N 沟道增强型场效应晶体管
N-CHANNEL MOSFET
FHF10N80C/FHA10N80C

主要参数 MAIN CHARACTERISTICS

ID	10 A
VDSS	800 V
Rdson-typ（ @Vgs=10V）	0.72 Ω
Qg-typ	51.2 nC

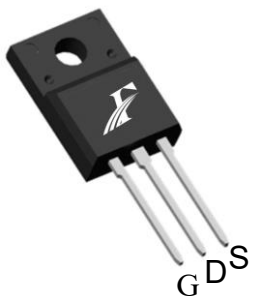
产品特性 FEATURES

低栅极电荷	Low gate charge
低 Crss (典型值 4.1 pF)	Low Crss (typical 4.1 pF)
开关速度快	Fast switching
100%经过雪崩测试	100% avalanche tested
100%经过热阻测试	100% DVDS tested
100%经过 Rg 测试	100% Rg tested
高抗 dv/dt 能力	Improved dv/dt capability
平面工艺	Plane process
RoHS 产品	RoHS product

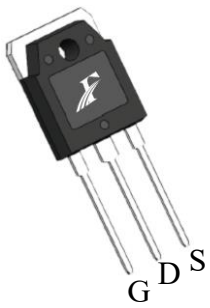
用途 APPLICATIONS

高频开关电源	High efficiency switch mode power supplies

封装形式 Package

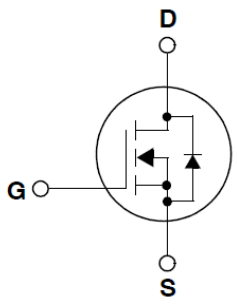


TO-220F
FHF series



TO-3PN
FHA series

等效电路 Equivalent Circuit



绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项目 **Parameter**	符号 **Symbol**	数值 **Value**		单位 **Unit**
		FHF10N80C	FHA10N80C	
最高漏极－源极直流电压 Drain-Source Voltage	V_{DS}	800		V
连续漏极电流* Drain Current -continuous *	I_D（T_C=25℃）	10		A
	I_D（T_C=100℃)	6.5		A
最大脉冲漏极电流（注 1） Drain Current – pulse（note 1）	I_{DM}	40		A
最高栅源电压 Gate-Source Voltage	V_{GS}	±30		V
单脉冲雪崩能量（注 2） Single Pulsed Avalanche Energy（note 2）	E_{AS}	211.25		mJ
雪崩电流（注 1） Avalanche Current（note 1）	I_{AR}	6.5		A
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	P_D （TC=25℃）	62.5	200	W
	-Derate above 25℃	0.5	1.6	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T_J，T_{STG}	150，–55 to 150		℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300		℃

*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**
关态特性 **Off –Characteristics**						
漏－源击穿电压 Drain-Source Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	800	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta TJ$	I_D=250μA, referenced to 25℃	-	0.8	-	V/℃
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=800V,V_{GS}=0V, T_C=25℃	-	-	1	μA
		V_{DS}=640V, T_C=125℃	-	-	100	μA
栅极体漏电流 Gate-body leakage current	I_{GSS}（F/R）	V_{DS}=0V, V_{GS} =±30V	-	-	±100	nA
通态特性 **On-Characteristics**						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D=250μA	3.0	3.8	4.5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10V , I_D=5A	-	0.72	0.85	Ω
正向跨导 Forward Transconductance	gfs	V_{DS} = 15V, I_D=5A（note 4）	-	11	-	S
动态特性 **Dynamic Characteristics**						
栅电阻 Gate Resistance	Rg	f=1.0MHz,V_{DS} OPEN	-	1.2	-	Ω
输入电容 Input capacitance	Ciss	V_{DS}=25V, V_{GS} =0V, f=1.0MHz	-	2900	-	pF
输出电容 Output capacitance	Coss		-	232	-	
反向传输电容 Reverse transfer capacitance	Crss		-	4.1	-	
开关特性 **Switching Characteristics**						
延迟时间 Turn-On delay time	td(on)	V_{DS}=400V, I_D=10A, R_G=20Ω V_{GS} =10V （note 4，5）	-	40	-	ns
上升时间 Turn-On rise time	tr		-	110	-	ns
延迟时间 Turn-Off delay time	td(off)		-	80	-	ns
下降时间 Turn-Off Fall time	tf		-	70	-	ns
栅极电荷总量 Total Gate Charge	Qg	V_{DS} =640V , I_D=10A , V_{GS} =10V （note 4，5）	-	51.2	-	nC
栅－源电荷 Gate-Source charge	Qgs		-	12.8	-	nC
栅－漏电荷 Gate-Drain charge	Qgd		-	16.8	-	nC
漏－源二极管特性及最大额定值 **Drain-Source Diode Characteristics and Maximum Ratings**						
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current	I_S		-	-	10	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	40	A
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=10A	-	-	1.2	V
反向恢复时间 Reverse recovery time	trr	V_{GS}=0V, I_S=10A ,dI_F/dt=100A/μs (note 4)	-	600	-	ns
反向恢复电荷 Reverse recovery charge	Qrr		-	5214	-	nC

热特性 THERMAL CHARACTERISTIC

项目 Parameter	符号 Symbol	FHF10N80C	FHA10N80C	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	2.0	0.62	℃/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	62.5	40	℃/W

注释：
1：脉冲宽度由最高结温限制
2：L=10mH, IAS=6.5A, VDS=50V, RG=25 Ω,起始结温 TJ=25℃
3：I_{SD} ≤10A,di/dt ≤100A/μs,V_{DD}≤BV_{DSS},起始结温 TJ=25℃
4：脉冲测试：脉冲宽度 ≤300μs,占空比≤2%
5：基本与工作温度无关

