



P 沟道增强型场效应晶体管

P-CHANNEL MOSFET

FHD18P10A

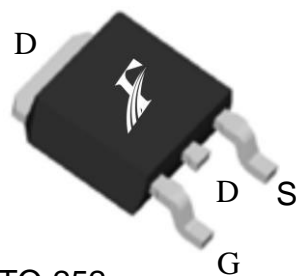
主要参数 MAIN CHARACTERISTICS

ID	-18 A
VDSS	-100 V
Rdson-typ (@Vgs=-10V)	92mΩ
Rdson-typ (@Vgs=-4.5V)	95mΩ
Qg-typ	37nC

用途 APPLICATIONS

功率开关	switch mode power supplies
便携式设备电源管理和电池供电系统	Portable equipment power management and battery power supply system

封装形式 Package

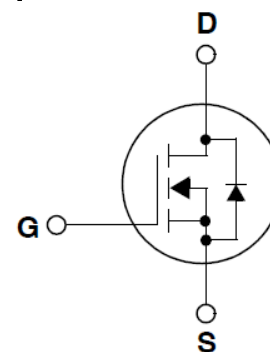


TO-252
FHD series

产品特性 FEATURES

低栅极电荷	Low gate charge
低 Crss (典型值 75pF)	Low Crss (typical 75pF)
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

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
		FHD18P10A	
最高漏极-源极直流电压 Drain-Source Voltage	VDS	-100	V
连续漏极电流* Drain Current -continuous *	ID (Tc=25°C)	-18	A
	ID (Tc=100°C)	-11	A
最大脉冲漏极电流 (注 1) Drain Current – pulse (note 1)	IDM	-50	A
最高栅源电压 Gate-Source Voltage	VGS	±25	V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	EAS	210	mJ
雪崩电流 (注 1) Avalanche Current (note 1)	IAR	-17	A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	EAR	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)	57	W
	-Derate above 25°C	0.33	W/°C
最高结温及存储温度 Operating and Storage Temperature Range	TJ, TSTG	-55~+175	°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
关态特性 Off –Characteristics						
漏-源击穿电压 Drain-Source Voltage	BVDSS	ID=-250μA, VGS=0V	-100	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	ΔBVDSS/ΔTJ	ID=-250μA, referenced to 25°C	-	-0.1	-	V/°C
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	IDSS	VDS=-100V, VGS=0V, Tc=25°C	-	-	-1	μA
		VDS=-80V, Tc=125°C	-	-	-100	μA
栅极体漏电流 Gate-body leakage current	IGSS (F/R)	VDS=0V, VGS =±20V	-	-	±100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	VGS(th)	VDS = VGS, ID=-250μA	-1.0	-1.8	-2.5	V
静态导通电阻 Static Drain-Source On-Resistance	RDS(ON)	VGS =-10V, ID=-10A	-	92	105	mΩ
		VGS =-4.5V, ID=-10A	-	95	115	
正向跨导 Forward Transconductance	gfs	VDS = -20V, ID=-10A (note 4)	-	70	-	S
动态特性 Dynamic Characteristics						
栅电阻 Gate Resistance	Rg	f=1.0MHz, VDS OPEN	-	1.7	-	Ω
输入电容 Input capacitance	Ciss	VDS=-30V, VGS =0V, f=1.0MHz	-	2575	-	pF
输出电容 Output capacitance	Coss		-	90	-	
反向传输电容 Reverse transfer capacitance	Crss		-	75	-	
开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	td(on)	VDS=-50V, ID=-10A, RG=6.8Ω VGS =-10V (note 4, 5)	-	11	-	ns
上升时间 Turn-On rise time	tr		-	16	-	ns
延迟时间 Turn-Off delay time	td(off)		-	38	-	ns
下降时间 Turn-Off Fall time	tf		-	15	-	ns
栅极电荷总量 Total Gate Charge	Qg	VDS =-50V , ID=-10A , VGS =-10V (note 4, 5)	-	37	-	nC
栅-源电荷 Gate-Source charge	Qgs		-	8	-	nC
栅-漏电荷 Gate-Drain charge	Qgd		-	9	-	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		IS	-	-	-18	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		ISM	-	-	-50	A
正向压降 Drain-Source Diode Forward Voltage	VSD	VGS=0V, IS=-10A	-	-0.9	-1.3	V
反向恢复时间 Reverse recovery time	trr	VGS=0V, IS=-20A, dIF/dt=-500A/μs (note 4)	-	23	-	ns
反向恢复电荷 Reverse recovery charge	Qrr		-	52	-	nC

