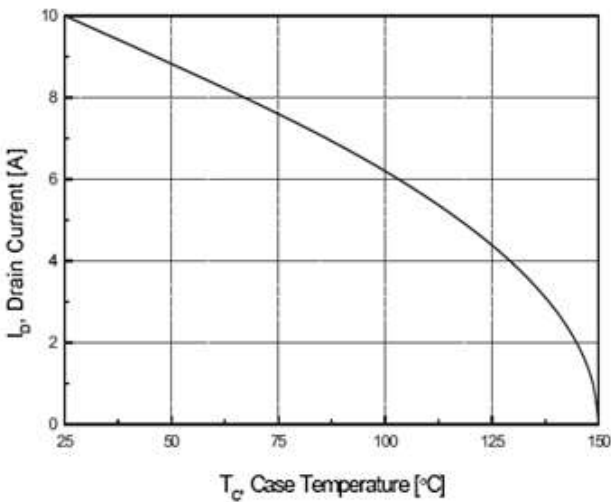


图 5 最大漏极电流与壳温曲线

Fig5 Maximum Drain Current Vs.Case Temperature

特性曲线

ELECTRICAL CHARACTERISTICS (curves)

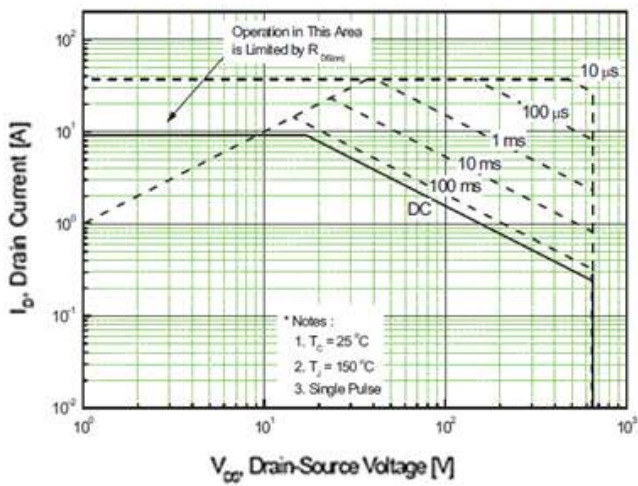