Notes:
1：Pulse width limited by maximum junction temperature
2： L=10mH, IAS=6.5A, VDS=50V, RG=25 Ω ,Start TJ=25℃;
3：I_{SD} ≤10A,di/dt ≤100A/μs,V_{DD}≤BV_{DSS}, Starting T_J=25℃
4：Pulse Test：Pulse Width ≤300μs,Duty Cycle≤2%
5：Essentially independent of operating temperature

特性曲线
（ELECTRICAL CHARACTERISTICS (curves)）

Figure 1 Safe Operating Area

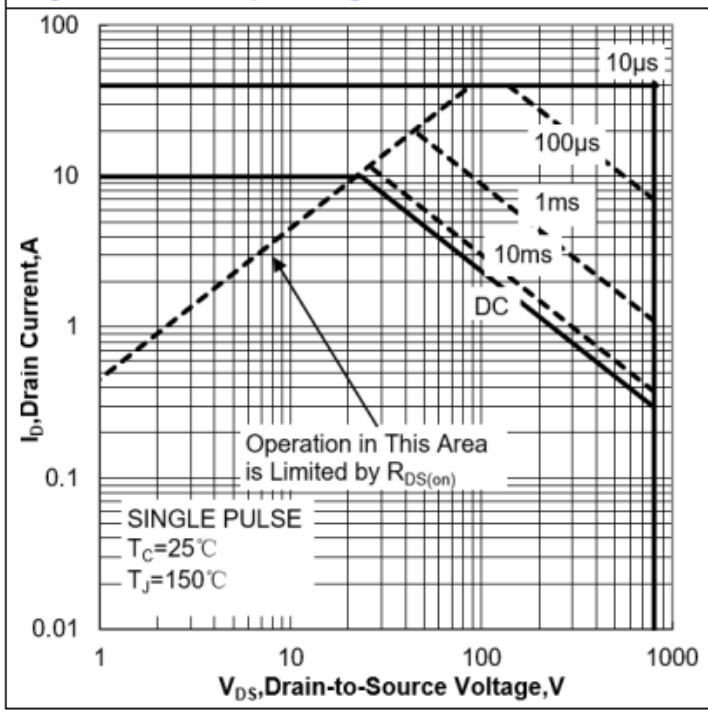


Figure 2 Power Dissipation

