

PDFN5060-8 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

$R_{DS(ON)}=4.2m\Omega(\text{Type})@V_{GS}=10V$

$R_{DS(ON)}=5.8m\Omega(\text{Type})@V_{GS}=4.5V$

SGT Technology 屏蔽栅技术

Excellent $Q_g \times R_{DS(on)}$ product(FOM)

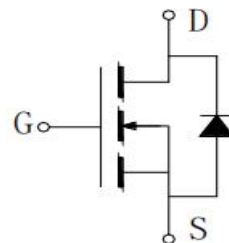
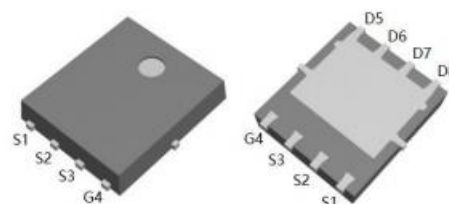
■ Applications 应用

Switch Application System 开关系统

Uninterruptible Power Supplies 不间断电源

Synchronous Rectification for AC/DC Quick Charger 快充同步整流

■ 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}	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 $T_C = 100^\circ C$)	80 55	A
Drain Current (pulsed)漏极电流-脉冲	$I_{DM}(\text{at } T_C = 25^\circ C)$	360	A
Total Device Dissipation 总耗散功率	$P_{TOT}(\text{at } T_C = 25^\circ C)$	78	W
Avalanche Energy(Single Pulse)雪崩能量	E_{AS}	121	mJ
Thermal Resistance Junction-Case 结壳热阻	$R_{\theta JC}$	1.6	$^\circ C/W$
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($I_D=250\mu\text{A}$, $V_{GS}=V_{DS}$)	$V_{GS(th)}$	1.2	1.8	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}$, $V_{DS}=60\text{V}$)	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($I_D=20\text{A}$, $V_{GS}=10\text{V}$) ($I_D=20\text{A}$, $V_{GS}=4.5\text{V}$)	$R_{DS(ON)}$	—	4.2 5.8	5.5 7.5	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD}=30\text{A}$, $V_{GS}=0\text{V}$)	V_{SD}	—	0.77	1.2	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=0.3\text{MHz}$)	C_{ISS}	—	2140	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=0.3\text{MHz}$)	C_{OSS}	—	850	—	pF
Reverse Transfer Capacitance 反馈电容 ($V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=0.3\text{MHz}$)	C_{RSS}	—	60	—	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	—	30	—	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}	—	4.5	—	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}	—	5	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=5\Omega$, $V_{GS}=10\text{V}$)	$t_{d(on)}$	—	6.5	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=5\Omega$, $V_{GS}=10\text{V}$)	t_r	—	8	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=5\Omega$, $V_{GS}=10\text{V}$)	$t_{d(off)}$	—	38	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=5\Omega$, $V_{GS}=10\text{V}$)	t_f	—	16	—	ns

