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

Product Summary

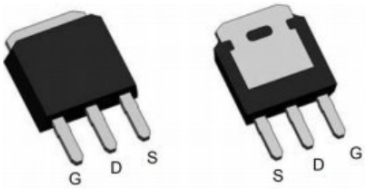
Green

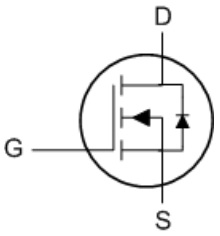
BVDSS	RDSON	ID
60V	25mΩ	20A

Description

The XR20N06Z is the high cell density trenchedN-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.
The XR20N06Z meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

TO251 Pin Configuration





Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±30	V
I_D	Continuous Drain Current	T_C = 25℃	20	A
		T_C = 100℃	10	A
I_{DM}	Pulsed Drain Current note1		80	A
EAS	Single Pulsed Avalanche Energy note2		39	mJ
P_D	Power Dissipation	T_C = 25℃	41.7	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		50	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	℃

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	-	-	V
Gate-Body Leakage Current		I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T_J=25°C	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	-	-	1	μA
	T_J=100°C			-	-	100	
Gate-Threshold Voltage		$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.7	2.5	V
Drain-Source on-Resistance[4]		$R_{DS(on)}$	V_{GS} = 10V, I_D = 10A	-	25	32	mΩ
			V_{GS} = 4.5V, I_D = 5A	-	31.5	40	
Forward Transconductance[4]		g_{fs}	V_{DS} = 5V, I_D = 10A	-	15.5	-	S
Dynamic Characteristics[5]							
Input Capacitance		C_{iss}	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	1355	-	pF
Output Capacitance		C_{oss}		-	60	-	
Reverse Transfer Capacitance		C_{rss}		-	49	-	
Gate Resistance		R_G	f =1MHz	-	1.2	-	Ω
Switching Characteristics[5]							
Total Gate Charge		Q_g	V_{GS} = 10V, V_{DD} = 30V, I_D= 10A	-	22	-	nC
Gate-Source Charge		Q_{gs}		-	4.2	-	
Gate-Drain Charge		Q_{gd}		-	6.9	-	
Turn-on Delay Time		$t_{d(on)}$	V_{GS} =10V, V_{DD} = 30V, R_G = 3Ω, I_D= 10A	-	6.4	-	ns
Rise Time		t_r		-	15.3	-	
Turn-off Delay Time		$t_{d(off)}$		-	25	-	
Fall Time		t_f		-	7.6	-	
Body Diode Reverse Recovery Time		t_{rr}	I_F=10A, dI_F/dt=100A/μs	-	26	-	ns
Body Diode Reverse Recovery Charge		Q_{rr}		-	45	-	nC
Drain-Source Body Diode Characteristics							
Diode Forward Voltage[4]		V_{SD}	I_S = 10A, V_{GS} = 0V	-	-	1.2	V
Continuous Source Current	T_C=25°C	I_S	-	-	-	20	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C
2. The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=14A
3. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

