FSN130G04

PDFN5X6-8L N Channel Enhancement 沟道增强型
MOS Field Effect Transistor 场效应管

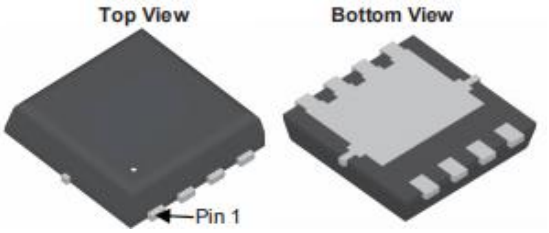
■Features 特点

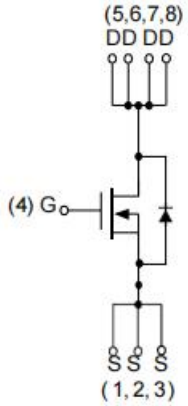
Low on-resistance 低导通电阻
$R_{DS(ON)}$=1.1mΩ(Type)@V_{GS}=10V
$R_{DS(ON)}$=1.7mΩ(Type)@V_{GS}=4.5V

■Applications 应用

DC/DC Converter 升压转换
Power Management 电源管理
Synchronous-rectification 同步整流

■Internal Schematic Diagram 内部结构





■Absolute Maximum Ratings 最大额定值

Characteristic 特性参数	Symbol 符号	Rat 额定值	Unit 单位
Drain-Source Voltage 漏极-源极电压	BV_{DSS}	40	V
Gate- Source Voltage 栅极-源极电压	V_{GS}	±20	V
Drain Current (continuous)漏极电流-连续	I_D（at T_C = 25°C at T_A = 25°C）	130 20	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	390	A
Total Device Dissipation 总耗散功率	P_{TOT}(at T_C = 25°C at T_A = 25°C)	114 6.25	W
Avalanche Energy(Single Pulse)雪崩能量	E_{AS}	450	mJ
Thermal Resistance Junction-Ambient 热阻	$R_{\Theta JC}$/$R_{\Theta JA}$	1.1/20	℃/W
Junction/Storage Temperature 结温/储存温度	T_J,T_{stg}	-55~150	℃

■Electrical Characteristics 电特性

(T_A=25℃ unless otherwise noted 如无特殊说明，温度为 25℃)

Characteristic 特性参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Drain-Source Breakdown Voltage 漏极-源极击穿电压(I_D =250uA,V_{GS}=0V)	BV_{DSS}	40	—	—	V
Gate Threshold Voltage 栅极开启电压(I_D =250uA,V_{GS}= V_{DS})	$V_{GS(th)}$	1.2	1.8	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V_{GS}=0V, V_{DS}= 40V)	I_{DSS}	—	—	1	uA
Gate Body Leakage 栅极漏电流(V_{GS}=±20V, V_{DS}=0V)	I_{GSS}	—	—	±100	nA
Static Drain-Source On-State Resistance 静态漏源导通电阻(I_D=20A,V_{GS}=10V) (I_D=20A,V_{GS}=4.5V)	$R_{DS(ON)}$	—	1.1 1.7	1.4 2.3	mΩ
Diode Forward Voltage Drop 内附二极管正向压降(I_{SD}=20A,V_{GS}=0V)	V_{SD}	—	0.8	1.1	V
Input Capacitance 输入电容 (V_{GS}=0V, V_{DS}=25V,f=1MHz)	C_{ISS}	—	8300	—	pF
Common Source Output Capacitance 共源输出电容(V_{GS}=0V, V_{DS}=25V,f=1MHz)	C_{OSS}	—	1510	—	pF
Reverse Transfer Capacitance 反馈电容 (V_{GS}=0V, V_{DS}=25V,f=1MHz)	C_{RSS}	—	130	—	pF
Total Gate Charge 栅极电荷密度 (V_{DS}=32V, I_D=20A, V_{GS}=10V)	Q_g	—	127	—	nC
Gate Source Charge 栅源电荷密度 (V_{DS}=32V, I_D=20A, V_{GS}=10V)	Q_{gs}	—	35	—	nC
Gate Drain Charge 栅漏电荷密度 (V_{DS}=32V, I_D=20A, V_{GS}=10V)	Q_{gd}	—	26	—	nC
Turn-ON Delay Time 开启延迟时间 (V_{DS}=20V I_D=25A, R_{GEN}=2Ω,V_{GS}=10V)	$t_{d(on)}$	—	23	—	ns
Turn-ON Rise Time 开启上升时间 (V_{DS}=20V I_D=25A, R_{GEN}=2Ω,V_{GS}=10V)	t_r	—	8	—	ns
Turn-OFF Delay Time 关断延迟时间 (V_{DS}=20V I_D=25A, R_{GEN}=2Ω,V_{GS}=10V)	$t_{d(off)}$	—	80	—	ns
Turn-OFF Fall Time 关断下降时间 (V_{DS}=20V I_D=25A, R_{GEN}=2Ω,V_{GS}=10V)	t_f	—	28	—	ns