■ Typical Characteristic Curve 典型特性曲线

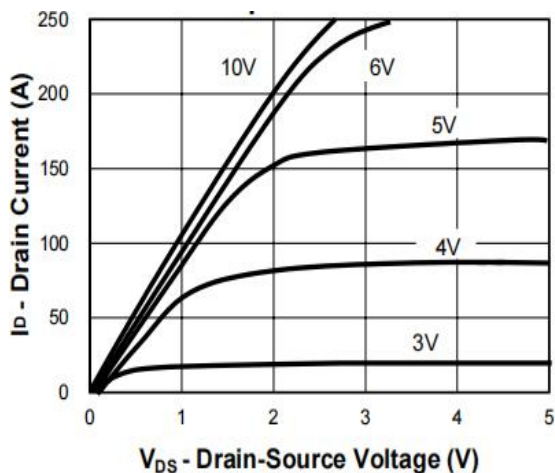


Figure 1: Output Characteristics

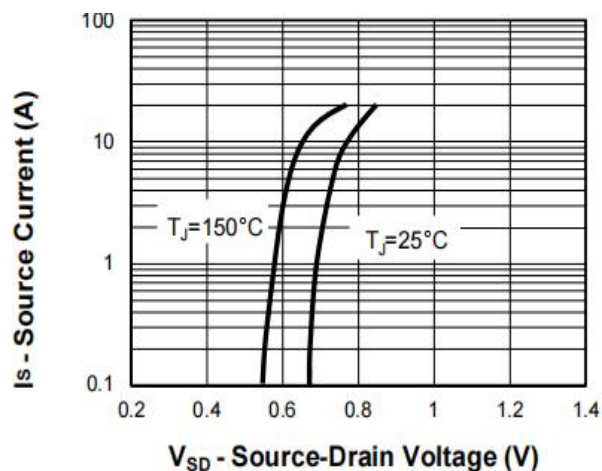


Figure 2: Diode Forward Characteristics

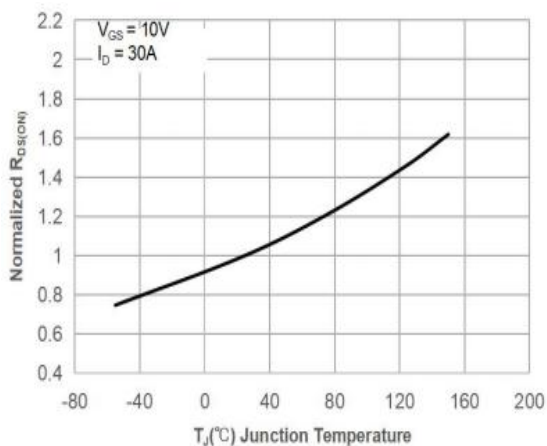


Figure 3: On-Resistance vs. T_J

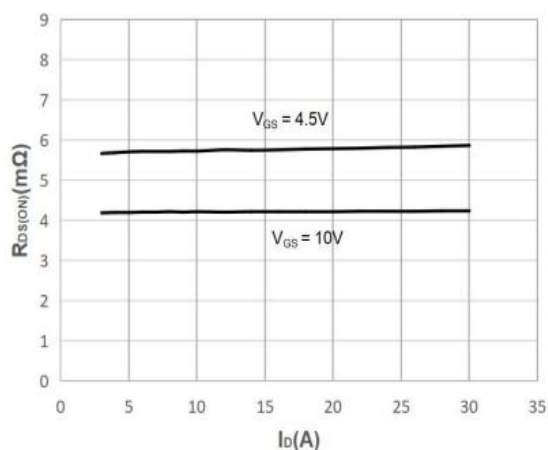


Figure 4: On-Resistance vs. Drain Current

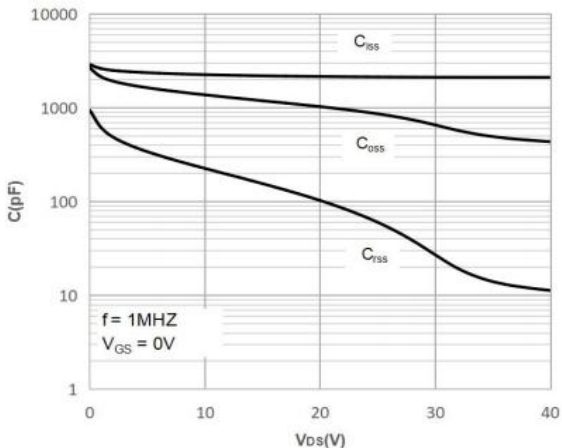


Figure 5: Capacitance Characteristics

