

PDFN3.3X3.3-8 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

$R_{DS(ON)}=12m\Omega(\text{Type})@V_{GS}=-10V$

$R_{DS(ON)}=18m\Omega(\text{Type})@V_{GS}=-4.5V$

ESD Protection 静电保护 3KV

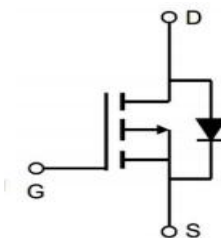
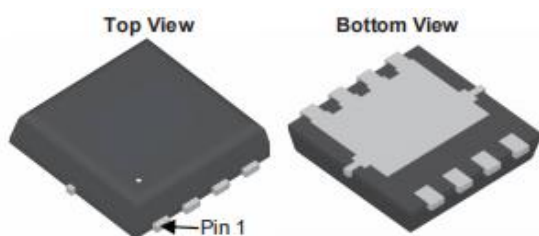
■Applications 应用

PWM 脉宽调制

Load Switch 负载开关

Power Management 电源管理

■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}	-30	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 $T_C = 25^\circ C$ at $T_C = 100^\circ C$)	-30 -19	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	-120	A
Total Device Dissipation 总耗散功率	$P_{TOT}(\text{at } T_C = 25^\circ C)$	25	W
Avalanche Energy(Single Pulse)雪崩能量	E_{AS}	42	mJ
Thermal Resistance 热阻	$R_{\theta JC}$ $R_{\theta JA}$	4.3 50	$^\circ C/W$
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ C$

■ Electrical Characteristics 电特性

($T_A=25^{\circ}\text{C}$ unless otherwise noted 如无特殊说明, 温度为 25°C)

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($I_D = -250\mu\text{A}, V_{GS}=0\text{V}$)	BV_{DSS}	-30	—	—	V
Gate Threshold Voltage 栅极开启电压($I_D = -250\mu\text{A}, V_{GS} = V_{DS}$)	$V_{GS(th)}$	-1.2	-1.8	-2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}, V_{DS}= -30\text{V}$)	I_{DSS}	—	—	-1	μA
Gate Body Leakage 栅极漏电流($V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$)	I_{GSS}	—	—	± 100	nA
Static Drain-Source On-State Resistance 静态漏源导通电阻($I_D = -10\text{A}, V_{GS} = -10\text{V}$) ($I_D = -5\text{A}, V_{GS} = -4.5\text{V}$)	$R_{DS(ON)}$	—	12 18	16 23	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD} = -1\text{A}, V_{GS}=0\text{V}$)	V_{SD}	—	—	-1.2	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}, V_{DS}= -15\text{V}, f=1\text{MHz}$)	C_{ISS}	—	2143	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}, V_{DS}= -15\text{V}, f=1\text{MHz}$)	C_{OSS}	—	277	—	pF
Reverse Transfer Capacitance 反馈电容 ($V_{GS}=0\text{V}, V_{DS}= -15\text{V}, f=1\text{MHz}$)	C_{RSS}	—	242	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}= -15\text{V}, I_D = -20\text{A}, V_{GS} = -10\text{V}$)	Q_g	—	42	—	nC
Gate Source Charge 栅源电荷密度 ($V_{DS}= -15\text{V}, I_D = -20\text{A}, V_{GS} = -10\text{V}$)	Q_{gs}	—	8.5	—	nC
Gate Drain Charge 栅漏电荷密度 ($V_{DS}= -15\text{V}, I_D = -20\text{A}, V_{GS} = -10\text{V}$)	Q_{gd}	—	5.5	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}= -15\text{V}, I_D = -1\text{A}, R_{GEN}=3.3\Omega, V_{GS} = -10\text{V}$)	$t_{d(on)}$	—	14	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}= -15\text{V}, I_D = -1\text{A}, R_{GEN}=3.3\Omega, V_{GS} = -10\text{V}$)	t_r	—	26	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}= -15\text{V}, I_D = -1\text{A}, R_{GEN}=3.3\Omega, V_{GS} = -10\text{V}$)	$t_{d(off)}$	—	27	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}= -15\text{V}, I_D = -1\text{A}, R_{GEN}=3.3\Omega, V_{GS} = -10\text{V}$)	t_f	—	5	—	ns