热特性 THERMAL CHARACTERISTIC

项目 Parameter	符号 Symbol	FHD18P10A	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	Rth(j-c)	2.6	°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	Rth(j-A)	110	°C/W

注释:

- 1: 脉冲宽度由最高结温限制
- 2: L=0.5mH, IAS=-29A, RG=25 Ω, 起始结温 TJ=25°C
- 3: ISD ≤ -18A, di/dt ≤ 500A/μs, VDD ≤ BVDS, 起始结温 TJ=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

Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: L=0.5mH, IAS=-29A, RG=25 Ω, Starting TJ=25°C
- 3: ISD ≤ -18A, di/dt ≤ 500A/μs, VDD ≤ BVDS, Starting TJ=25°C
- 4: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
- 5: Essentially independent of operating temperatur

Typical Characteristics

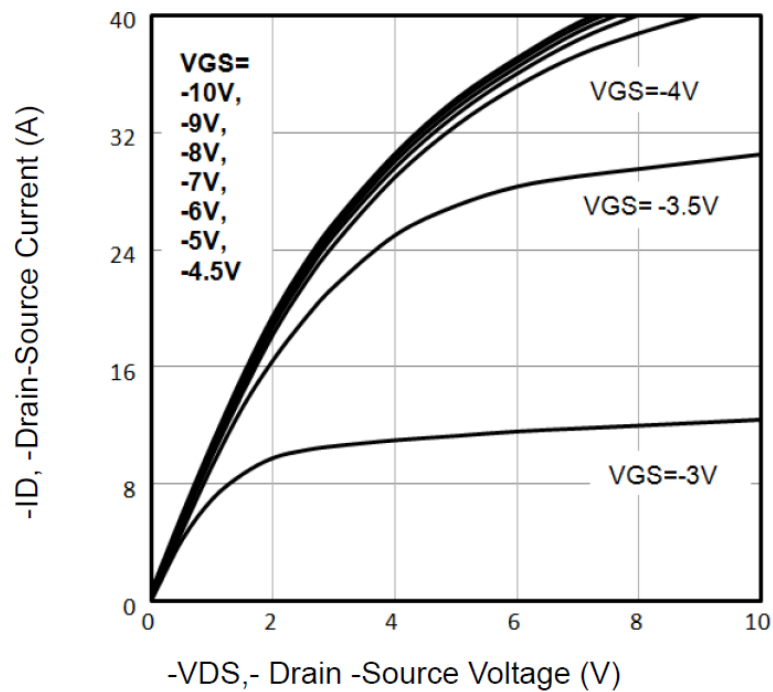


