

**PDFN3.3X3.3-8 N Channel SGT Enhancement 沟道屏蔽栅增强型
MOS Field Effect Transistor 场效应管**

■ **Features 特点**

Low on-resistance 低导通电阻

$R_{DS(ON)}=9.7m\Omega(\text{Type})@V_{GS}=10V$

$R_{DS(ON)}=13m\Omega(\text{Type})@V_{GS}=4.5V$

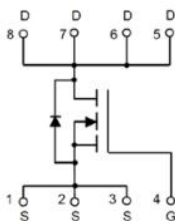
■ **Applications 应用**

Load Switch 负载开关

DC-DC Converter 电源转换

High current load applications 高电流负载应用

■ **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}	60	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 $T_C = 100^\circ C$)	54 34	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	216	A
Total Device Dissipation 总耗散功率	$P_{TOT}(\text{at } T_A = 25^\circ C$ at $T_C = 25^\circ C)$	2.5 36.7	W
Avalanche Energy(Single Pulse)雪崩能量	EAS	56	mJ
Thermal Resistance Junction-A/C 热阻	$R_{\theta JA}$ $R_{\theta JC}$	60 3.4	$^\circ C/W$
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}	60	—	—	V
Gate Threshold Voltage 栅极开启电压($I_D=250\mu\text{A}$, $V_{GS}=V_{DS}$)	$V_{GS(th)}$	1.1	1.6	2.1	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}$, $V_{DS}=60\text{V}$)	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($I_D=20\text{A}$, $V_{GS}=10\text{V}$) ($I_D=15\text{A}$, $V_{GS}=4.5\text{V}$)	$R_{DS(ON)}$	—	9.7 13	13 17	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD}=20\text{A}$, $V_{GS}=0\text{V}$)	V_{SD}	—	0.8	1.2	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$)	C_{ISS}	—	950	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$)	C_{OSS}	—	254	—	pF
Reverse Transfer Capacitance 反馈电容 ($V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$)	C_{RSS}	—	45	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_g	—	13.1	—	nC
Gate Source Charge 栅源电荷密度 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_{gs}	—	2.2	—	nC
Gate Drain Charge 栅漏电荷密度 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_{gd}	—	2.6	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=10\Omega$, $V_{GS}=10\text{V}$)	$t_{d(on)}$	—	7	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=10\Omega$, $V_{GS}=10\text{V}$)	t_r	—	52.5	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=10\Omega$, $V_{GS}=10\text{V}$)	$t_{d(off)}$	—	44.5	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=10\Omega$, $V_{GS}=10\text{V}$)	t_f	—	93.5	—	ns

