

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

$R_{DS(ON)}=9.5m\Omega(\text{Type})@V_{GS}=10V$

$R_{DS(ON)}=12m\Omega(\text{Type})@V_{GS}=4.5V$

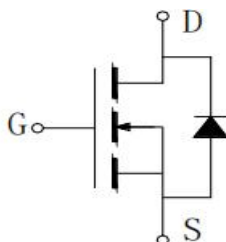
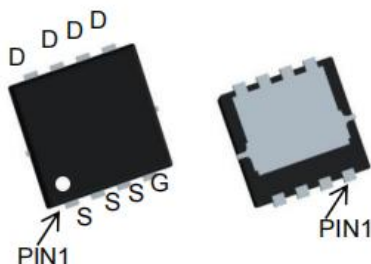
SGT Technology 屏蔽栅技术

Excellent QG x RDS(on) product(FOM)

■Applications 应用

Switch Application System 开关系统

■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}	100	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 $T_C = 25^\circ\text{C}$ at $T_C = 100^\circ\text{C}$)	60 38	A
Drain Current (pulsed)漏极电流-脉冲	$I_{DM}(\text{at } T_C = 25^\circ\text{C})$	240	A
Total Device Dissipation 总耗散功率	$P_{TOT}(\text{at } T_C = 25^\circ\text{C}$ at $T_C = 100^\circ\text{C})$	63 25	W
Avalanche Energy(Single Pulse)雪崩能量	E_{AS}	196	mJ
Thermal Resistance Junction-Case 结壳热阻	$R_{\theta JC}$	2	$^\circ\text{C}/\text{W}$
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ\text{C}$

■ 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}	100	—	—	V
Gate Threshold Voltage 栅极开启电压($I_D=250\mu\text{A}$, $V_{GS}=V_{DS}$)	$V_{GS(th)}$	1	1.8	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}$, $V_{DS}=100\text{V}$)	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($I_D=20\text{A}$, $V_{GS}=10\text{V}$) ($I_D=20\text{A}$, $V_{GS}=4.5\text{V}$)	$R_{DS(on)}$	—	9.5 12	13 15	$\text{m}\Omega$
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}	—	0.85	1.2	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}$, $V_{DS}=50\text{V}$, $f=1\text{MHz}$)	C_{ISS}	—	1106	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}$, $V_{DS}=50\text{V}$, $f=1\text{MHz}$)	C_{OSS}	—	194	—	pF
Reverse Transfer Capacitance 反馈电容 ($V_{GS}=0\text{V}$, $V_{DS}=50\text{V}$, $f=1\text{MHz}$)	C_{RSS}	—	16.4	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_g	—	26	—	nC
Gate Source Charge 栅源电荷密度 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_{gs}	—	4.3	—	nC
Gate Drain Charge 栅漏电荷密度 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_{gd}	—	6.7	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $R_{GEN}=6\Omega$, $V_{GS}=10\text{V}$)	$t_{d(on)}$	—	8	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $R_{GEN}=6\Omega$, $V_{GS}=10\text{V}$)	t_r	—	16	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $R_{GEN}=6\Omega$, $V_{GS}=10\text{V}$)	$t_{d(off)}$	—	30	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}=50\text{V}$, $I_D=20\text{A}$, $R_{GEN}=6\Omega$, $V_{GS}=10\text{V}$)	t_f	—	29	—	ns

