

- ★ Super Low Gate Charge
- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

Product Summary



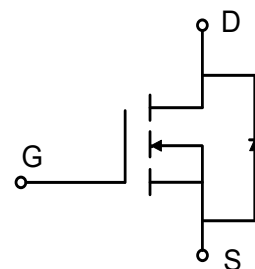
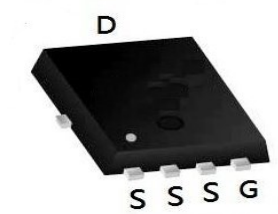
BVDSS	RDSON	ID
200V	57 mΩ	30A

PDFN5060-8L Pin Configuration

Description

The XR30N20F is the high cell density trench N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The XR30N20F meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.



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

Symbol	Parameter		Rating	Unit
Common Ratings (Tc=25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		200	V
V _{GSS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		-55 to 175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Source Current-Continuous(Body Diode)	Tc=25°C	30	A
Mounted on Large Heat Sink				
I _{DM}	Pulsed Drain Current *	Tc=25°C	120	A
I _D	Continuous Drain Current	Tc=25°C	30	A
		Tc=100°C	20	A
P _D	Maximum Power Dissipation	Tc=25°C	125	W
		Tc=100°C	62.5	W
R _{θJC}	Thermal Resistance, Junction-to-Case		1.2	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient **		50	°C/W
E _{AS}	Single Pulsed-Avalanche Energy ***	L=0.5mH	161.8	mJ

Electrical Characteristics (T_c = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY1920			Unit
			Min	Typ.	Max	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _{DS} =250μA	200	-		V
I _{DSS}	Drain-to-Source Leakage Current	V _{DS} =200V,V _{GS} =0V	-	-	1	μA
		T _J =55°C	-	-	50	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	3.0	3.7	5.0	V
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V,V _{DS} =0V	-	-	±100	nA
R _{DS(ON)*}	Drain-Source On-State Resistance	V _{GS} =10V,I _{DS} =45A		57	72	mΩ
Diode Characteristics						
V _{SD} *	Diode Forward Voltage	I _{SD} =45A,V _{GS} =0V	-	0.84	1.3	V
t _{rr}	Reverse Recovery Time	I _{SD} =45A,dI _{SD} /dt=100A/μs	-	97.7	-	ns
Q _{rr}	Reverse Recovery Charge		-	424.7	-	nC

Electrical Characteristics (Cont.) (T_c = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY1920			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V, F=1MHz	-	3.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V,	-	2570	-	pF
C _{oss}	Output Capacitance	V _{DS} =25V,	-	199	-	
C _{rss}	Reverse Transfer Capacitance	Frequency=1.0MHz	-	97	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =100V,R _G =4Ω, I _{DS} =45A,V _{GS} =10V	-	15.18	-	ns
T _r	Turn-on Rise Time		-	39.7	-	
t _{d(OFF)}	Turn-off Delay Time		-	33.4	-	
T _f	Turn-off Fall Time		-	35.3	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =100V, V _{GS} =10V, I _D =30A	-	53	-	nC
Q _{gs}	Gate-Source Charge		-	15	-	
Q _{gd}	Gate-Drain Charge		-	19	-	