Fig1. Typical Output Characteristics

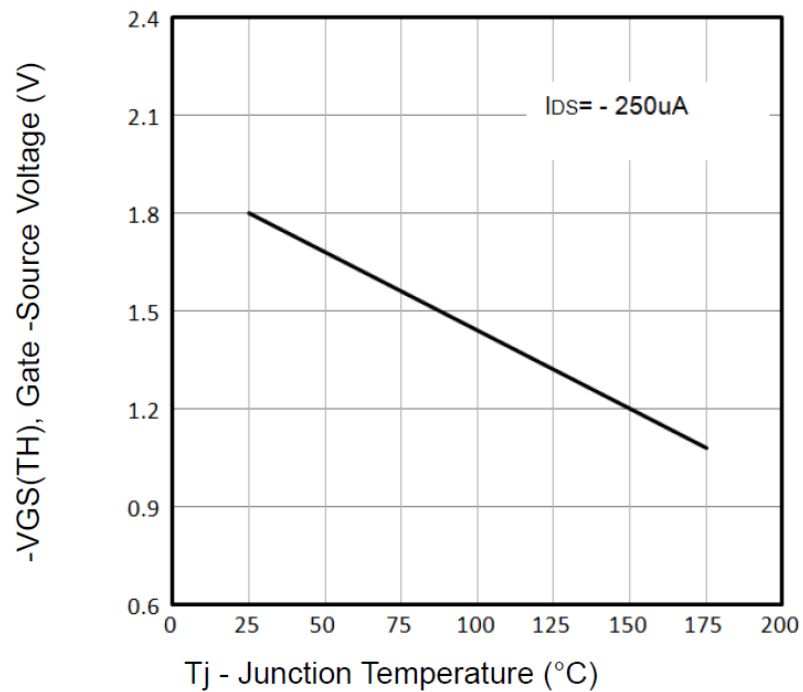


Fig2. $-V_{GS(TH)}$ Gate -Source Voltage Vs. T_j

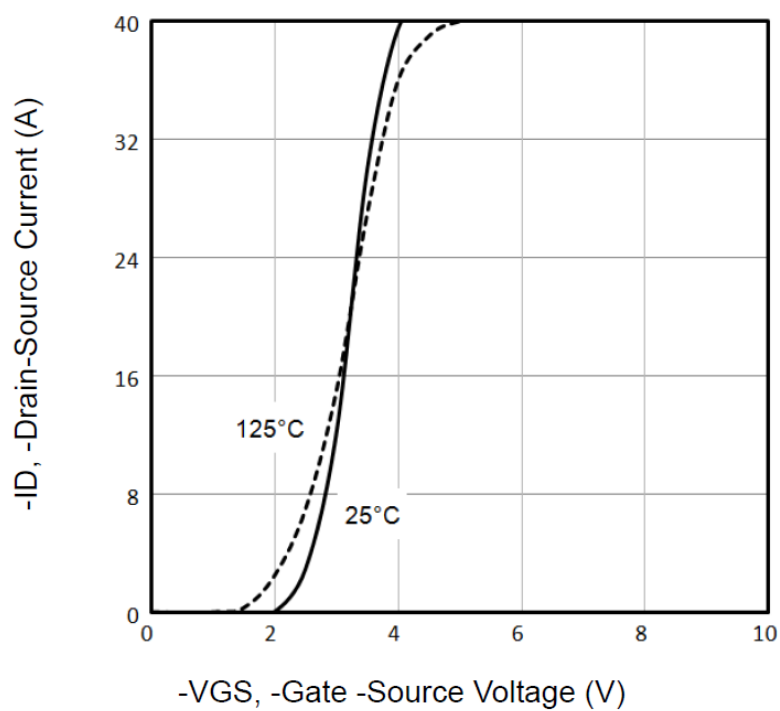


Fig3. Typical Transfer Characteristics

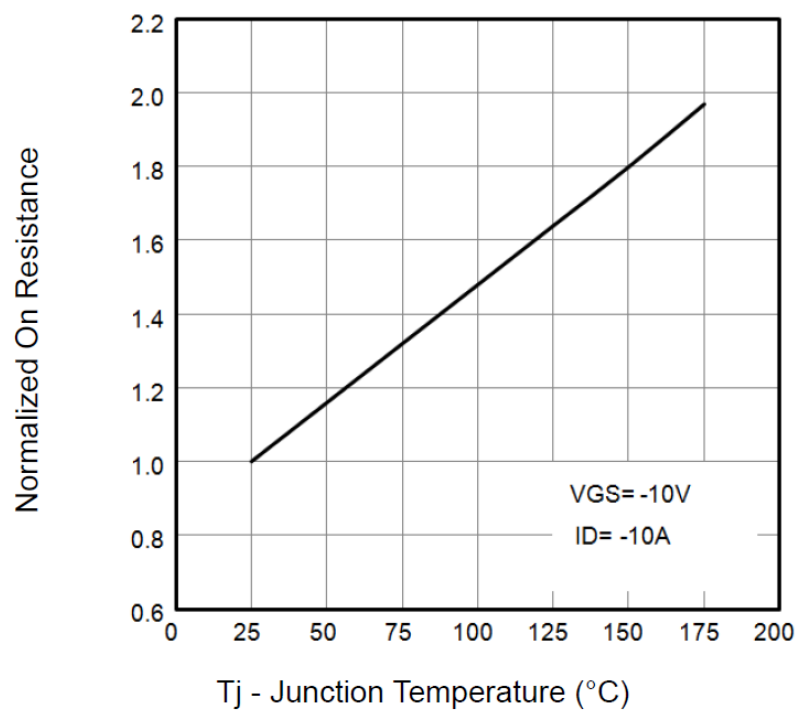