■ Typical Characteristic Curve 典型特性曲线

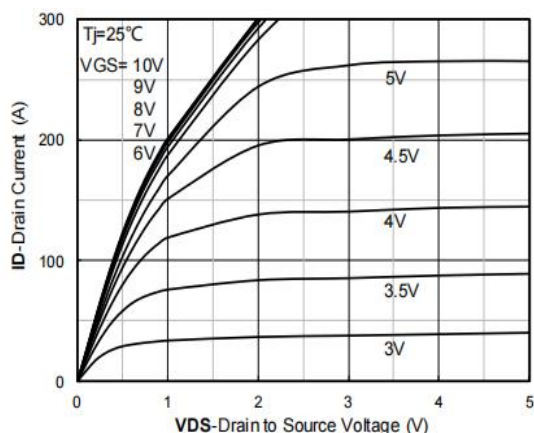


Figure 1: Output Characteristics

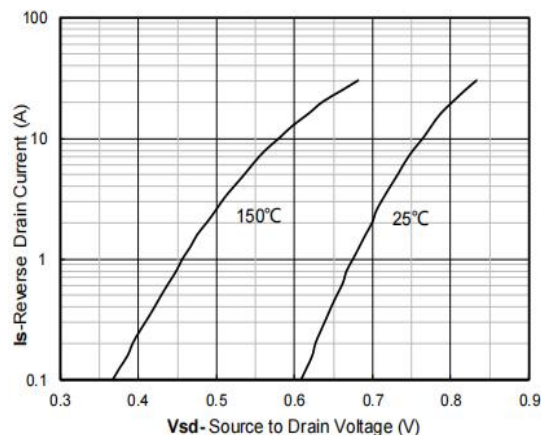


Figure 2: Diode Forward Characteristics

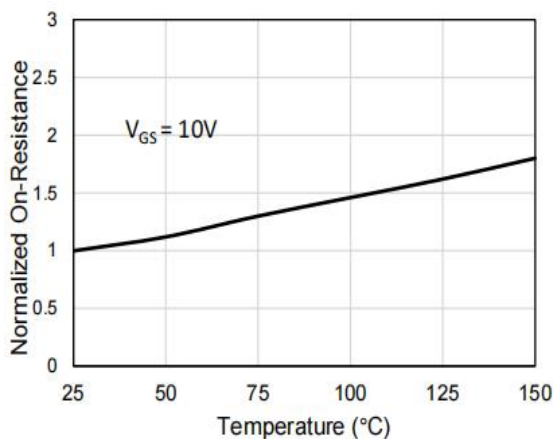


Figure 3: On-Resistance vs. T_J

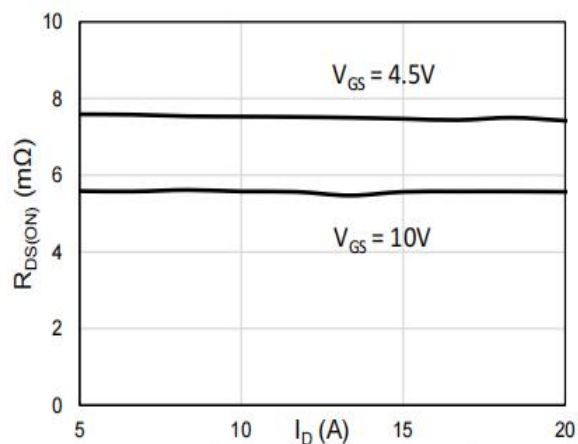


Figure 4: On-Resistance vs. Drain Current

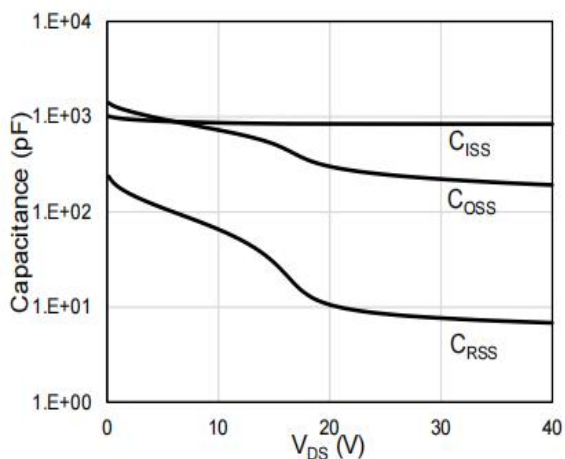


Figure 5: Capacitance Characteristics