■Typical Characteristic Curve 典型特性曲线

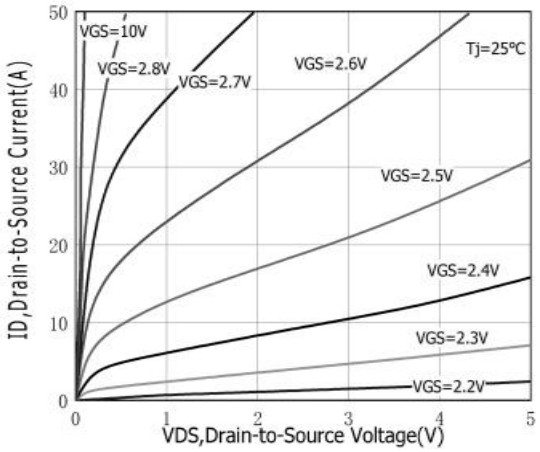


Figure 1: Output Characteristics

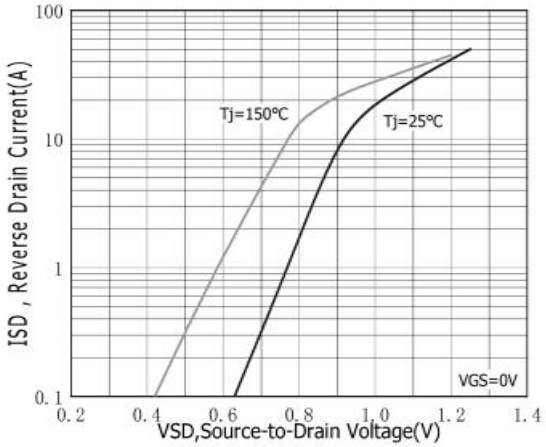


Figure 2: Diode Forward Characteristics

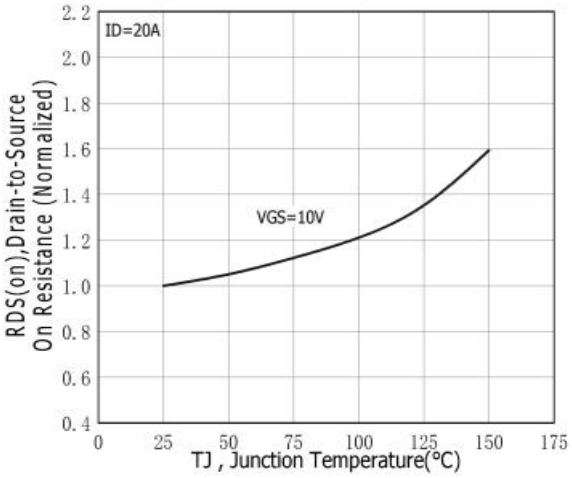


Figure 3: On-Resistance vs. T_J

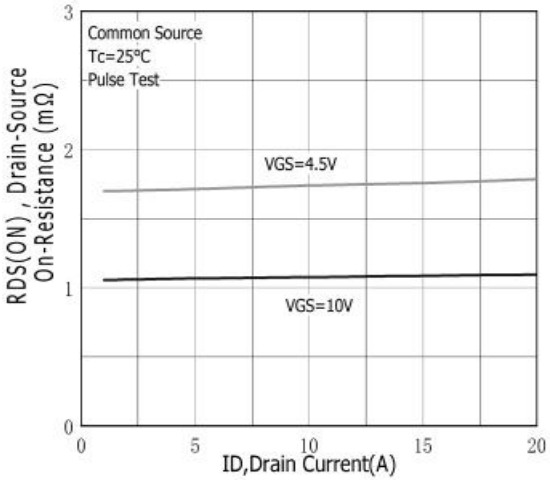


Figure 4: On-Resistance vs. Drain Current