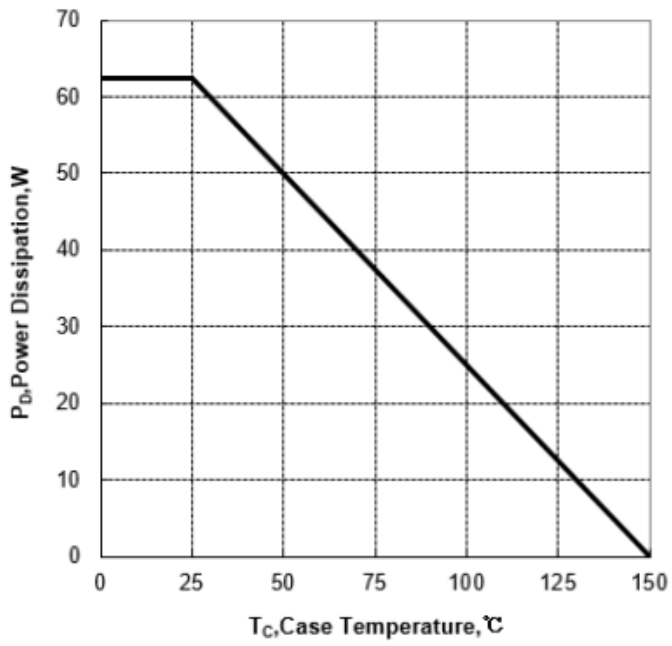


Figure 3 Typical Output Characteristics

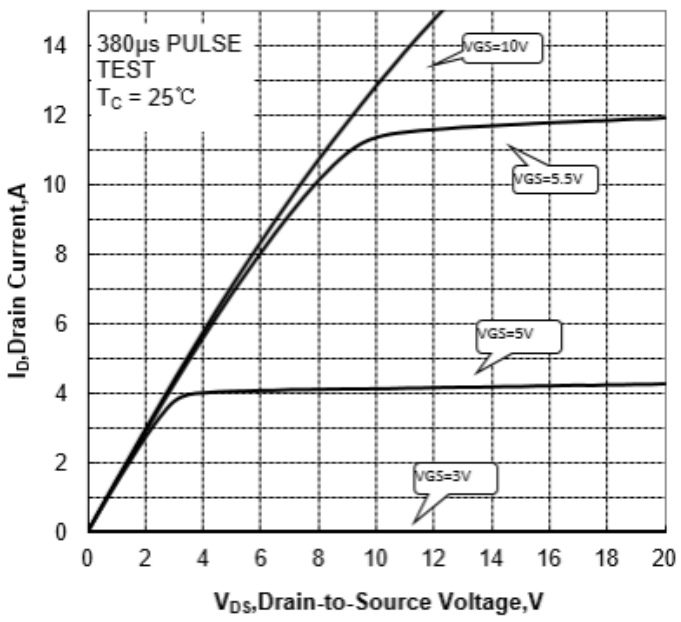


Figure 4 Typical Transfer Characteristics

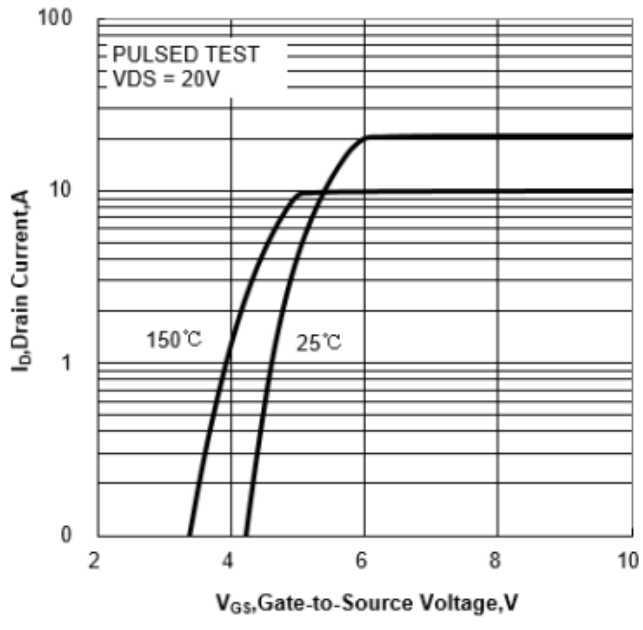


Figure 5 Typical Drain to Source ON Resistance vs Drain Current

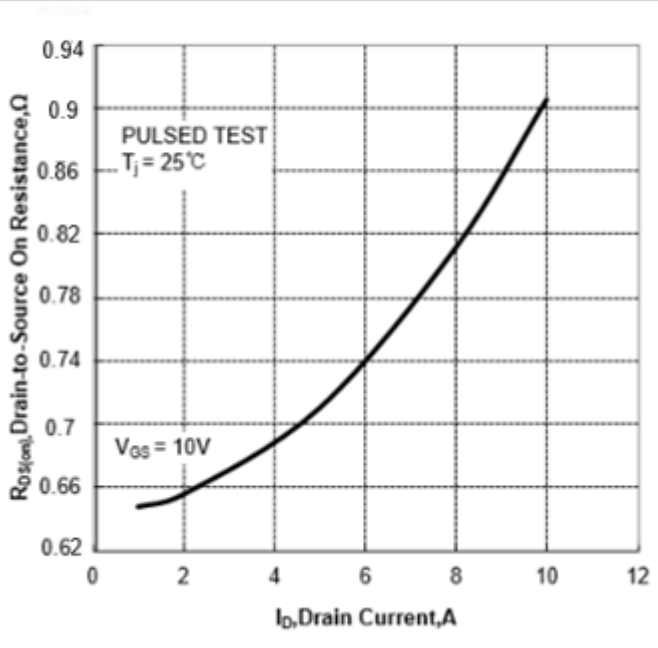


Figure 6 Typical Drian to Source on Resistance vs Junction Temperature

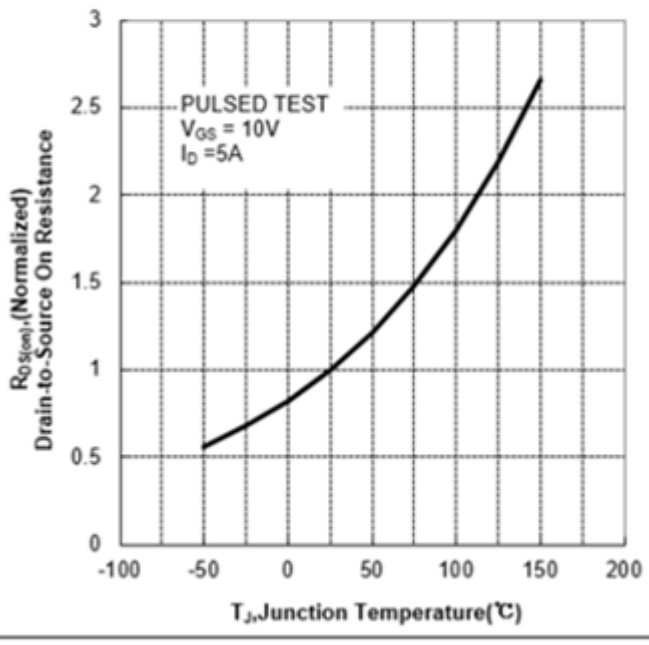


