

FEATURES

- Low gate charge
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product

产品特性

- 低栅极电荷
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

APPLICATIONS

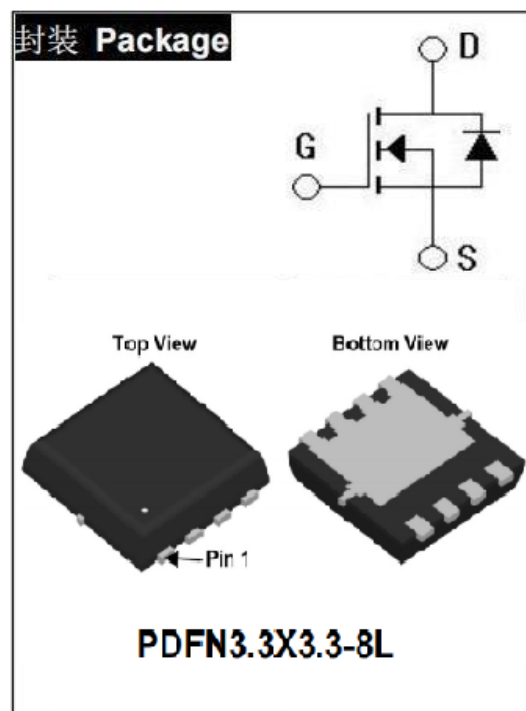
- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- LED power supplies

用途

- 高频开关电源
- 电子镇流器
- LED 电源

主要参数 MAIN CHARACTERISTICS

I_D		20 A
V_{DS}		30 V
Rdson	@ VGS =10V	18mΩ
	@ VGS =4.5V	30mΩ
Qg-typ		11nC



产品型号信息 PRODUCT MESSAGE

型 号 Model	印 记 Marking	封 装 Package
HGS20N030	HGS20N030	DFN3*3



Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
HGS20N030	HGS20N030	TAPING	PDFN3.3X3.3-8L	13inch	5000	50000

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter		Max.	Units
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate-Source Voltage		±20	V
I _D	Continuous Drain Current	T _C = 25°C	20	A
		T _C = 100°C	16	A
I _{DM}	Pulsed Drain Current ^{note1}		80	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}		28	mJ
P _D	Power Dissipation	T _C = 25°C	10	W
R _{θJC}	Thermal Resistance, Junction to Case		25	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range		-55 to +150	°C

**Electrical Characteristics** ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=25V, V_{GS}=0V,$	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.5	2.5	V
$R_{DS(on)}$ note3	Static Drain-Source on-Resistance	$V_{GS}=10V, I_D=10A$	-	13.5	18	m Ω
		$V_{GS}=4.5V, I_D=7A$	-	21	30	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	613	-	pF
C_{oss}	Output Capacitance		-	96	-	pF
C_{rss}	Reverse Transfer Capacitance		-	72	-	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=10A,$ $V_{GS}=4.5V$	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	3.8	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	9	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=10A, R_{GEN}=5\Omega,$ $V_{GS}=10V$	-	4	-	ns
t_r	Turn-on Rise Time		-	12	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	23	-	ns
t_f	Turn-off Fall Time		-	7.3	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	17	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	68	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	-	-	1	V
t_{rr}	Body Diode Reverse Recovery Time	$I_F=20A, di/dt=100A/\mu s$	-	16	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	3.7	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J=25^{\circ}\text{C}$, $V_G=10V$, $R_G=25\Omega$, $L=0.1mH$, $I_{AS}=9A$ 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Figure 1: Output Characteristics