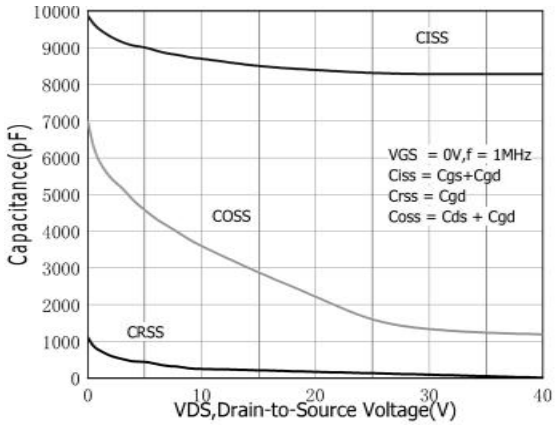


Figure 5: Capacitance Characteristics

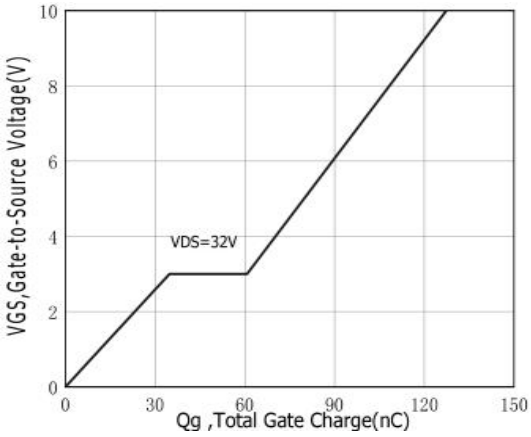


Figure 6: Gate-Charge Characteristics

■Typical Characteristic Curve 典型特性曲线

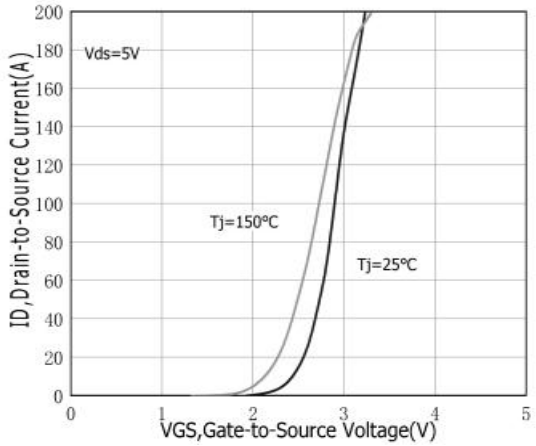


Figure 7: Transfer Characteristics

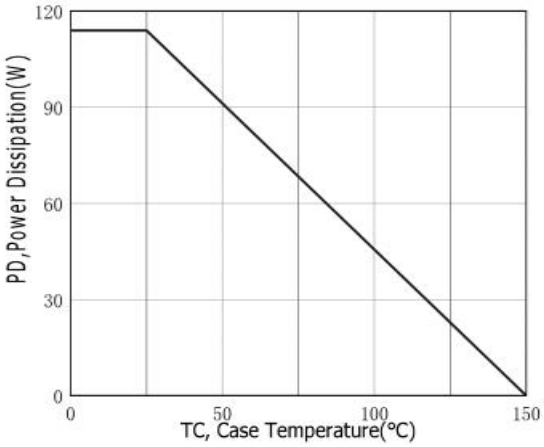