■ Typical Characteristic Curve 典型特性曲线

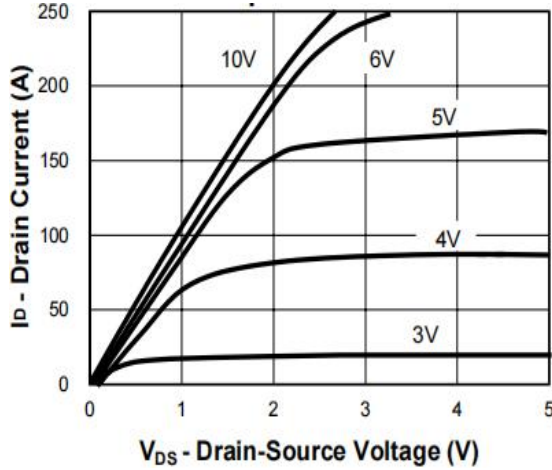


Figure 1: Output Characteristics

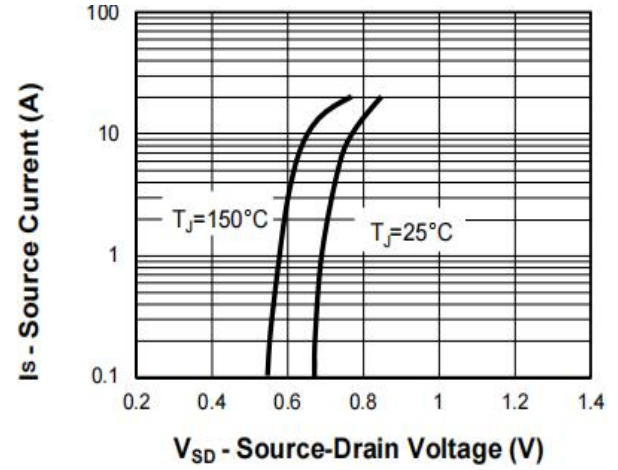


Figure 2: Diode Forward Characteristics

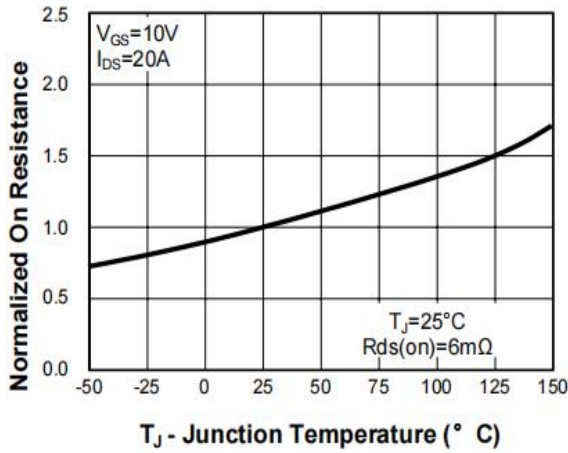


Figure 3: On-Resistance vs. T_J

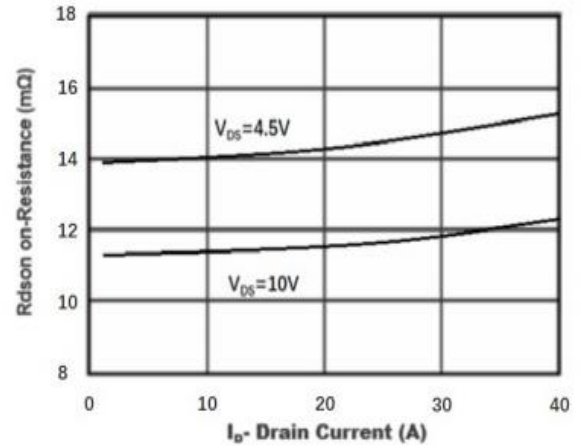


Figure 4: On-Resistance vs. Drain Current