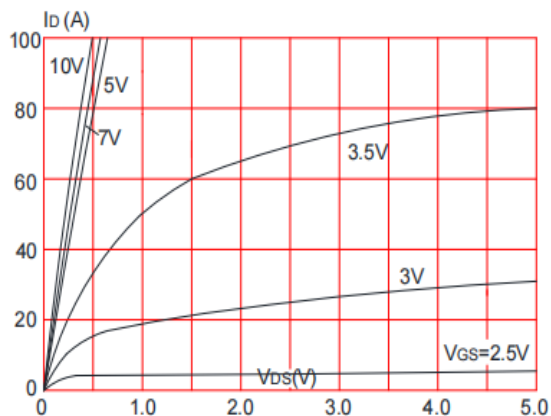


Figure 2: Typical Transfer Characteristics

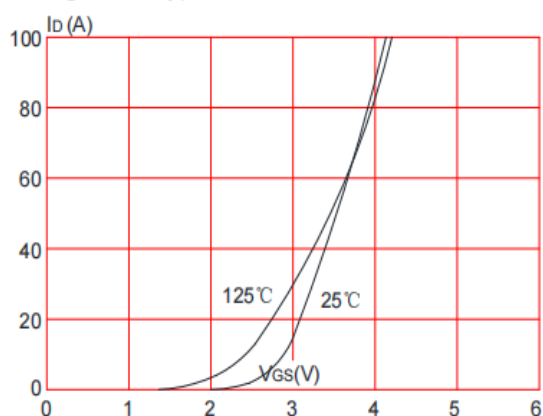


Figure 3: On-resistance vs. Drain Current

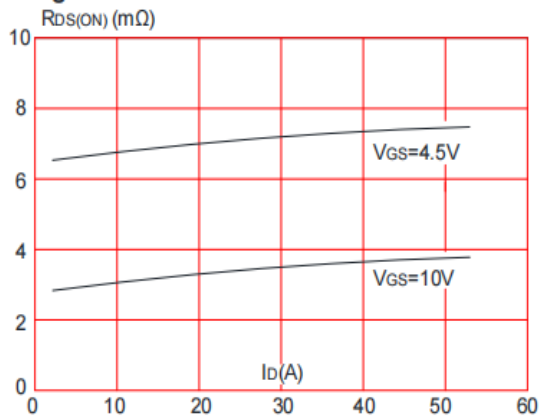


Figure 4: Body Diode Characteristics

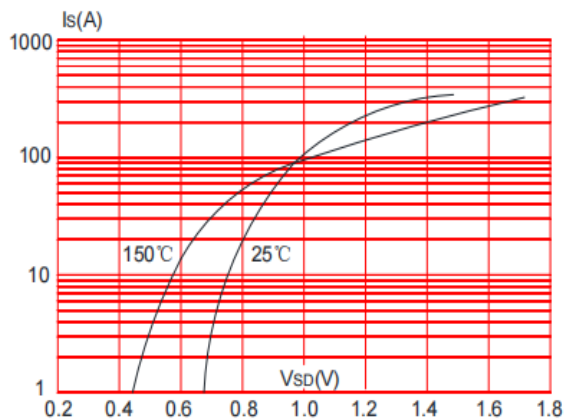


Figure 5: Gate Charge Characteristics

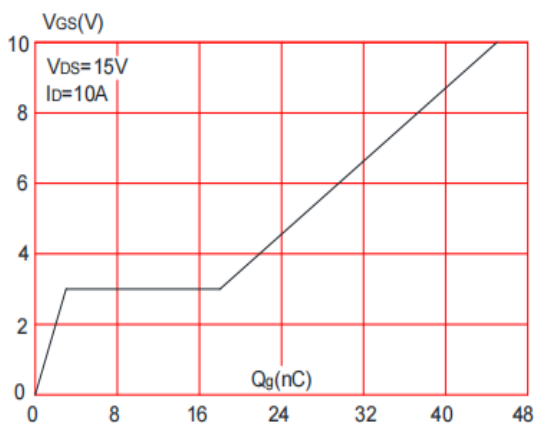


Figure 6: Capacitance Characteristics

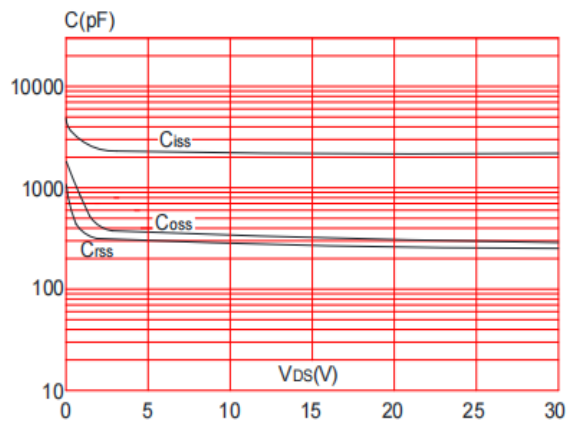