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

Typical Operating Characteristic

Figure 1: Power Dissipation

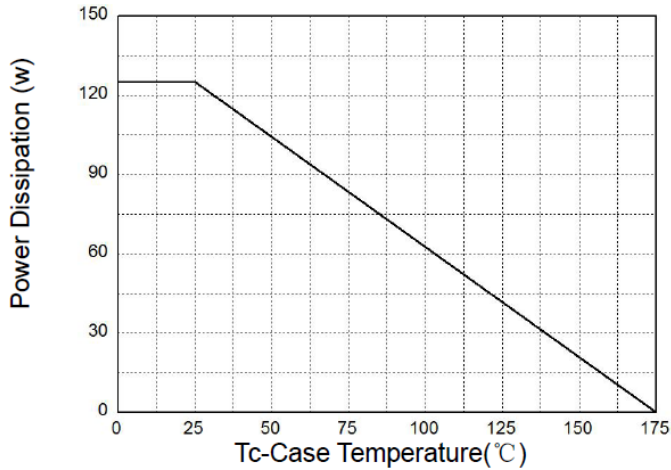


Figure 2: Drain Current

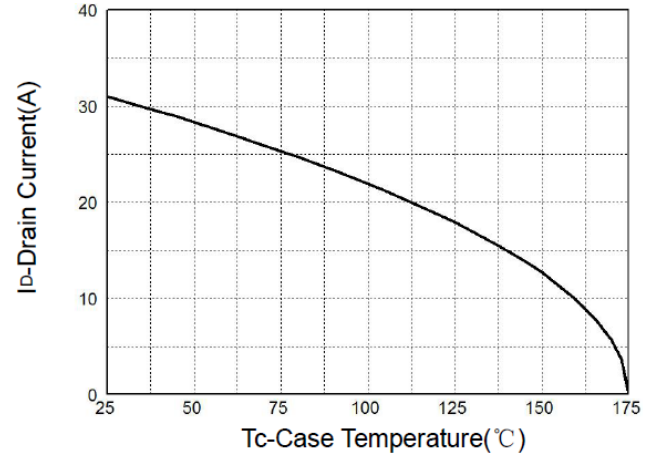


Figure 3: Safe Operation Area

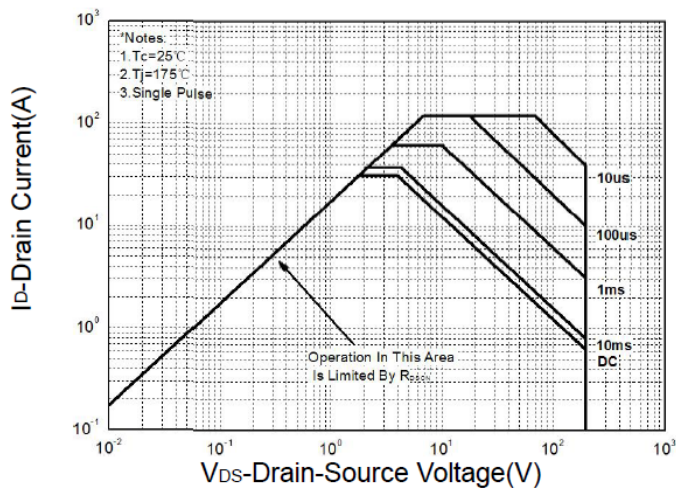


Figure 4: Thermal Transient Impedance

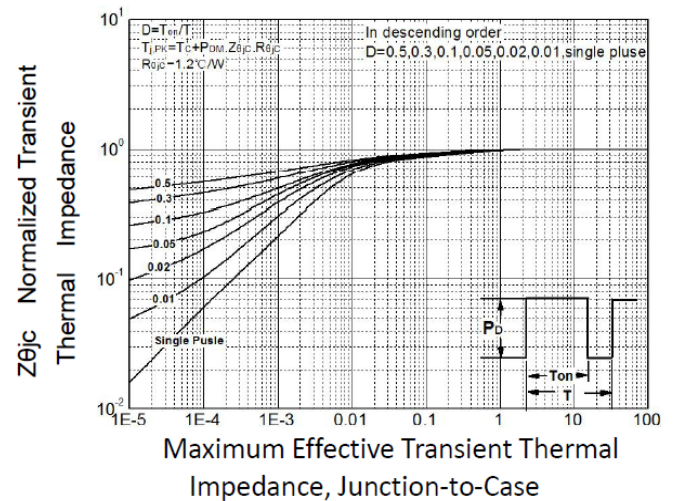


Figure 5: Output Characteristics

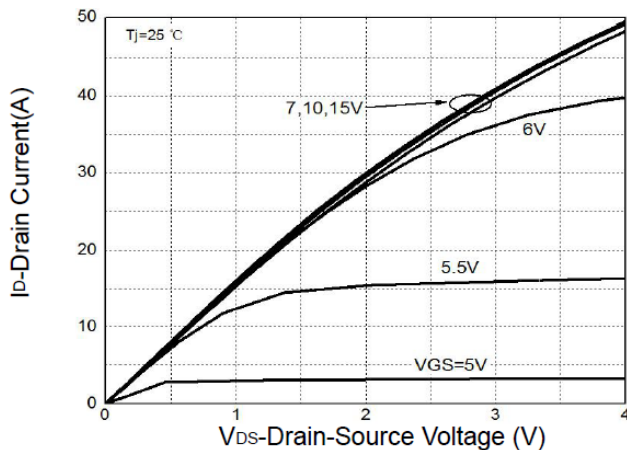
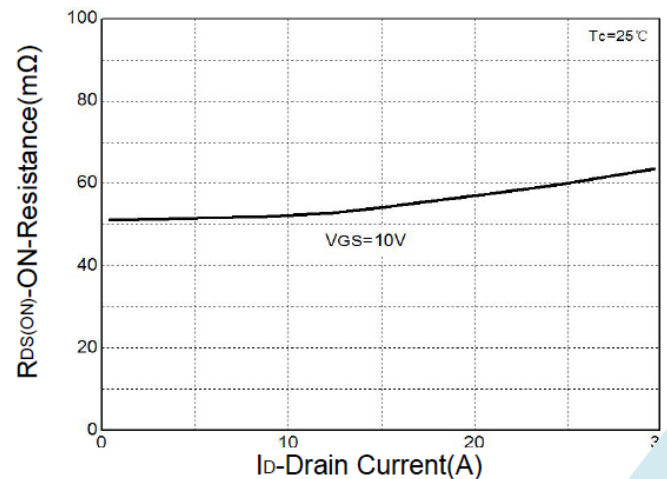