Figure 7 Typical Theshold Voltage vs Junction Temperature

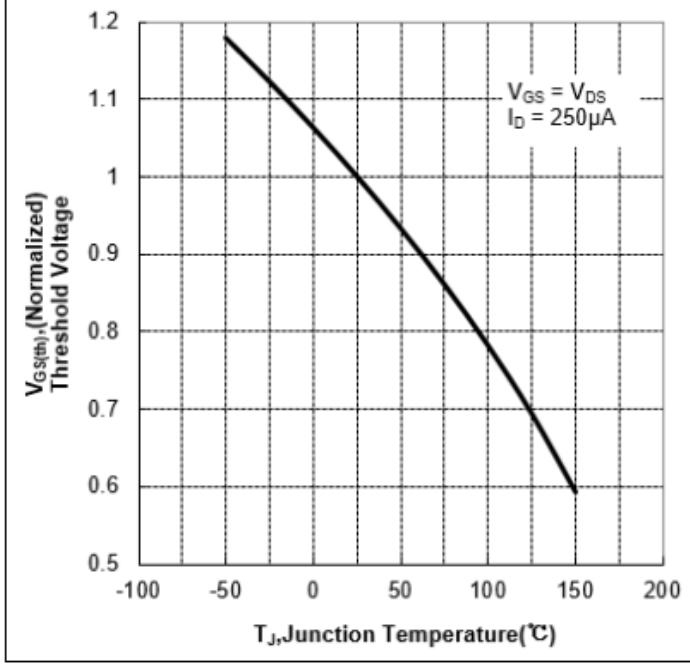


Figure 8 Typical Breakdown Voltage vs Junction Temperature

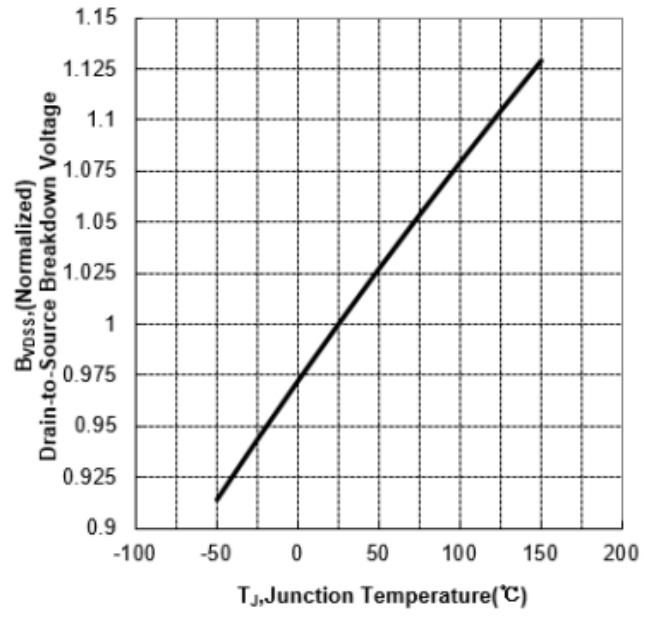


Figure 9 Capacitance Characteristics

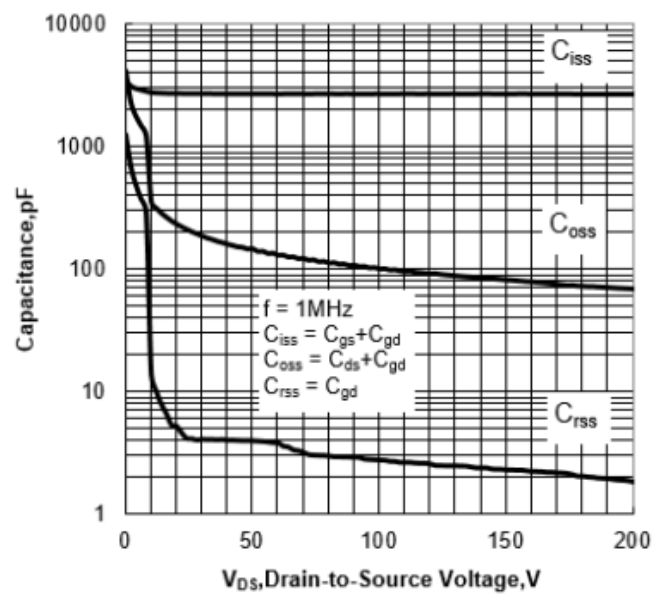


Figure 10 Gate Charge Characteristics

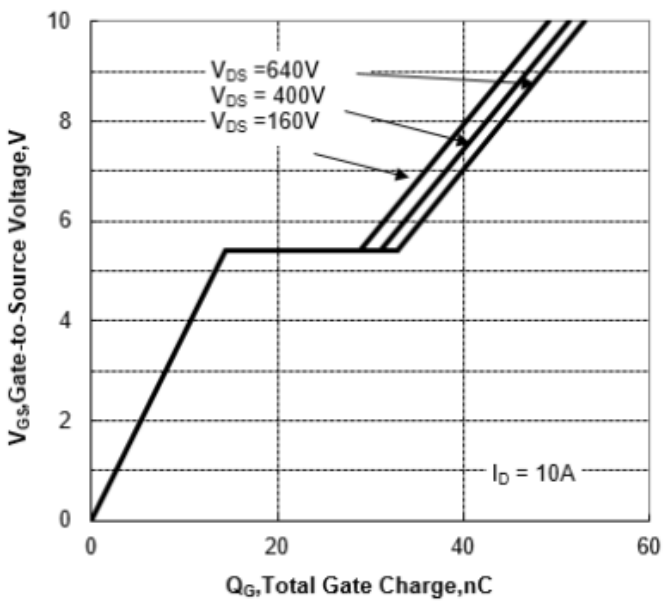
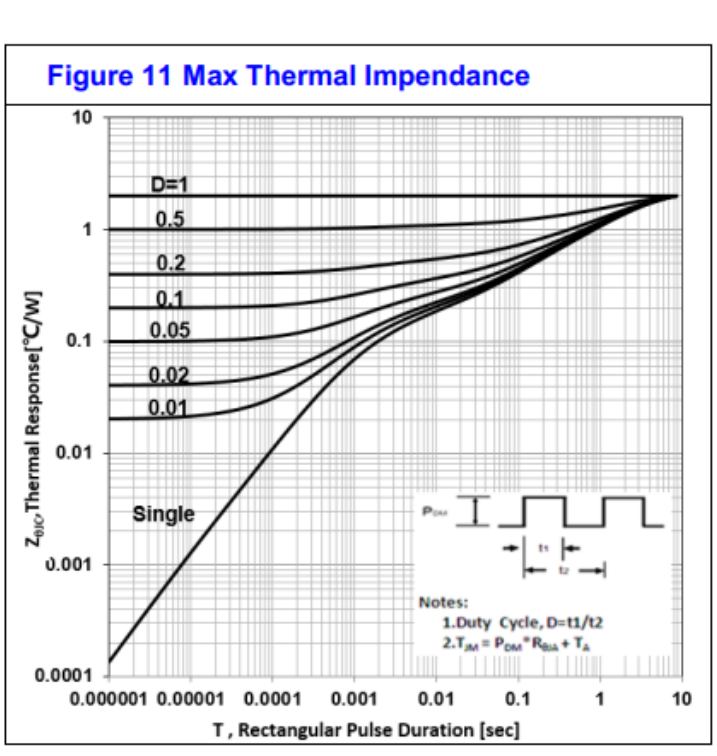
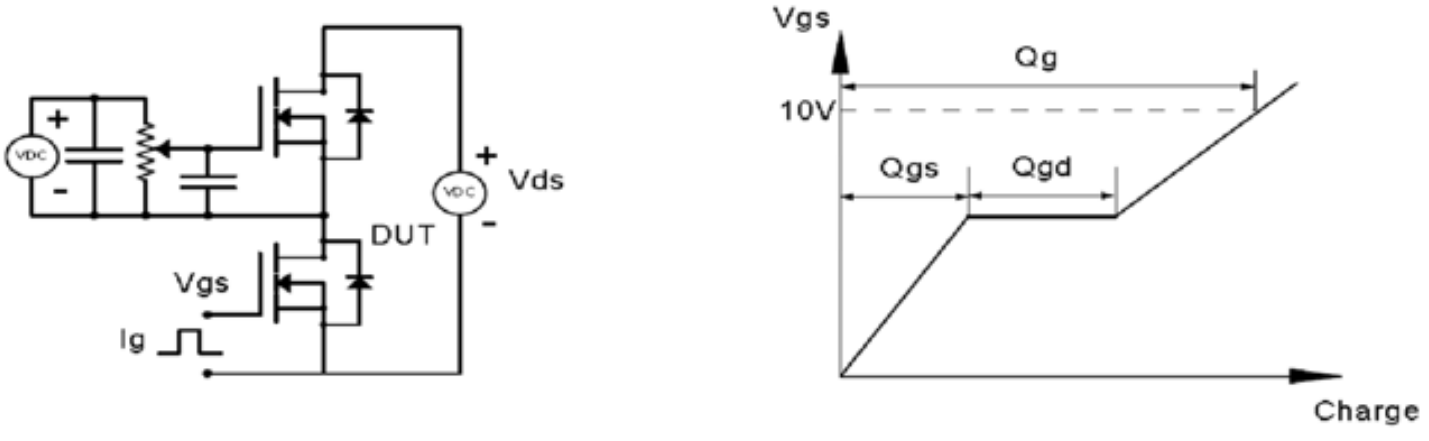