Figure 8: Power Rating Curve

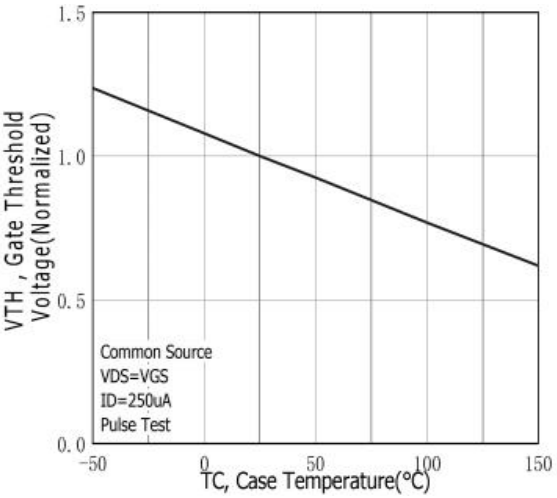


Figure 9: Threshold Voltage Characteristics

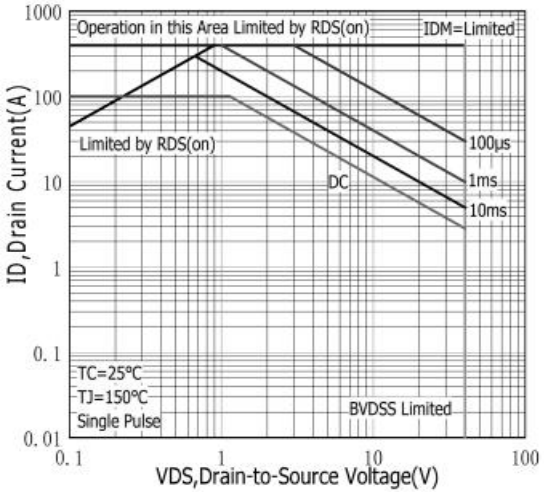


Figure 10: Safe Operating Area

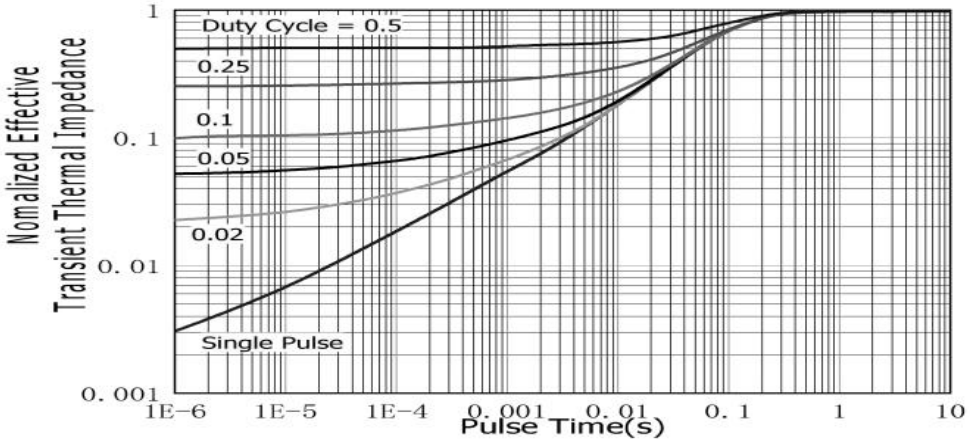
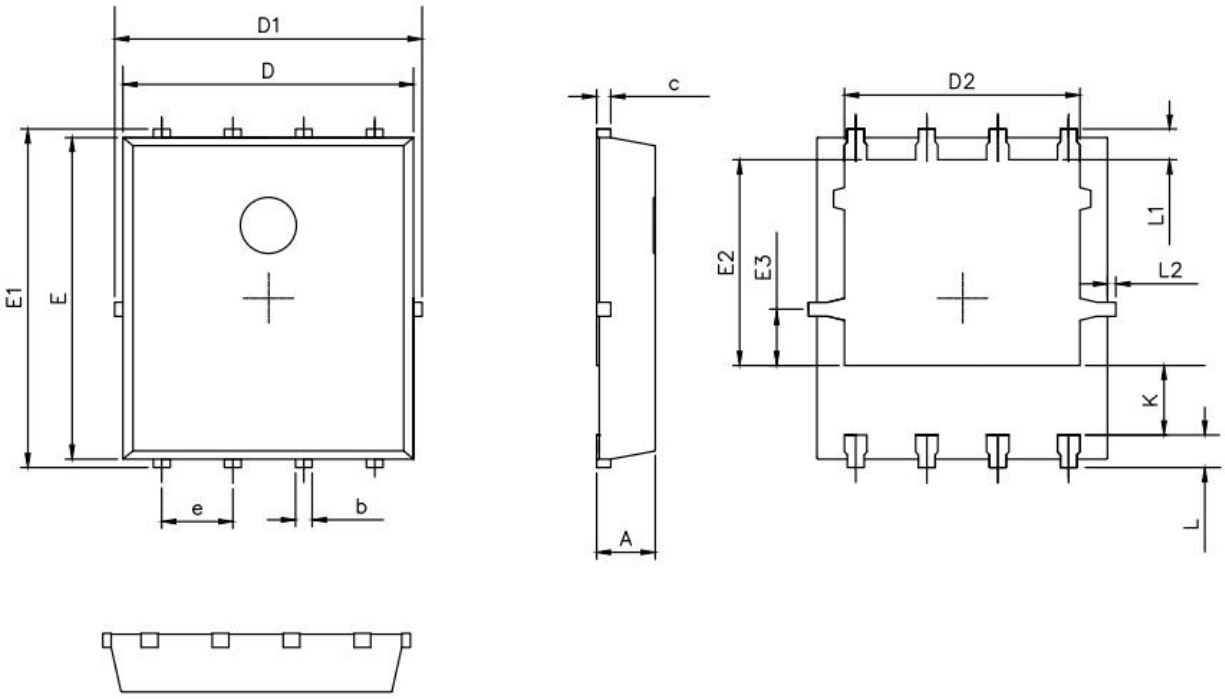
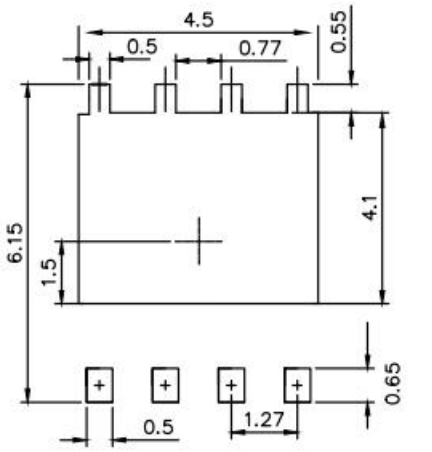


Figure 11: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



RECOMMENDED LAND PATTERN



UNIT: mm

	MIN	NOM	MAX
A	0.90	1.00	1.10
b	0.25	0.35	0.50
c	0.10	0.20	0.30
D	4.80	5.00	5.30
D1	4.90	5.10	5.50
D2	3.92	4.02	4.20
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	3.325	3.525	3.775
E3	0.80	0.90	1.00
e		1.27	
L	0.40	0.55	0.70
L1		0.65	
L2	0.00		0.15
K	1.00	1.30	1.50