图 6-1 (TO-220)  
最大安全工作区曲线  
Fig6-1 Maximum Safe Operating Area

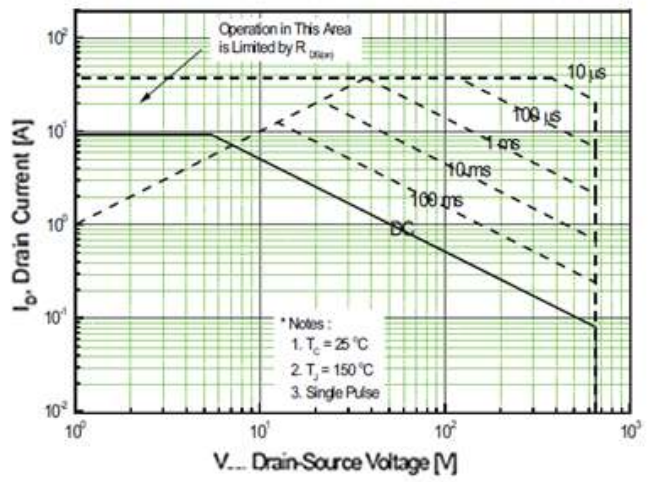
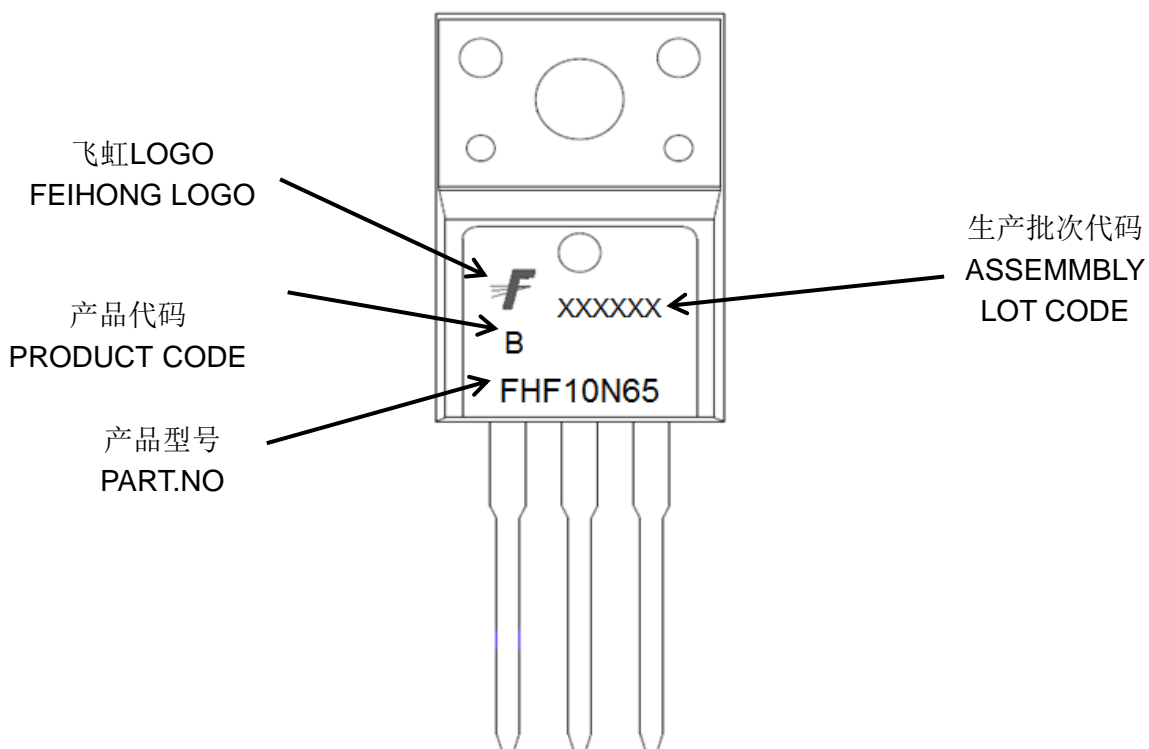
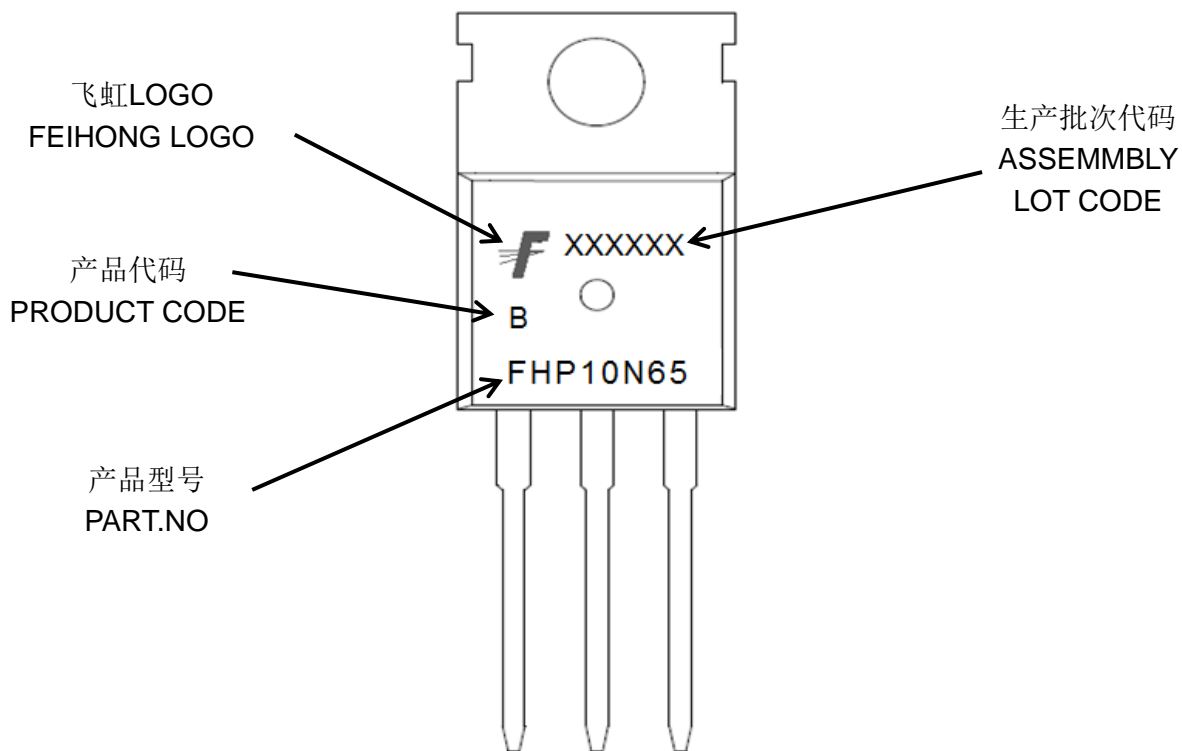