Figure 11 Max Thermal Impendance

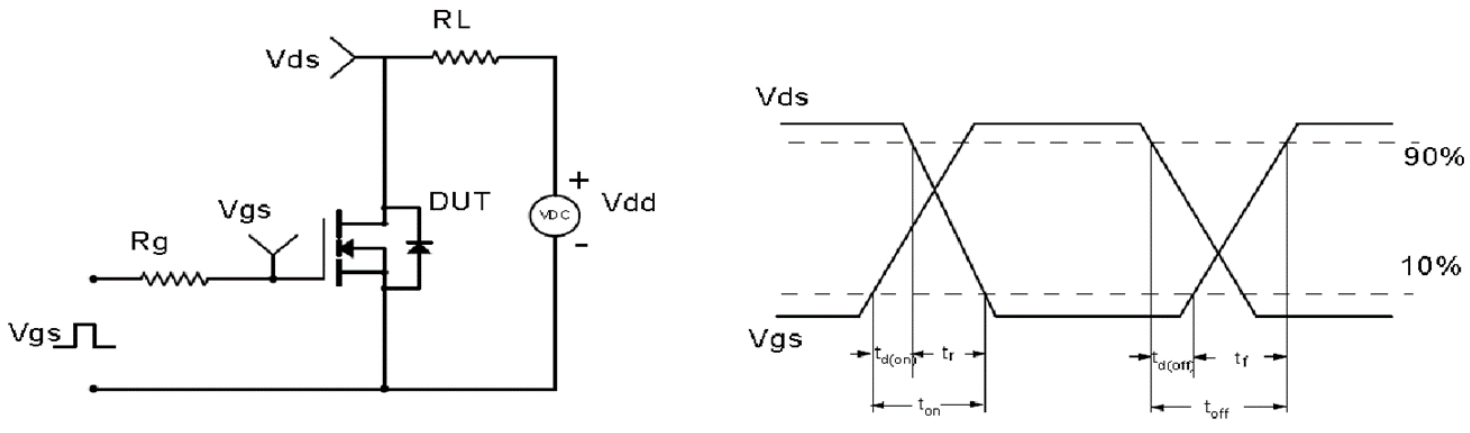


Test Circuit and Waveform

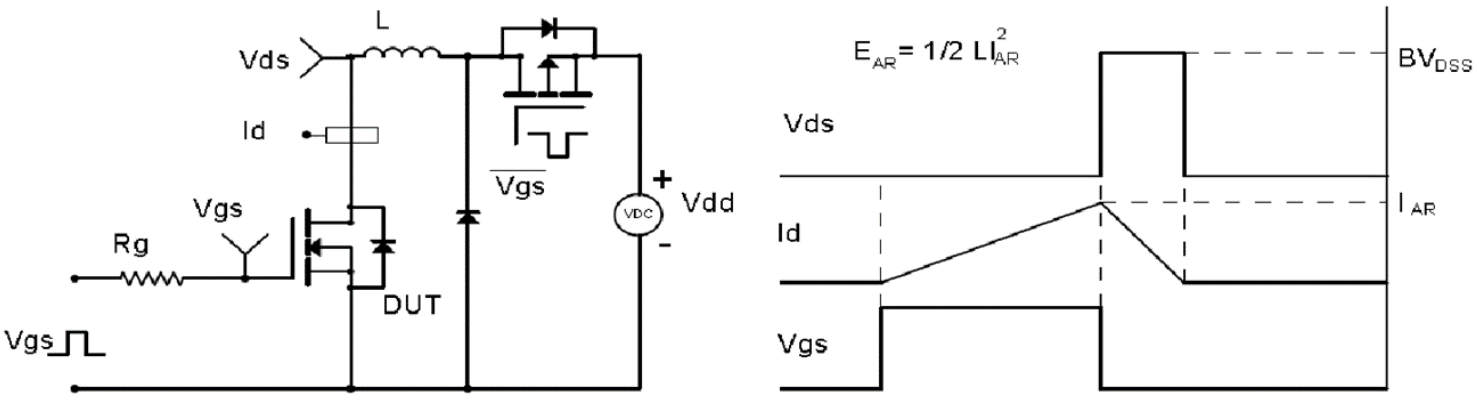
Gate Charge Test Circuit & Waveform