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

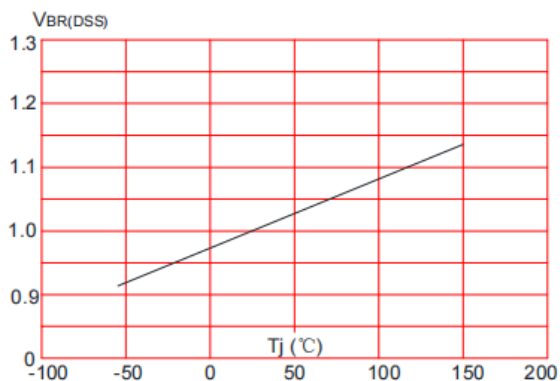


Figure 8: Normalized on Resistance vs. Junction Temperature

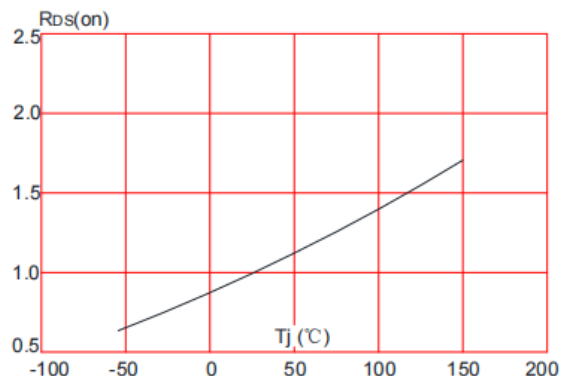


Figure 9: Maximum Safe Operating Area

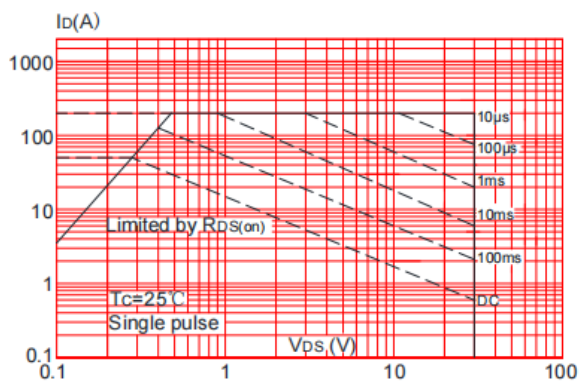


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

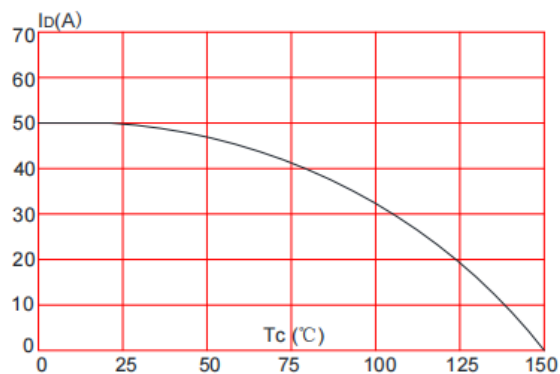
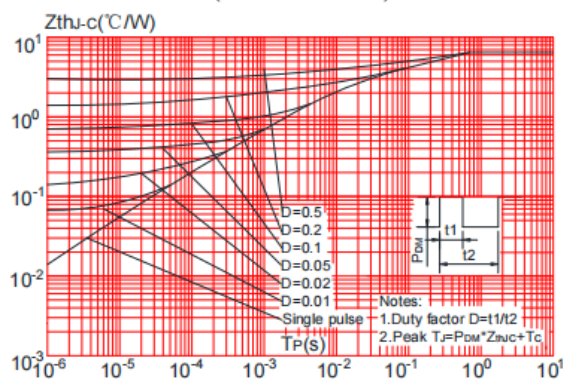


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (PDFN3.3*3.3-8L)