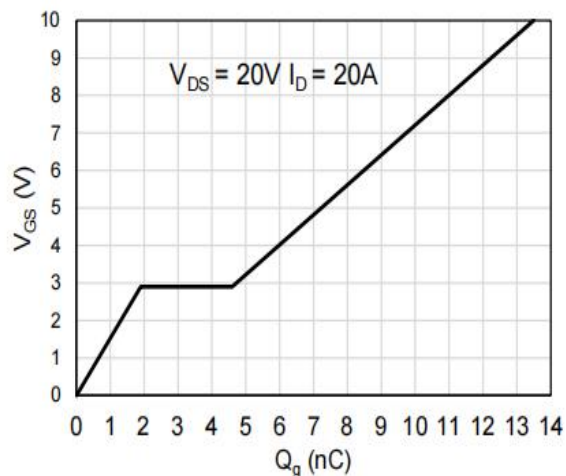


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

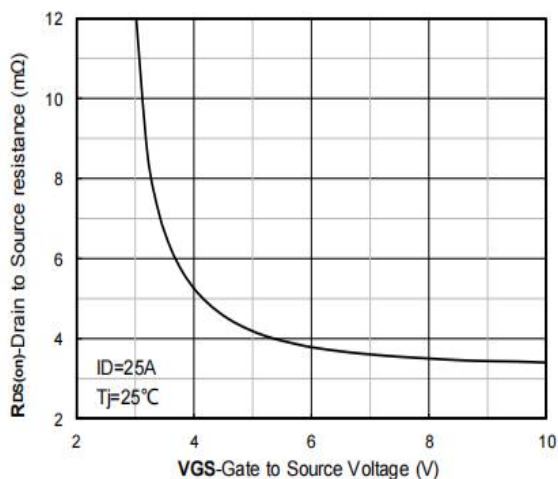


Figure 7: Drain Current vs. V_{GS}

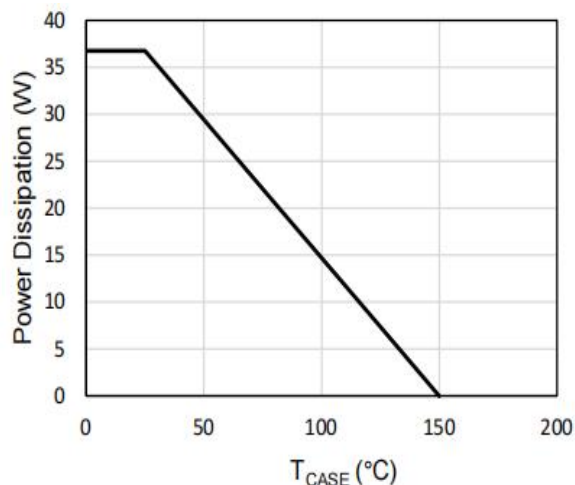


Figure 8: Power Rating Curve

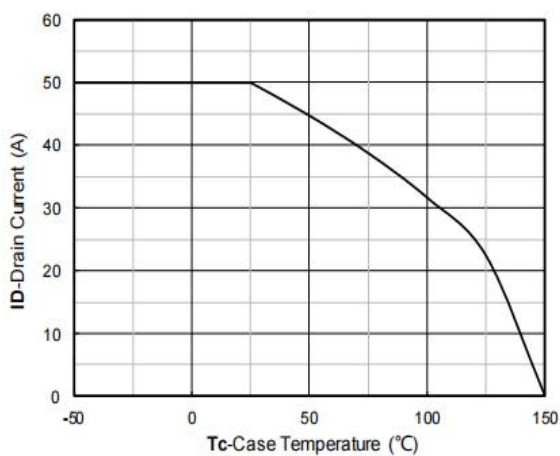


Figure 9: Drain Current Characteristics

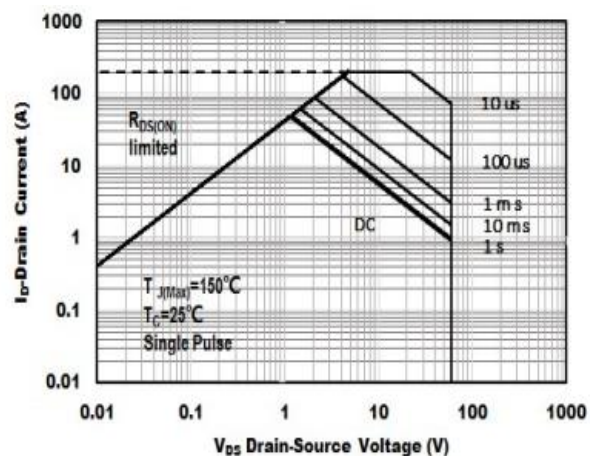


Figure 10: Safe Operating Area