Figure 6: Drain-Source On Resistance



Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature

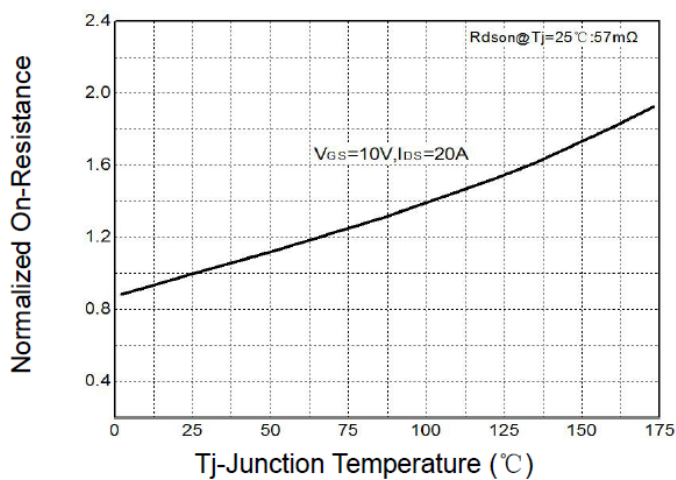


Figure 8: Source-Drain Diode Forward

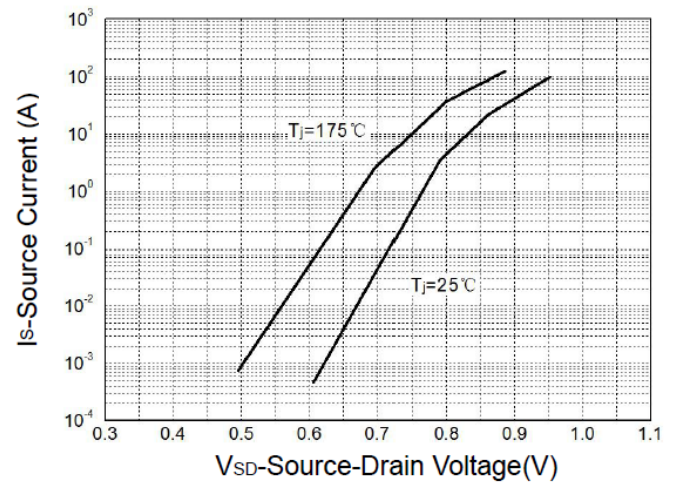


Figure 9: Capacitance Characteristics