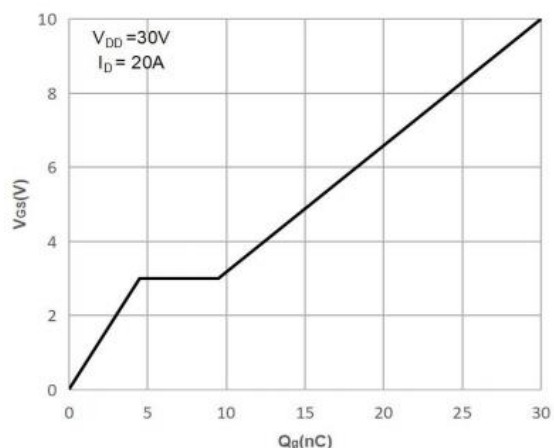


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

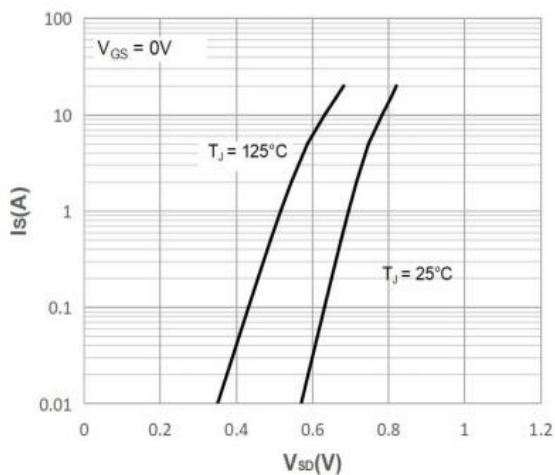


Figure 7: Diode Characteristics

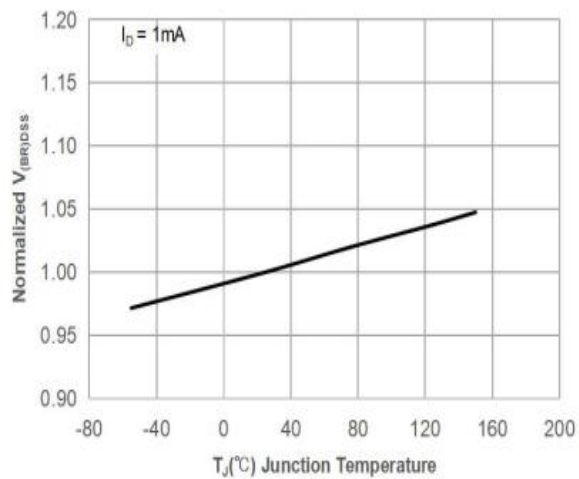


Figure 8: Breakdown Voltage vs. T_J

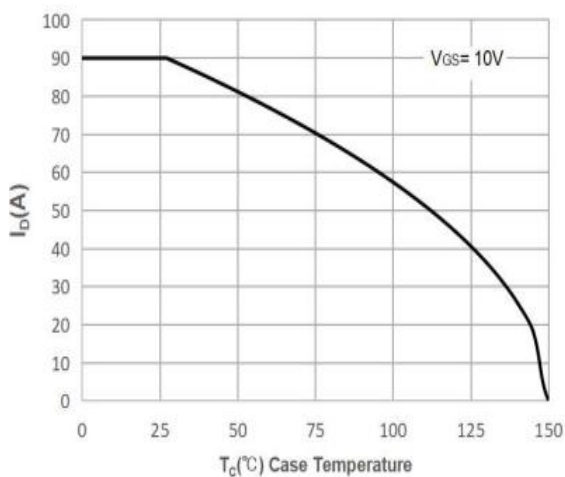


Figure 9: Drain Current Characteristics

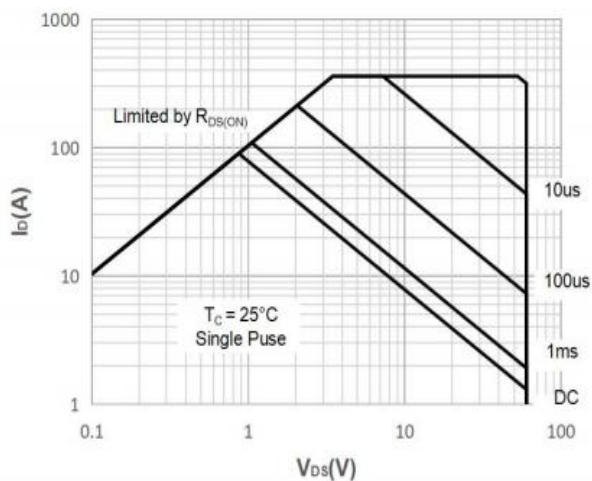


Figure 10: Safe Operating Area

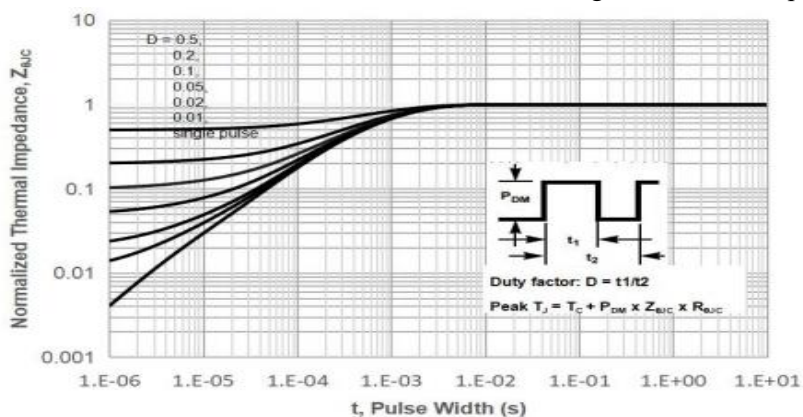