Test Circuit

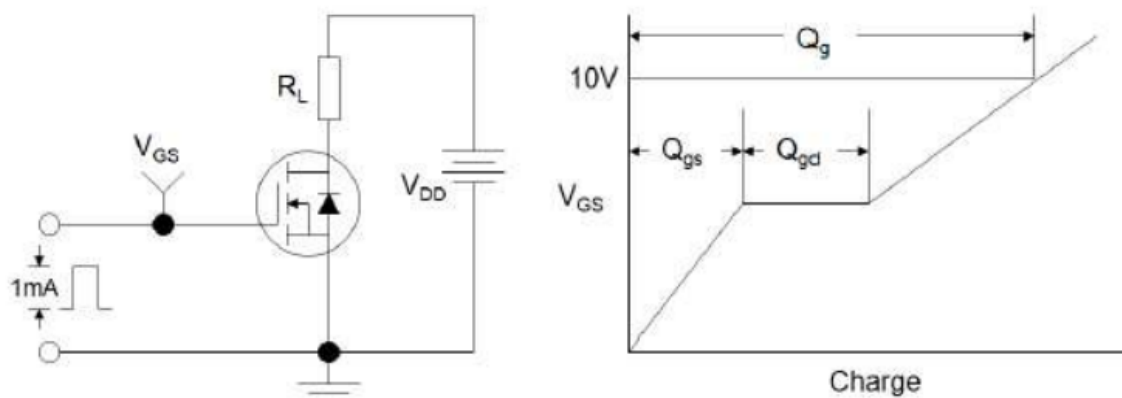


Figure1:Gate Charge Test Circuit & Waveform

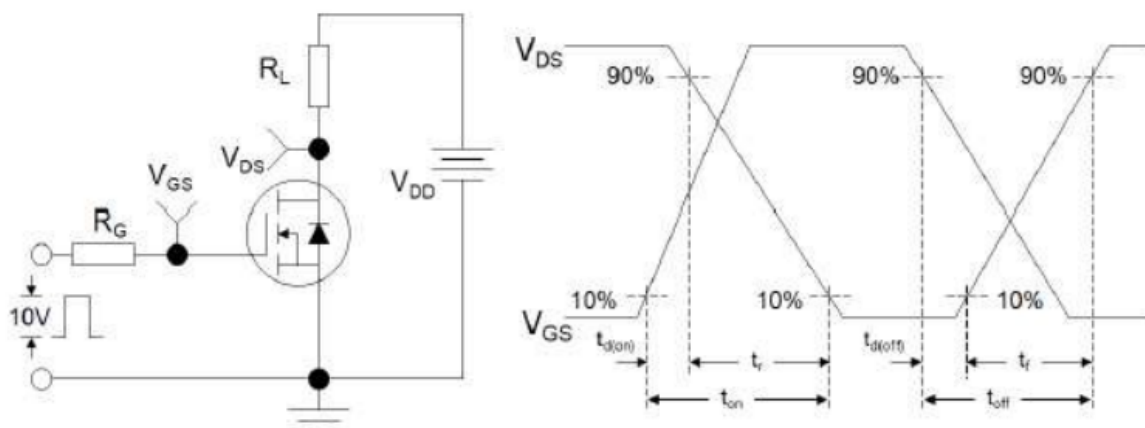


Figure 2: Resistive Switching Test Circuit & Waveforms

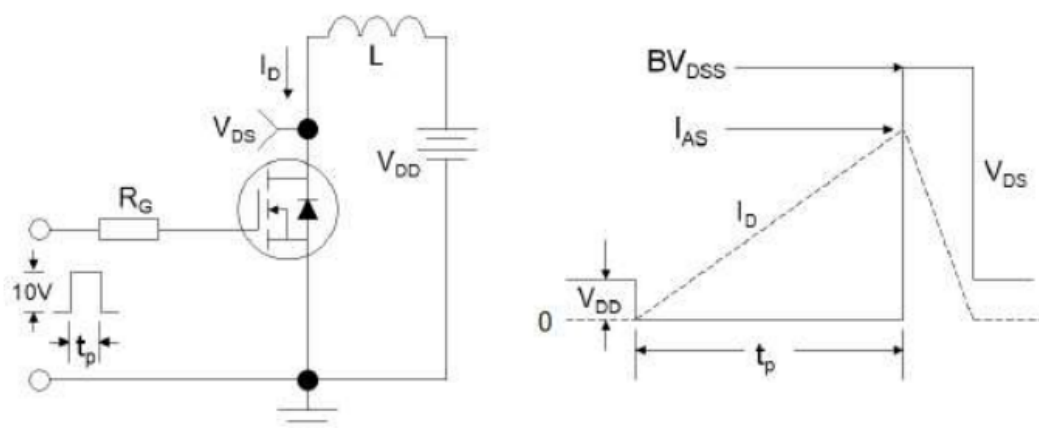
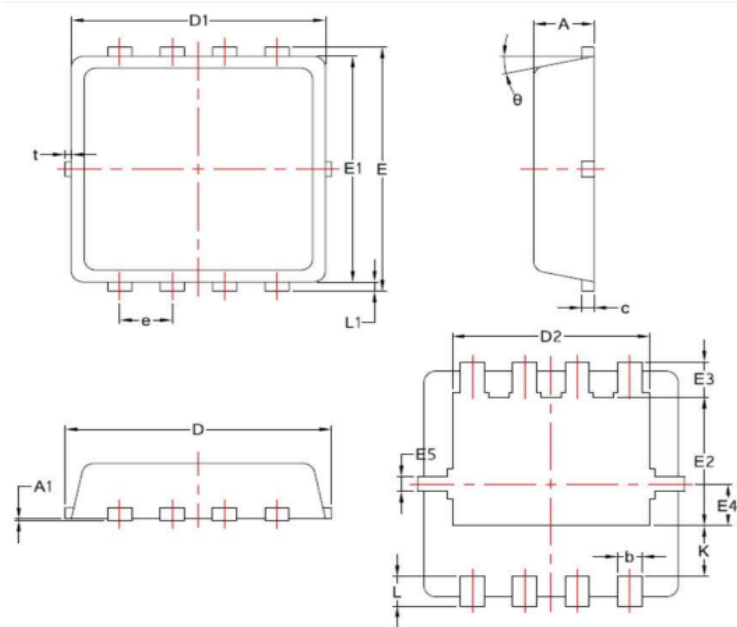


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



外形尺寸 PACKAGE MECHANICAL DATA

Package Mechanical Data-PDFN3.3X3.3-8L



SYMBOL	COMMON		
	MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
θ	10°	12°	14°



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