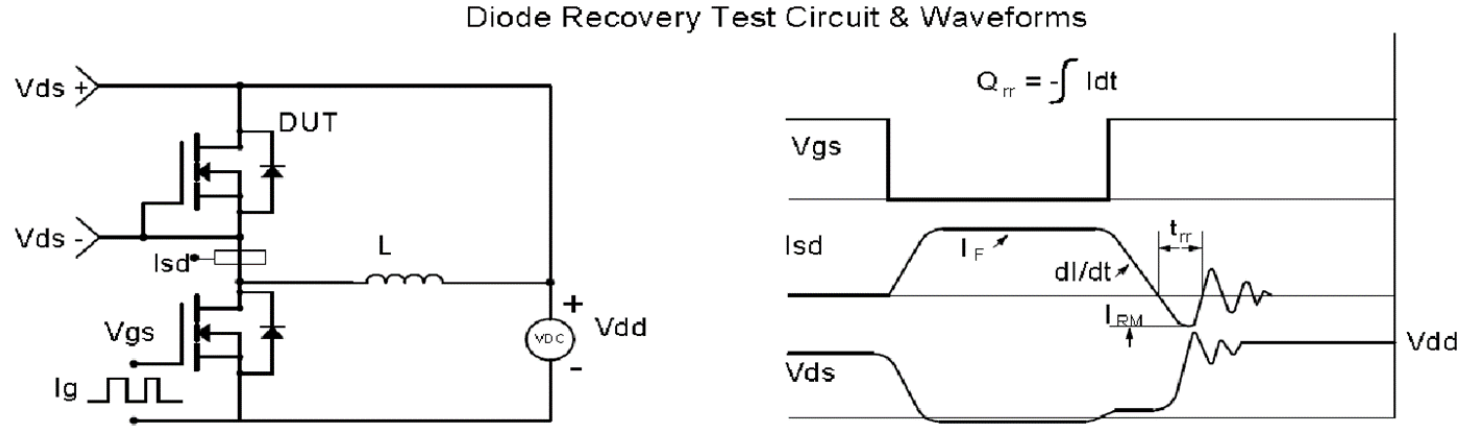
Resistive Switching Test Circuit & Waveforms



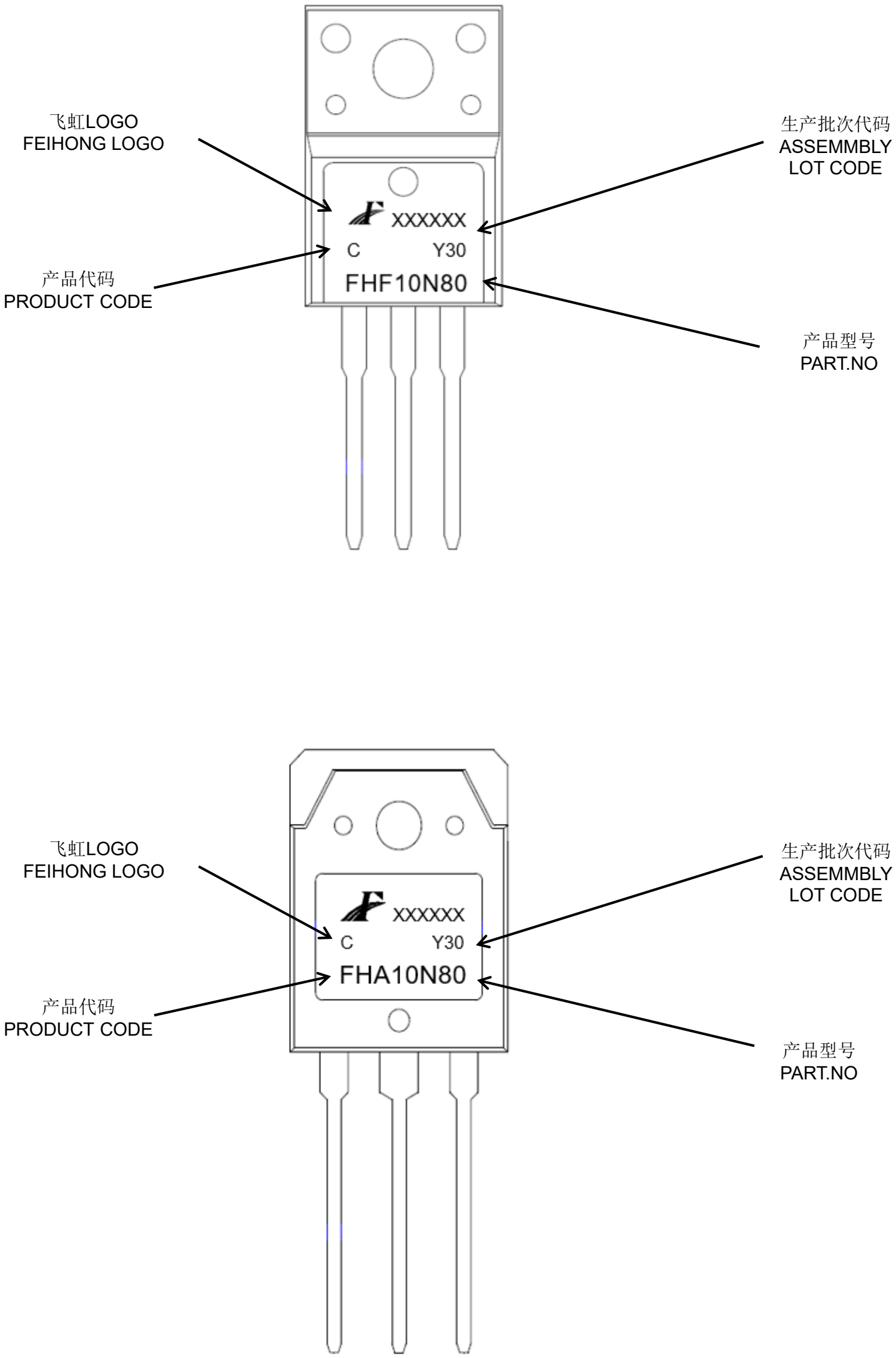
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