图 6-1 (TO-220F)  
最大安全工作区曲线  
Fig6 -2Maximum Safe Operating Area

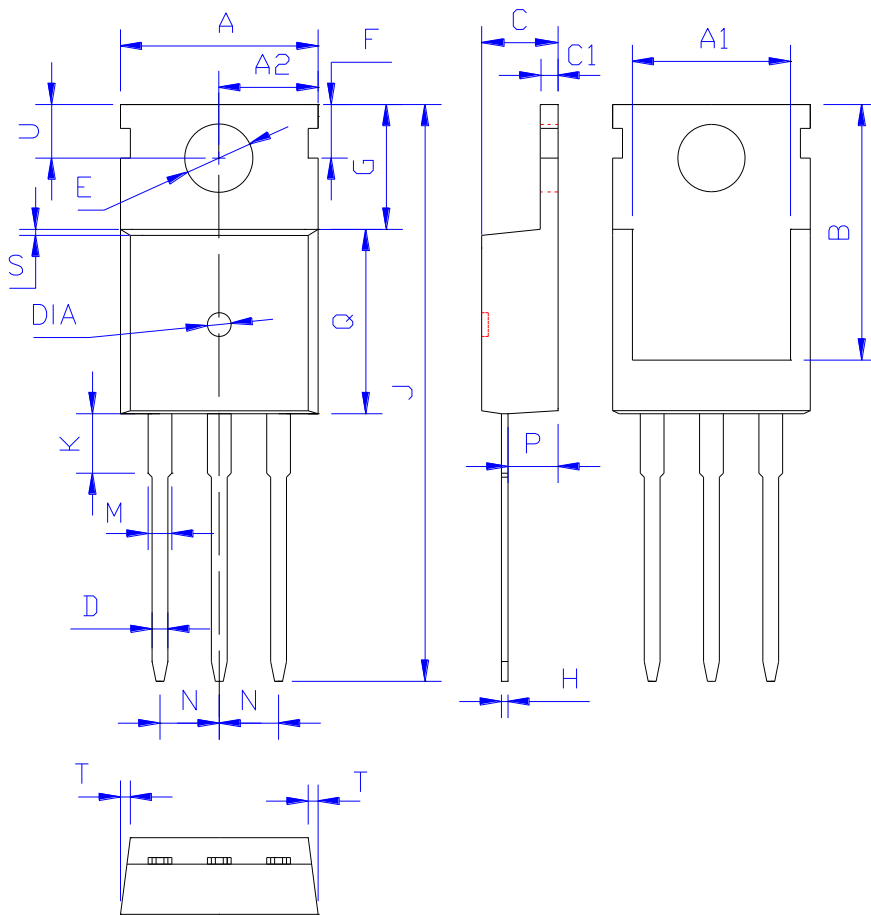
## 印记 Marking



外形尺寸:

Package Dimension:

TO-220



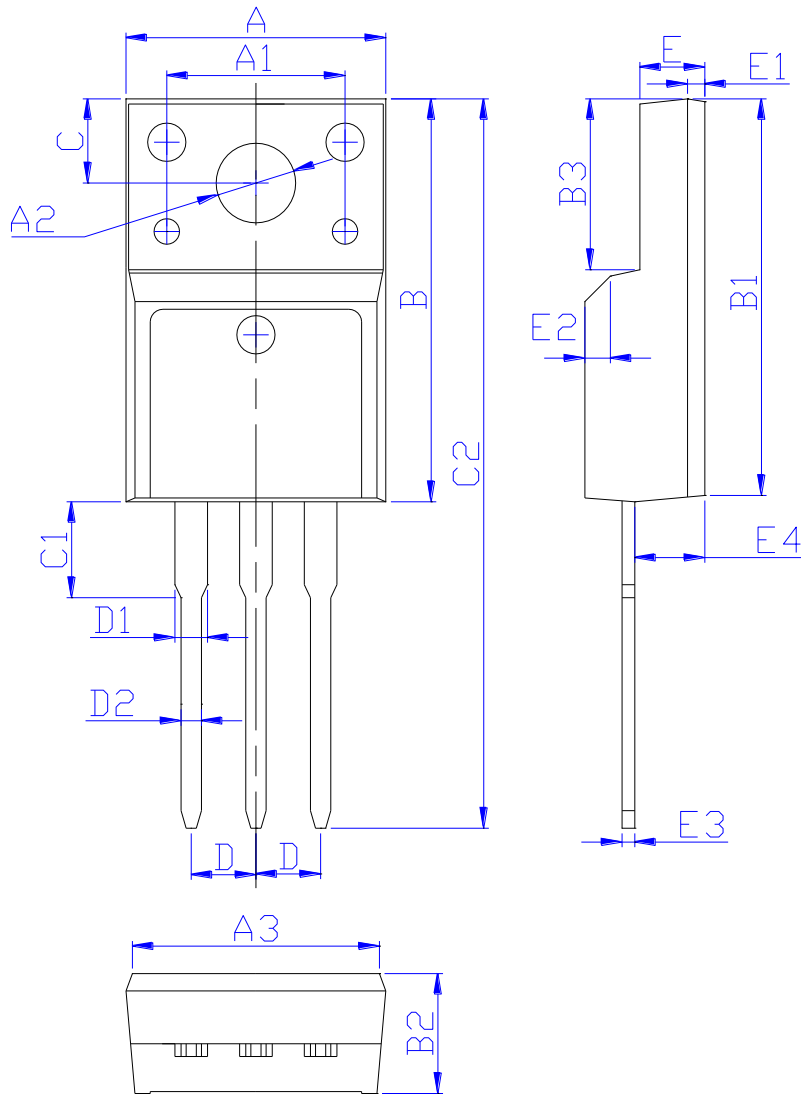
DIM	MILLIMETERS
A	10.00±0.30
A1	8.00±0.30
A2	5.00±0.30
B	13.20±0.40
C	4.50±0.20
C1	1.30±0.20
D	0.80±0.20
E	3.60±0.20
F	3.00±0.30
G	6.60±0.40
H	0.50±0.20
J	28.88±0.50
K	3.00±0.30
M	1.30±0.30
N	Typical 2.54
P	2.40±0.40
Q	9.20±0.40
S	0.25±0.15
T	0.25±0.15
U	2.80±0.30
DIA	宽 1.50±0.10 深 0.50 MAX

(Units: mm)

外形尺寸:

Package Dimension:

TO-220F



DIM	MILLIMETERS
A	10.16±0.30
A1	7.00±0.20
A2	3.12±0.20
A3	9.70±0.30
B	15.90±0.50
B1	15.60±0.50
B2	4.70±0.30
B3	6.70±0.30
C	3.30±0.25
C1	3.25±0.30
C2	28.70±0.50
D	Typical 2.54
D1	1.47 (MAX)
D2	0.80±0.20
E	2.55±0.25
E1	0.70±0.25
E2	1.0×45°
E3	0.50±0.20
E4	2.75±0.30

(Units : mm)



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [MOSFET](#) category:*

*Click to view products by [FeiHong](#) manufacturer:*

Other Similar products are found below :

[614233C](#) [648584F](#) [MCH3443-TL-E](#) [MCH6422-TL-E](#) [FDPF9N50NZ](#) [FW216A-TL-2W](#) [FW231A-TL-E](#) [APT5010JVR](#) [NTNS3A92PZT5G](#)  
[IRF100S201](#) [JANTX2N5237](#) [2SK2464-TL-E](#) [2SK3818-DL-E](#) [FCA20N60\\_F109](#) [FDZ595PZ](#) [STD6600NT4G](#) [FSS804-TL-E](#) [2SJ277-DL-E](#)  
[2SK1691-DL-E](#) [2SK2545\(Q,T\)](#) [D2294UK](#) [405094E](#) [423220D](#) [MCH6646-TL-E](#) [TPCC8103,L1Q\(CM](#) [367-8430-0972-503](#) [VN1206L](#)  
[424134F](#) [026935X](#) [051075F](#) [SBVS138LT1G](#) [614234A](#) [715780A](#) [NTNS3166NZT5G](#) [751625C](#) [873612G](#) [IRF7380TRHR](#)  
[IPS70R2K0CEAKMA1](#) [RJK60S3DPP-E0#T2](#) [RJK60S5DPK-M0#T0](#) [APT5010JVFR](#) [APT12031JFLL](#) [APT12040JVR](#) [DMN3404LQ-7](#)  
[NTE6400](#) [JANTX2N6796U](#) [JANTX2N6784U](#) [JANTXV2N5416U4](#) [SQM110N05-06L-GE3](#) [SIHF35N60E-GE3](#)