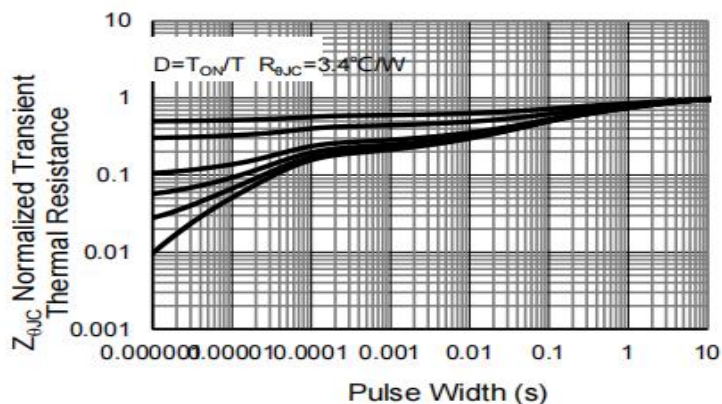
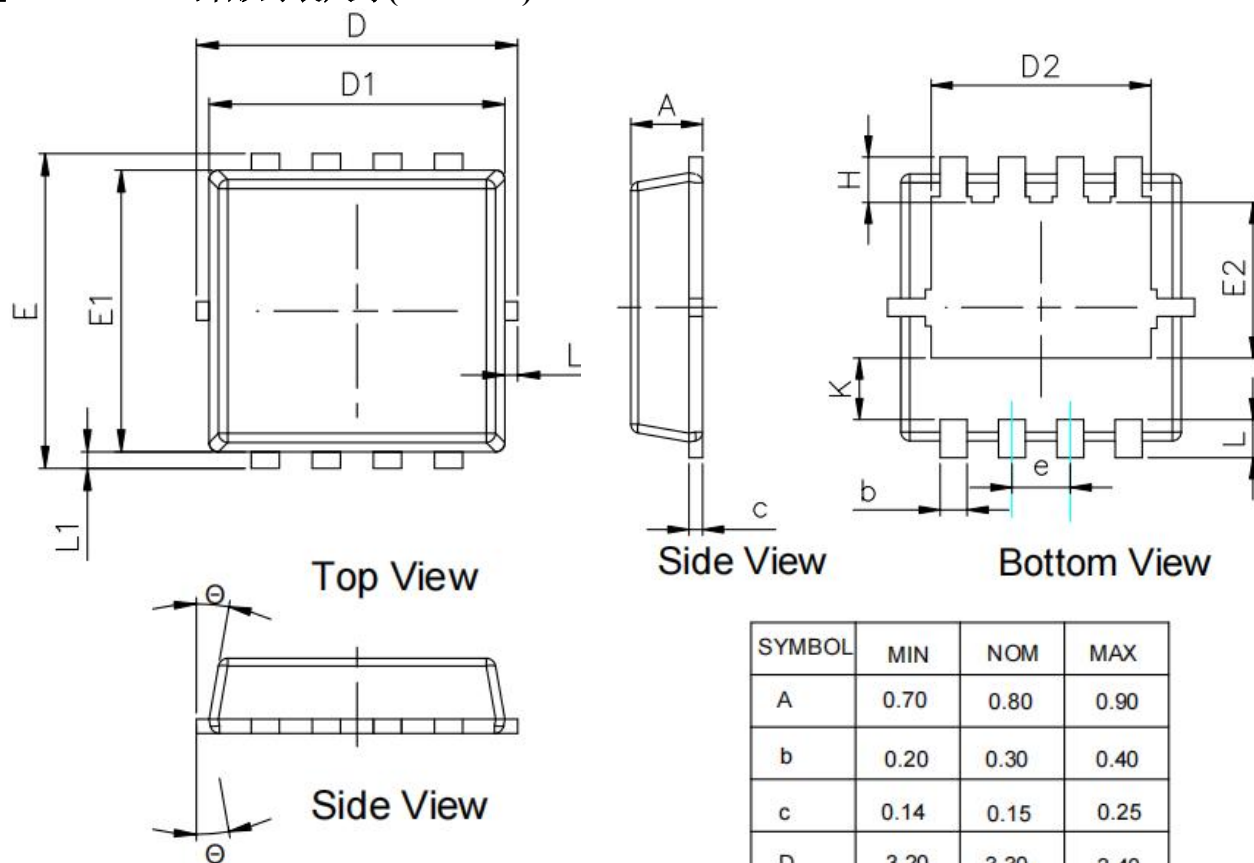


Figure 11: Transient Thermal Response Curve

■ Dimension 外形封装尺寸(Unit:mm)



SYMBOL	MIN	NOM	MAX
A	0.70	0.80	0.90
b	0.20	0.30	0.40
c	0.14	0.15	0.25
D	3.20	3.30	3.40
D1	3.00	3.15	3.30
D2	2.35	2.45	2.55
e	0.65 BSC		
E	3.25	3.35	3.45
E1	2.85	3.00	3.15
E2	1.635	1.735	1.835
H	0.41	0.56	0.71
K	0.585	0.685	0.785
L	0.30	0.40	0.50
L1	0.05	0.15	0.25
L2	—	—	0.15
Θ	8°	10°	12°