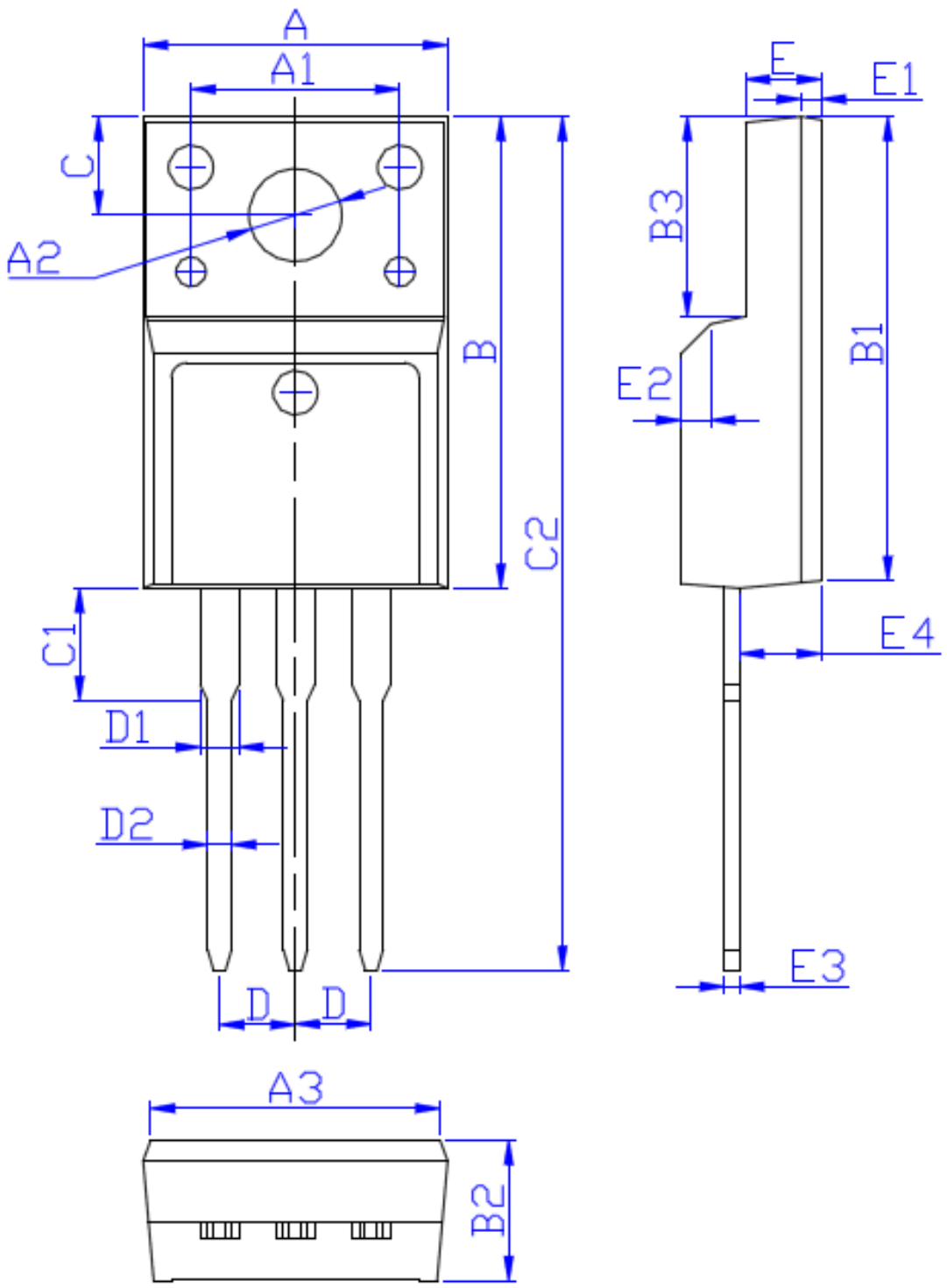
印记 Marking:


飞虹LOGO
FEIHONG LOGO
生产批次代码
ASSEMMBLY
LOT CODE
XXXXXX
C
Y30
FHF10N80
产品代码
PRODUCT CODE
产品型号
PART.NO
飞虹LOGO
FEIHONG LOGO
生产批次代码
ASSEMMBLY
LOT CODE
XXXXXX
C
Y30
FHA10N80
产品代码
PRODUCT CODE
产品型号
PART.NO

外形尺寸：

Package Dimension：

TO-220F



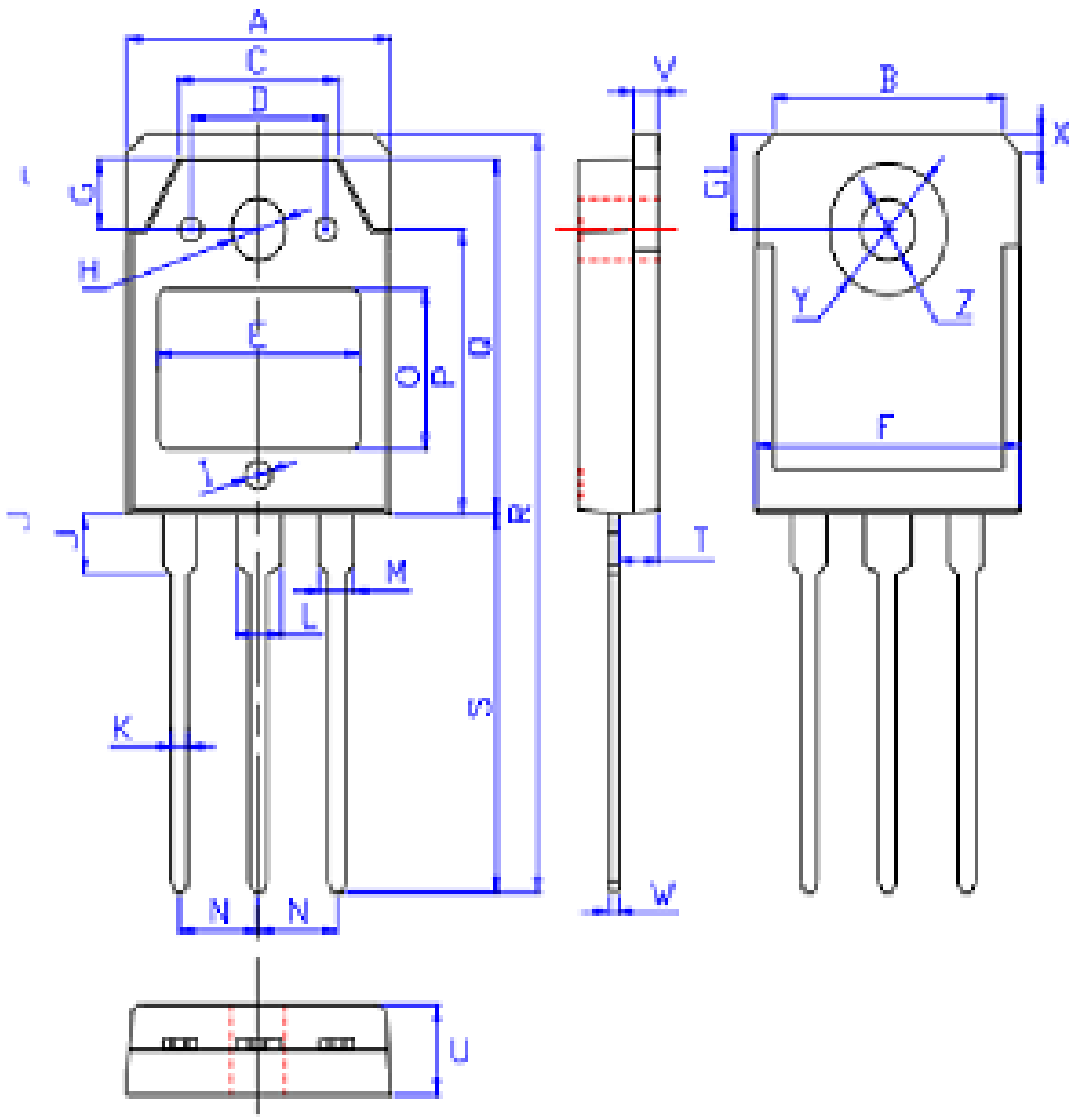
DIM	MILLIMETERS
A	10.16±0.30
A1	7.00±0.20
A2	3.12±0.20
A3	9.70±0.30
B	15.90±0.50
B1	15.60±0.50
B2	4.70±0.30
B3	6.70±0.30
C	3.30±0.25
C1	3.25±0.30
C2	28.70±0.50
D	Typical 2.54
D1	1.47 (MAX)
D2	0.80±0.20
E	2.55±0.25
E1	0.70±0.25
E2	1.0×45°
E3	0.50±0.20
E4	2.75±0.30

(Unit:mm)

外形尺寸：

Package Dimension：

TO-3PN



DIM	MILLIMETERS
A	15.60±0.30
B	13.60±0.30
C	9.50±0.30
D	8.00±0.30
E	11.85±0.30
F	15.65±0.30
G	3.80±0.30
G1	5.00±0.30
H	Φ3.50±0.30
I	Φ1.50±0.30 深 0.15±0.15
J	3.20±0.30
K	1.00±0.15
L	3.10±0.15
M	2.10±0.15
N	5.45±0.30
O	8.40±0.30
P	13.90±0.30
Q	18.70±0.30
R	40.00±0.60
S	20.00±0.40
T	2.40±0.30
U	4.80±0.30
V	1.50±0.15
W	0.60±0.15
X	1.80±0.40
Y	7.00±0.30
Z	3.20±0.30

（Units：mm）