Fig4. Normalized On-Resistance Vs. T_j

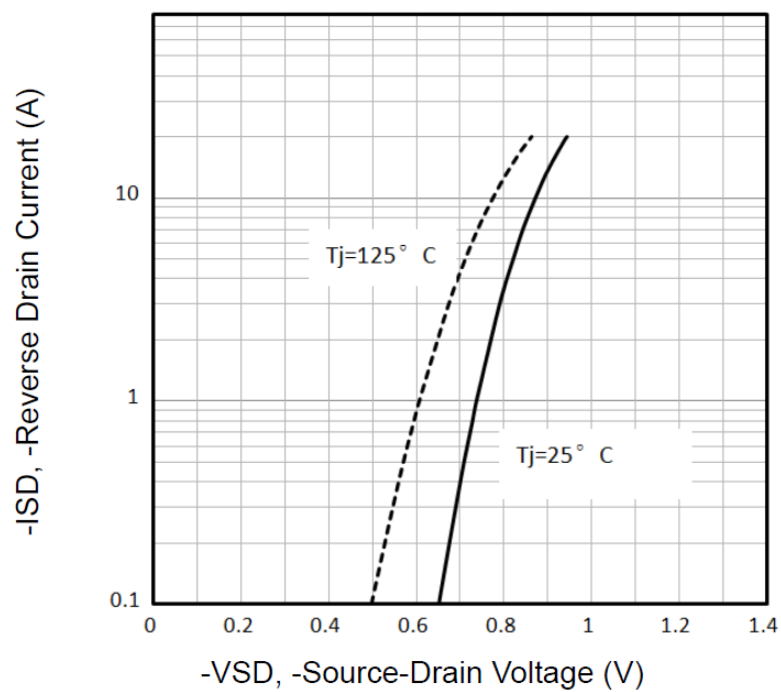


Fig5. Typical Source-Drain Diode Forward Voltage

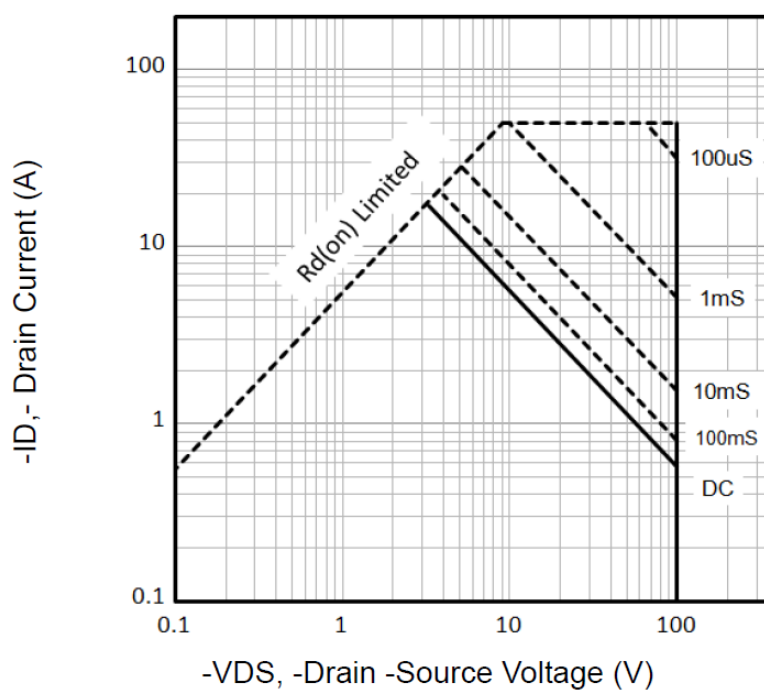


Fig6. Maximum Safe Operating Area

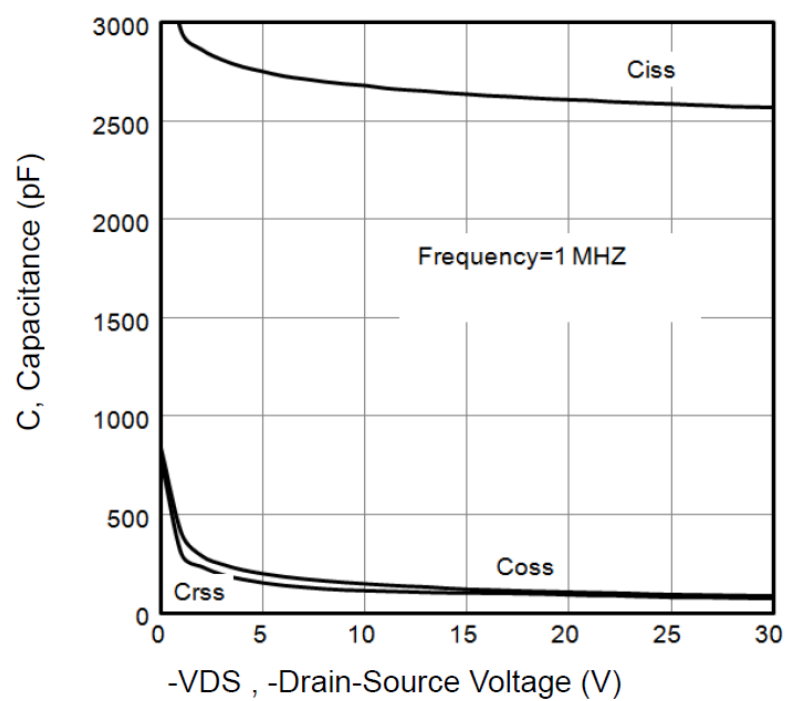