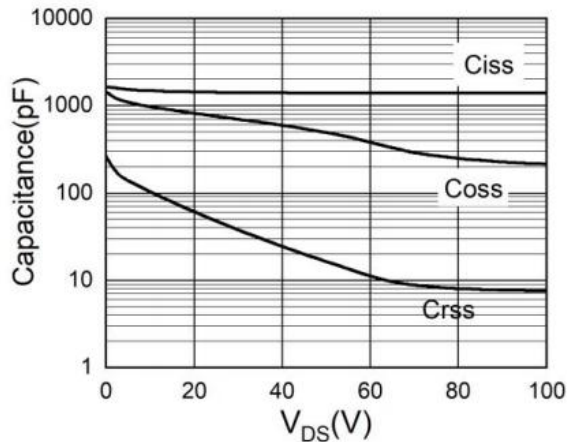


Figure 5: Capacitance Characteristics

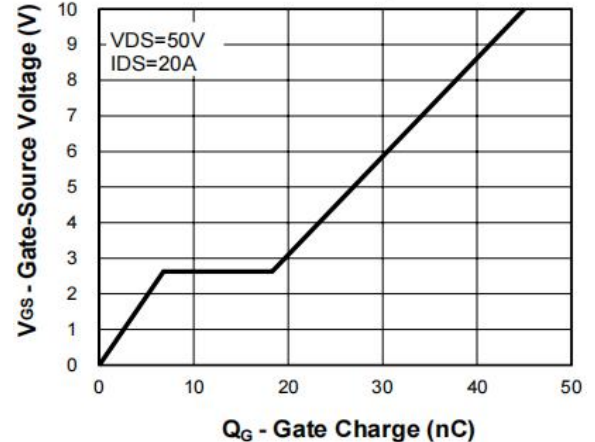


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

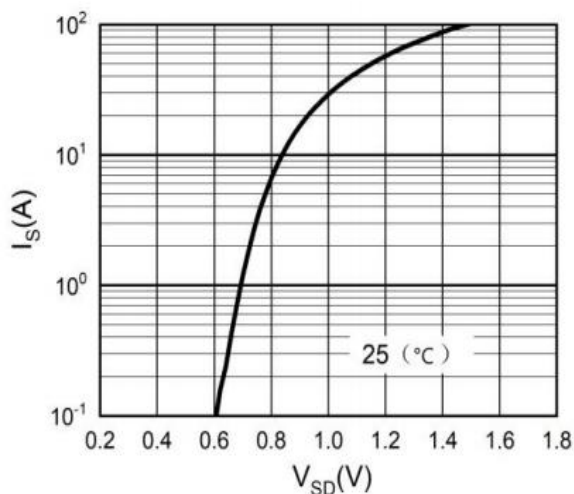


Figure 7: Diode Characteristics

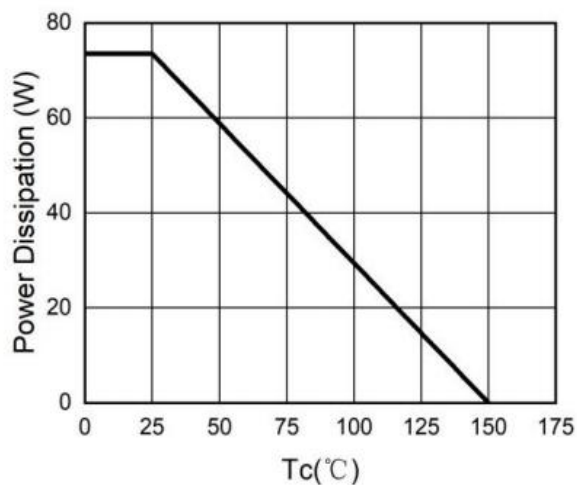


Figure 8: Power Rating Curve

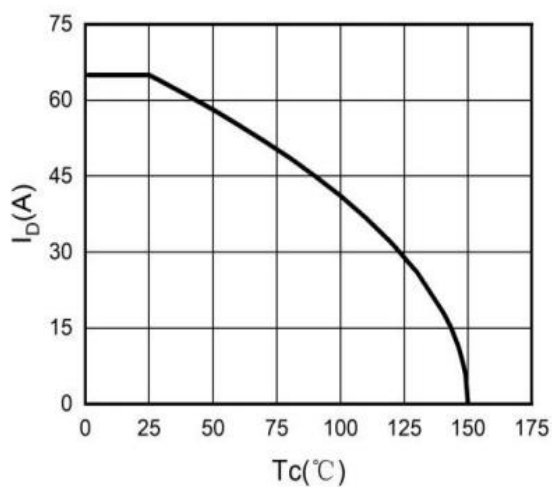