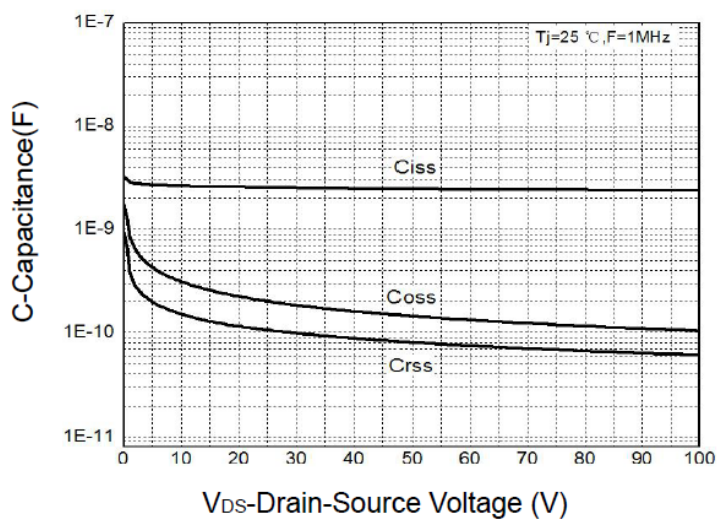
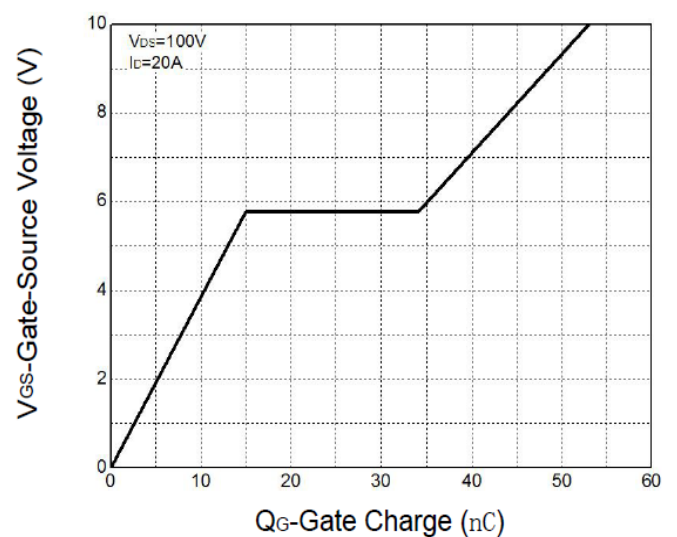
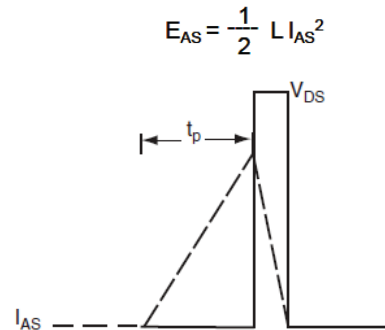
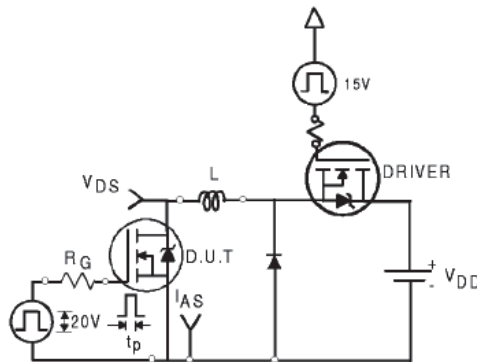


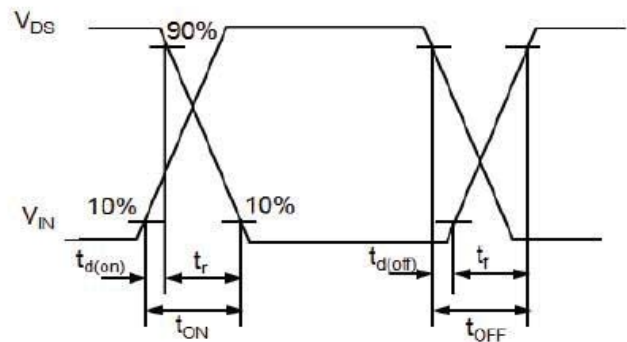
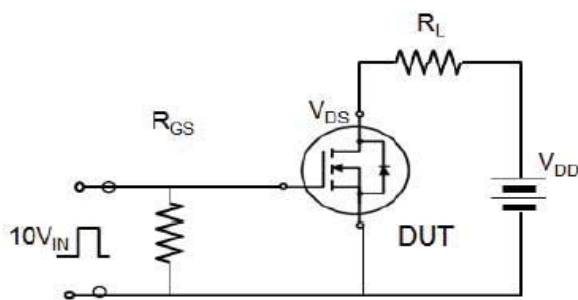
Figure 10: Gate Charge Characteristics