■ Typical Characteristic Curve 典型特性曲线

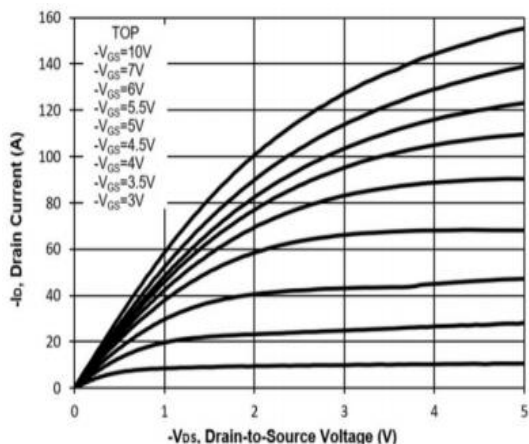


Figure 1: Output Characteristics

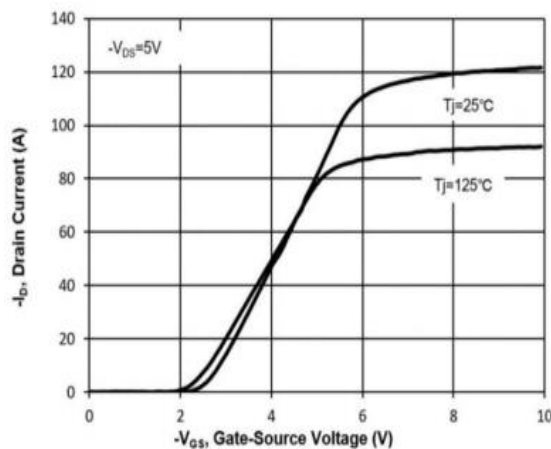


Figure 2: Transfer Characteristics

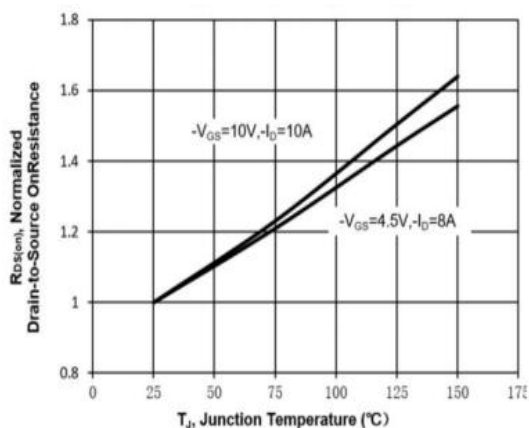


Figure 3: On-Resistance vs. T_J

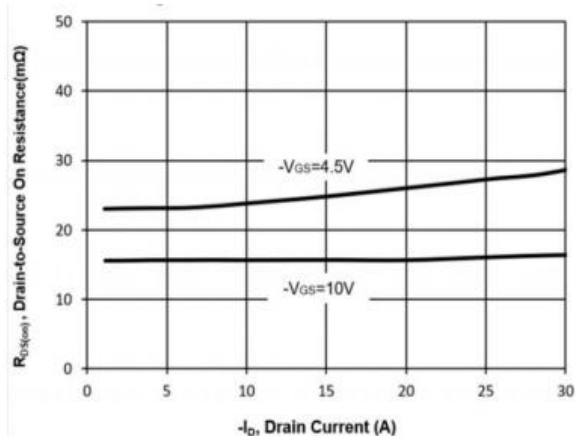


Figure 4: On-Resistance vs. Drain Current