Figure 9: Drain Current Characteristics

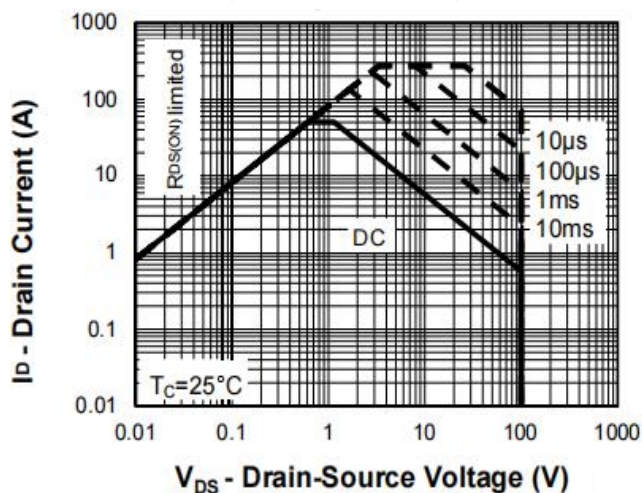


Figure 10: Safe Operating Area

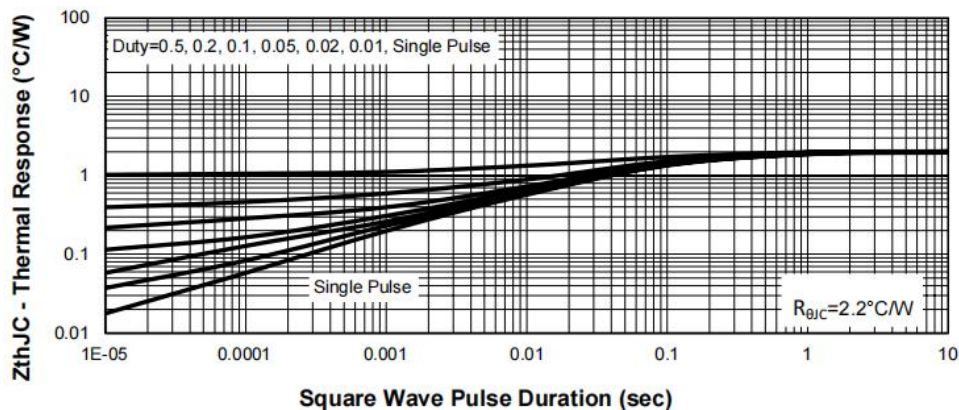
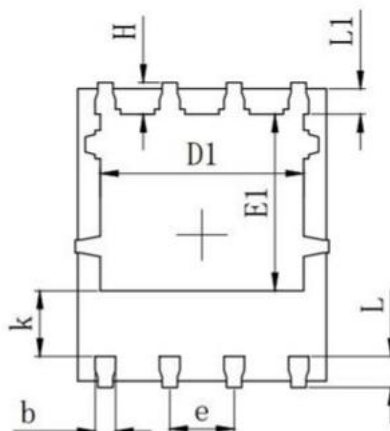
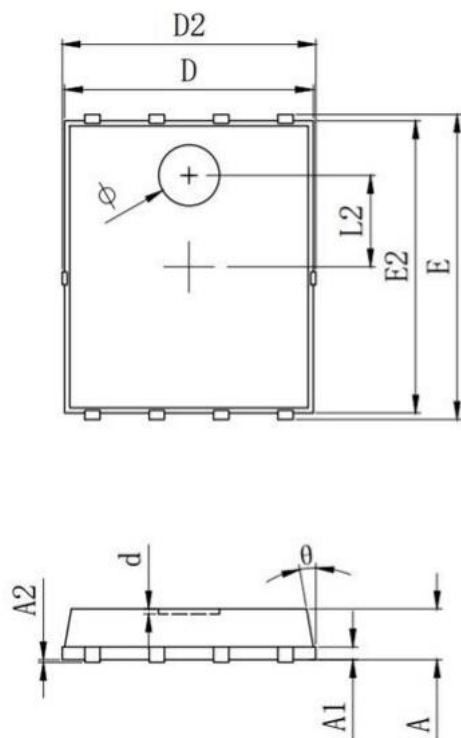


Figure 11: Transient Thermal Response Curve

■ **Dimension 外形封装尺寸**



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100