Fig7. Typical Capacitance Vs.Drain-Source Voltage

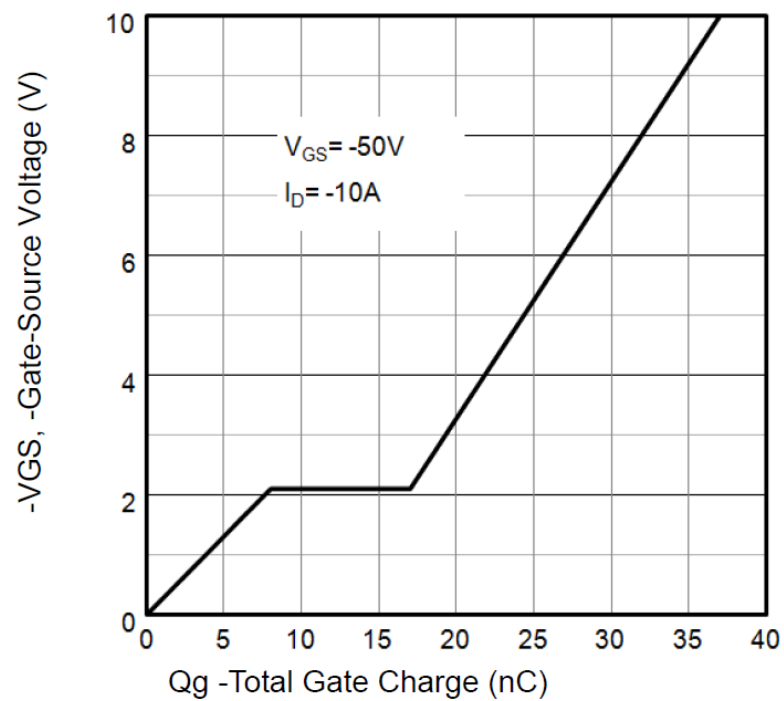


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

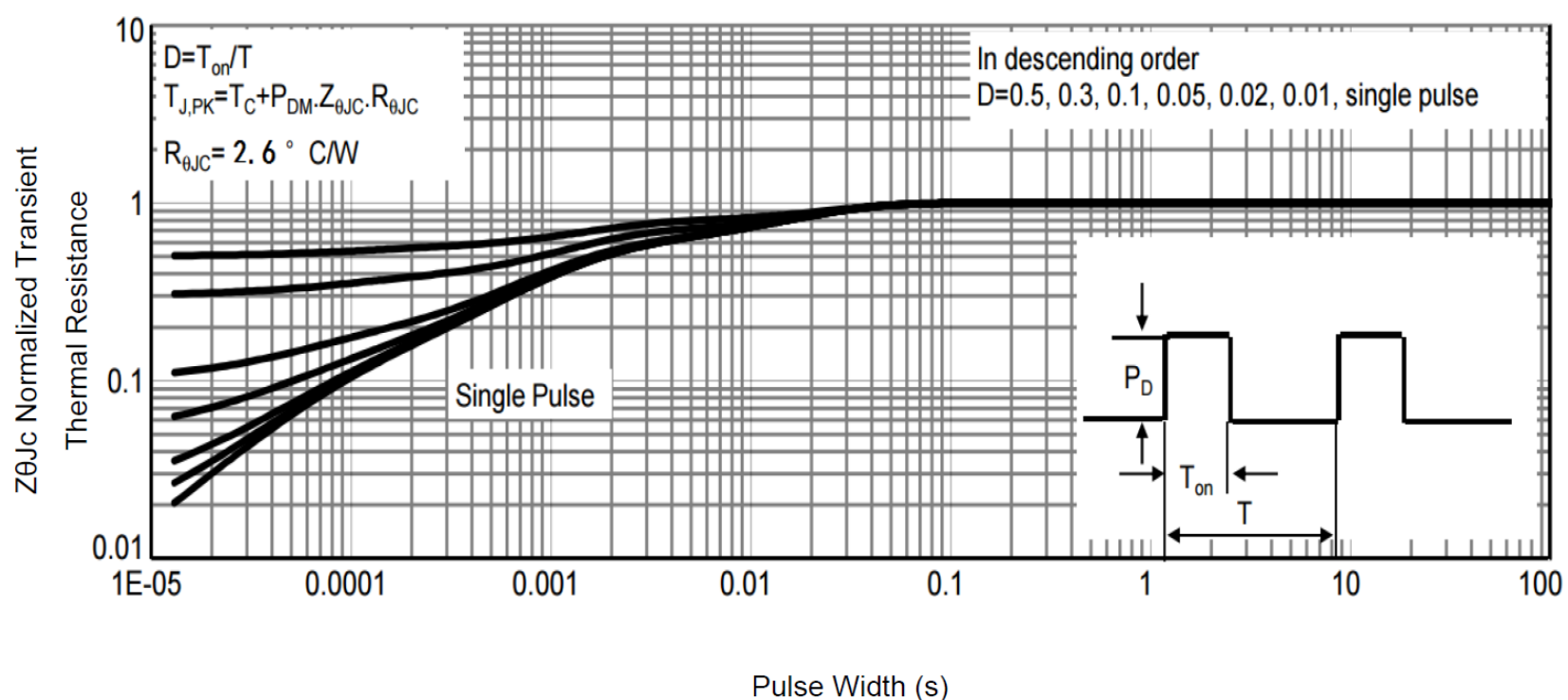
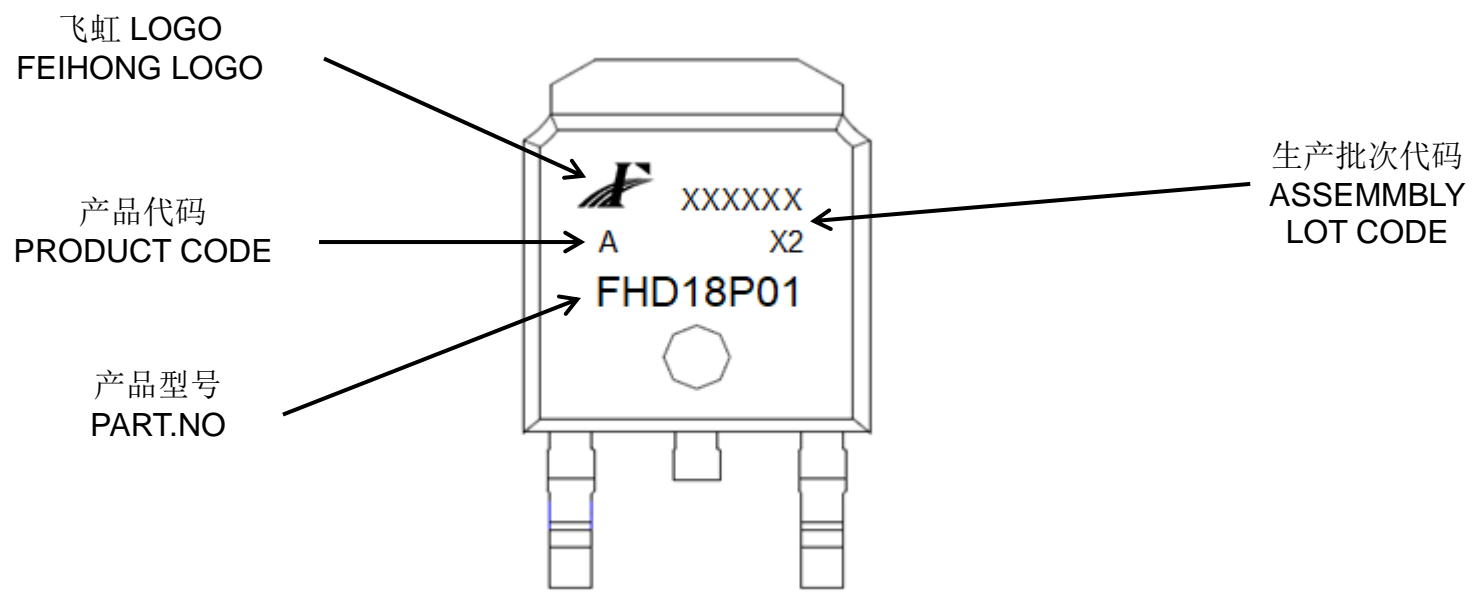