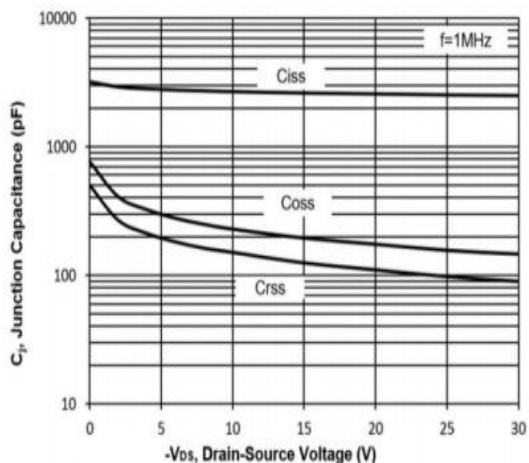


Figure 5: Capacitance Characteristics

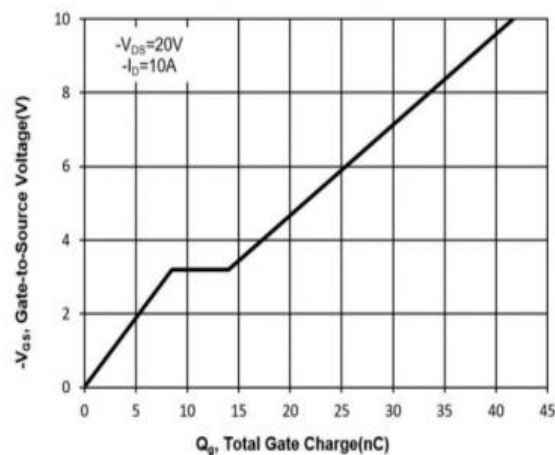


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

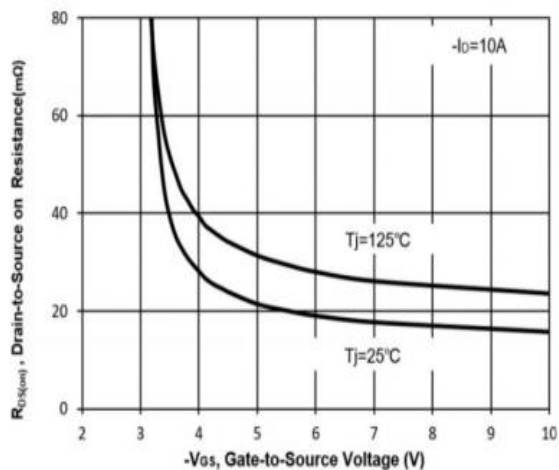


Figure 7: Drain Current vs. V_{GS}

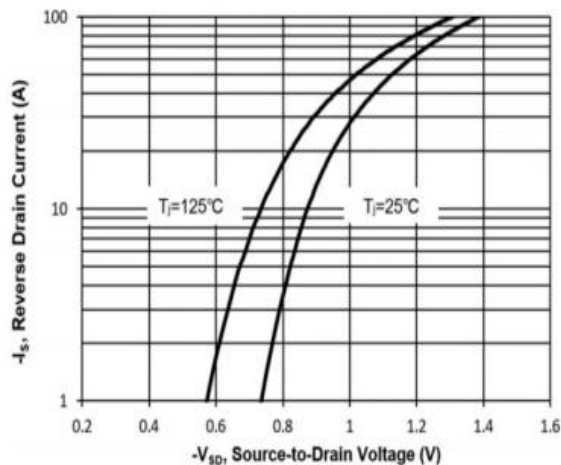


Figure 8: Diode Characteristics

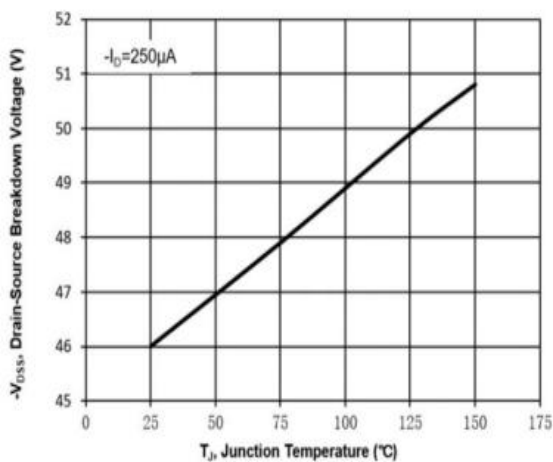