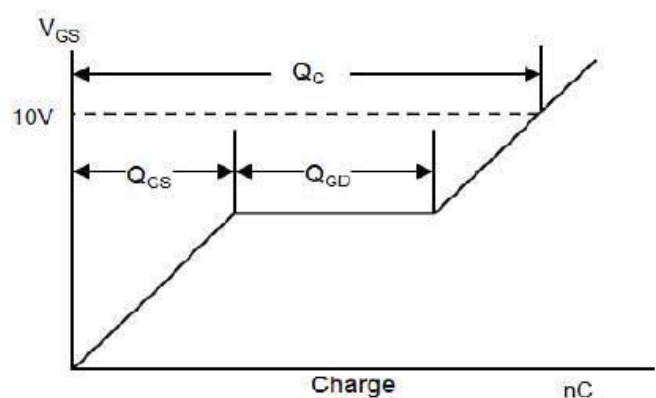
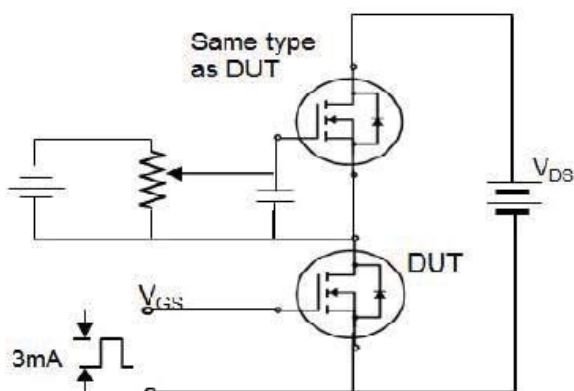
Avalanche Test Circuit



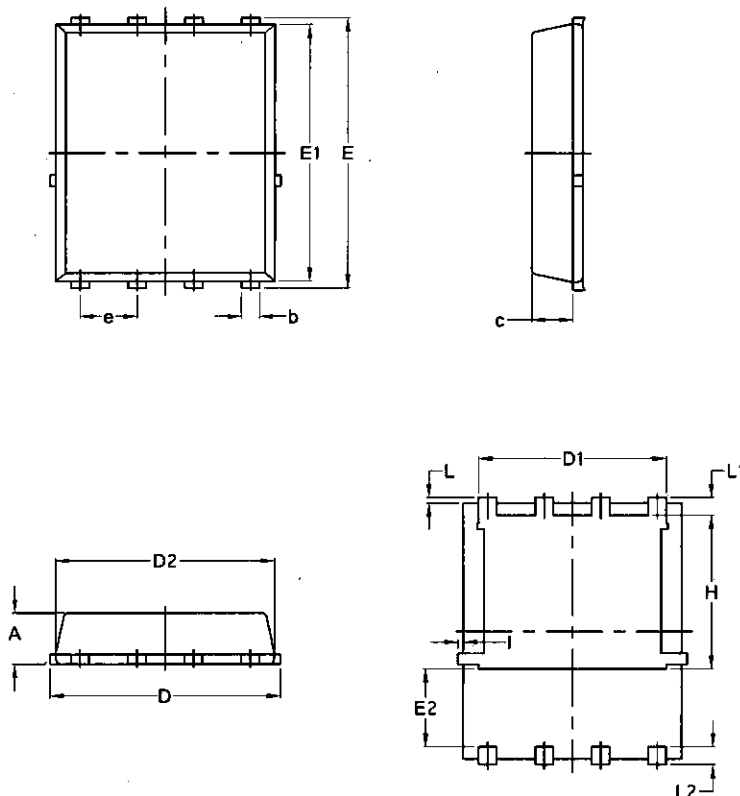
Switching Time Test Circuit



Gate Charge Test Circuit



Package Mechanical Data-PDFN5060-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070