Fig9. Normalized Maximum Transient Thermal Impedance

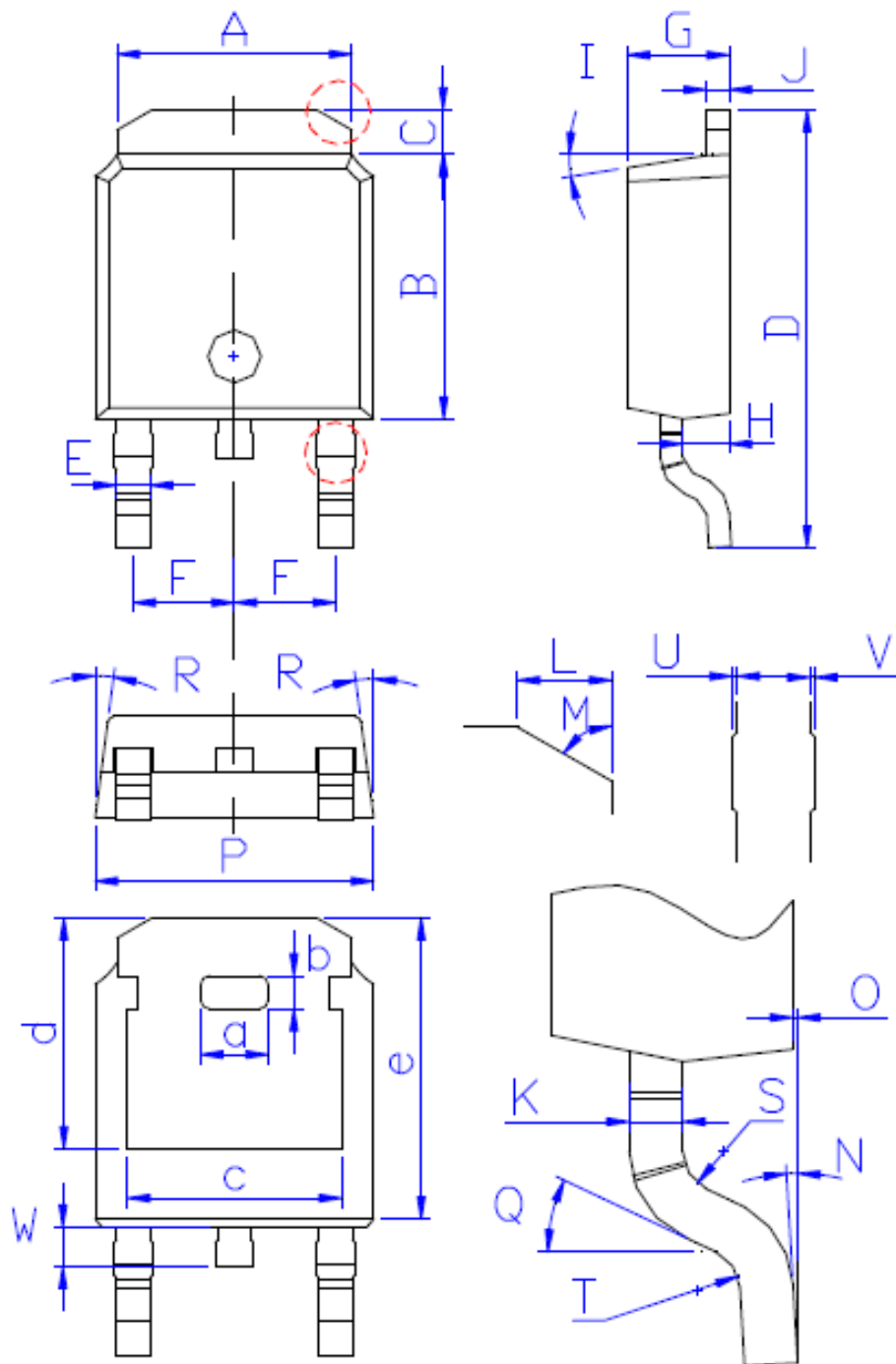
印记 Marking:



外形尺寸:

Package Dimension:

TO-252



DIM	MILLIMETERS
A	5.34 ± 0.30
B	6.00 ± 0.30
C	1.05 ± 0.30
D	9.95 ± 0.30
E	0.76 ± 0.15
F	2.28 ± 0.15
G	2.30 ± 0.30
H	1.06 ± 0.30
I	$(4-10)^\circ$
J	0.51 ± 0.15
K	0.52 ± 0.15
L	0.80 ± 0.30
M	60°
N	$(0-10)^\circ$
O	0.05 ± 0.05
P	6.60 ± 0.30
Q	25°
R	$(4-8.5)^\circ$
S	R0.40
T	R0.40
U	0.05 ± 0.05
V	0.05 ± 0.05
W	0.90 ± 0.30
a	1.80 ± 0.30
b	0.75 ± 0.30
c	4.85 ± 0.30
d	5.30 ± 0.30
e	6.90 ± 0.30

(Units: mm)

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