Figure 9: Breakdown Voltage Characteristics

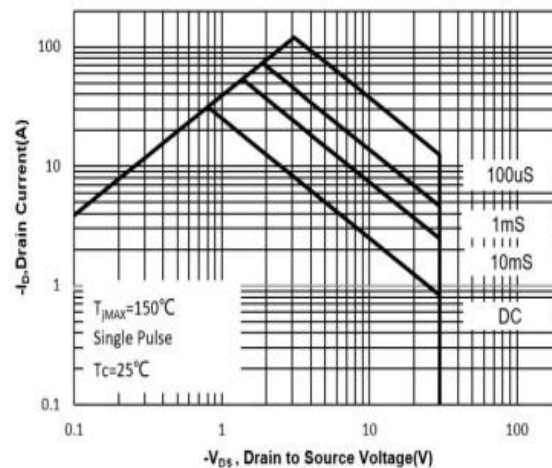


Figure 10: Safe Operating Area

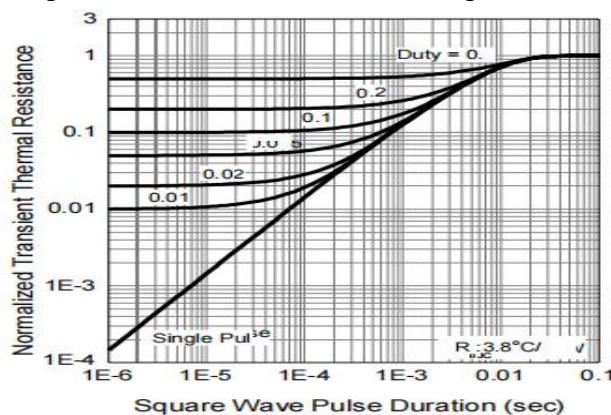
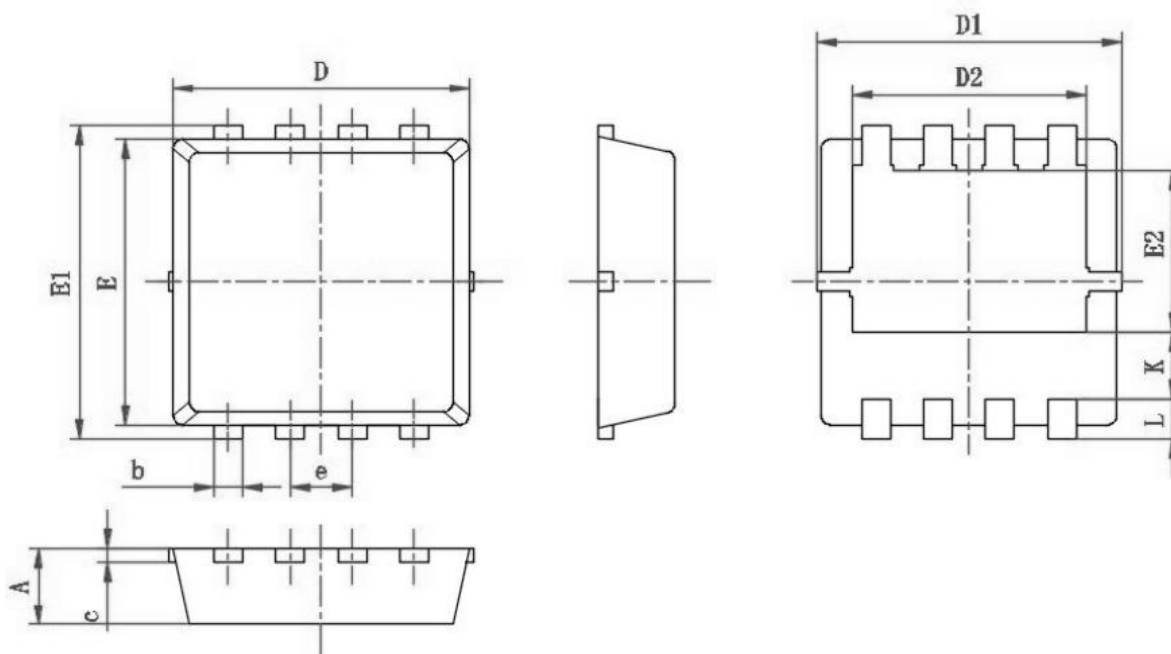


Figure 11: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
A	0.7	0.9	E	2.9	3.1	e	(0.65)	
D	3.0	3.2	E1	3.1	3.5	b	0.25	0.35
D1	3.0	3.4	E2	1.55	1.95	c	0.1	0.2
D2	2.25	2.65	K	(0.65)		L	0.3	0.55