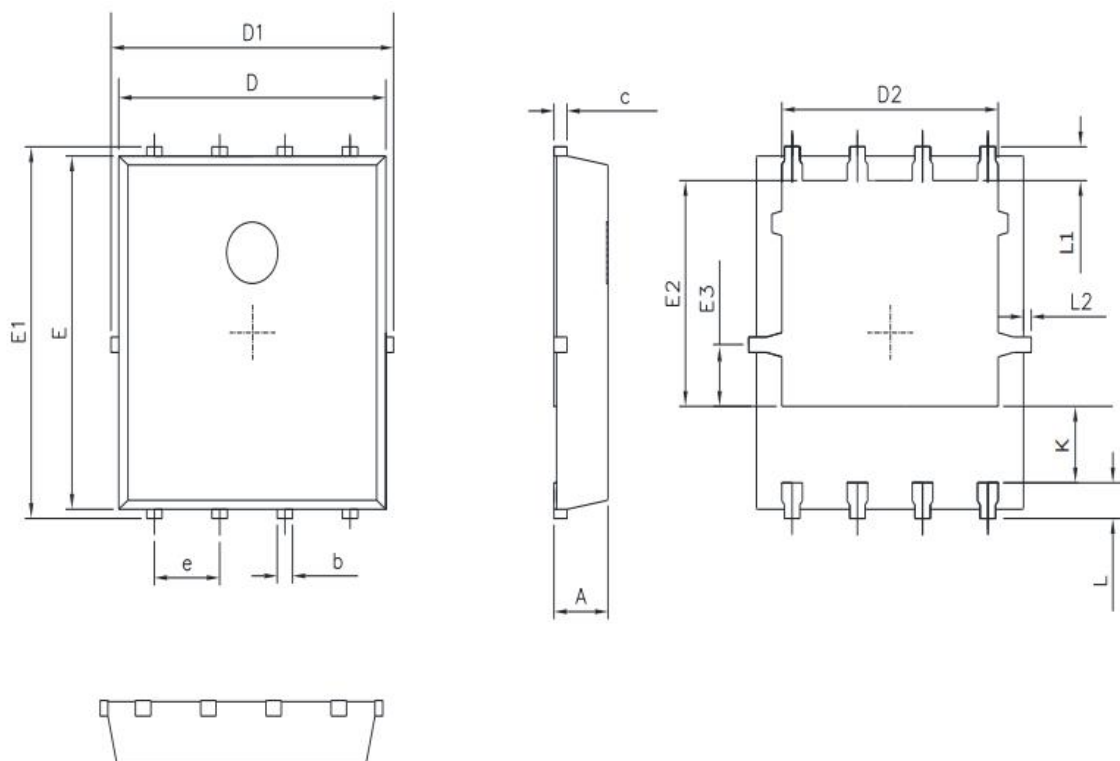


Figure 11: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.10	0.035	0.043
b	0.25	0.50	0.010	0.020
c	0.10	0.30	0.004	0.012
D	4.80	5.30	0.189	0.209
D1	4.90	5.50	0.193	0.217
D2	3.92	4.20	0.154	0.165
E	5.65	5.85	0.222	0.230
E1	5.90	6.20	0.232	0.244
E2	3.33	3.78	0.131	0.149
E3	0.80	1.00	0.031	0.039
e	1.27		0.050	
L	0.40	0.70	0.016	0.028
L1	0.65		0.026	
L2	0.00	0.15	0.000	0.006
K	1.00	1.50	0.039	0.059