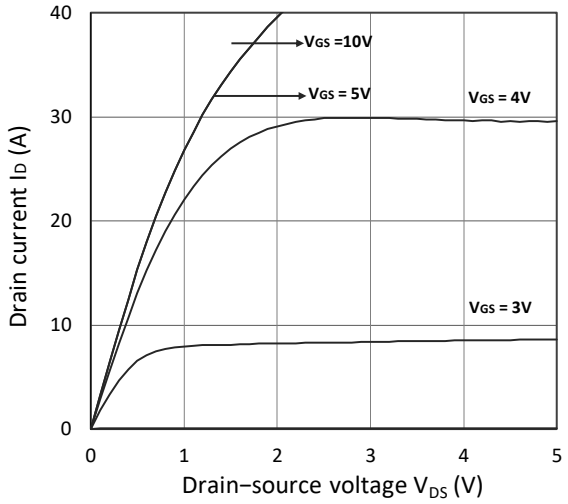


Figure 1. Output Characteristics

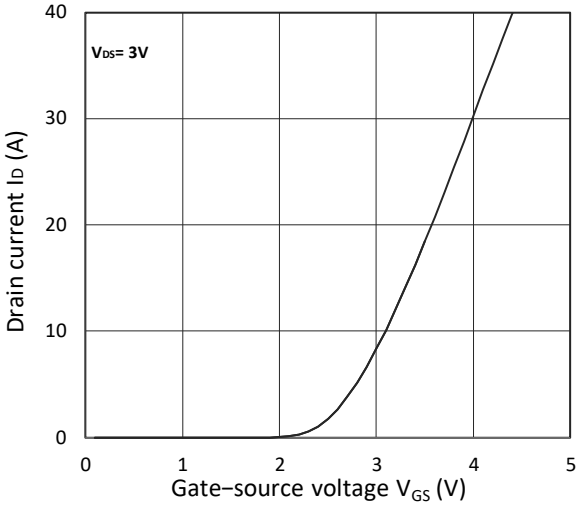


Figure 2. Transfer Characteristics

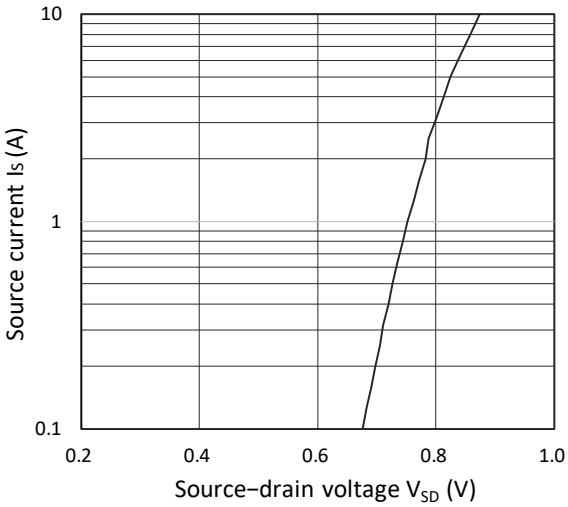


Figure 3. Forward Characteristics of Reverse

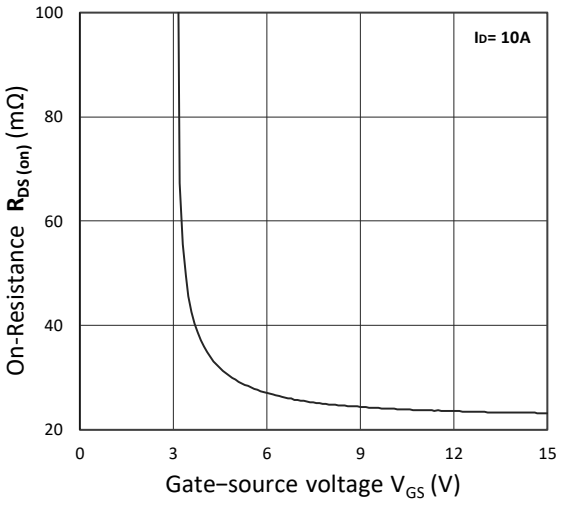


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

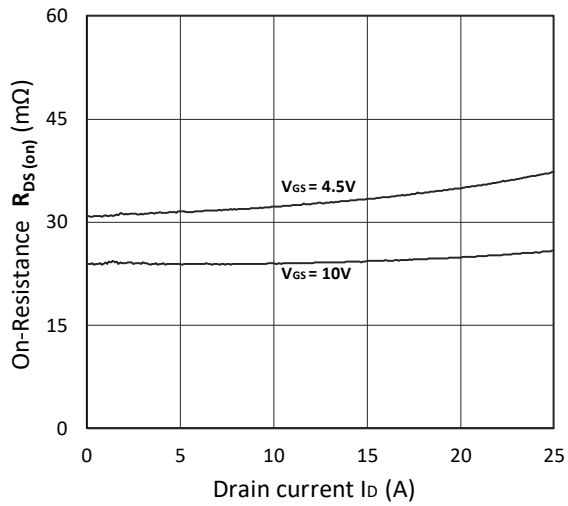


Figure 5. $R_{DS(ON)}$ vs. I_D

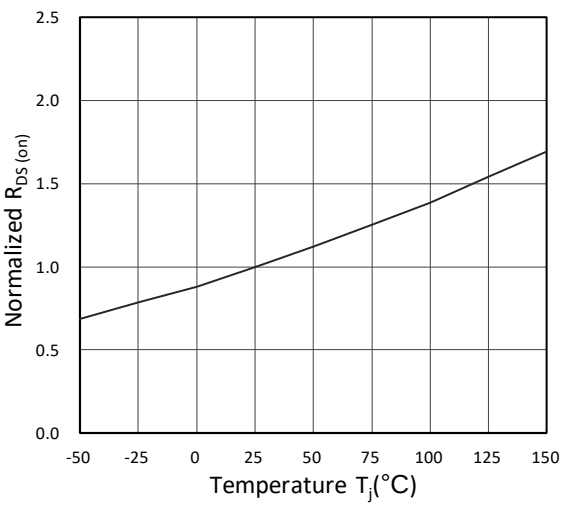


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

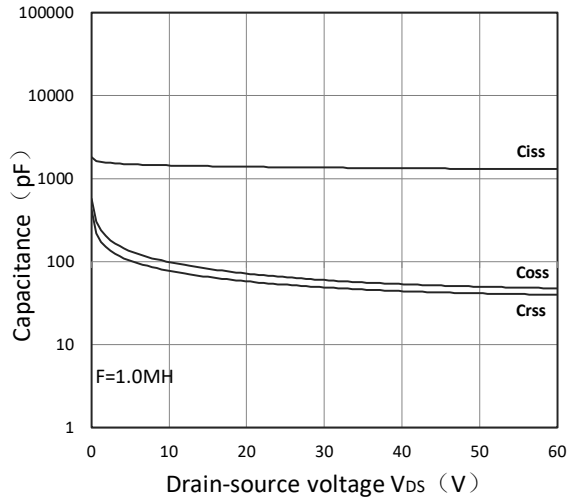


Figure 7. Capacitance Characteristics

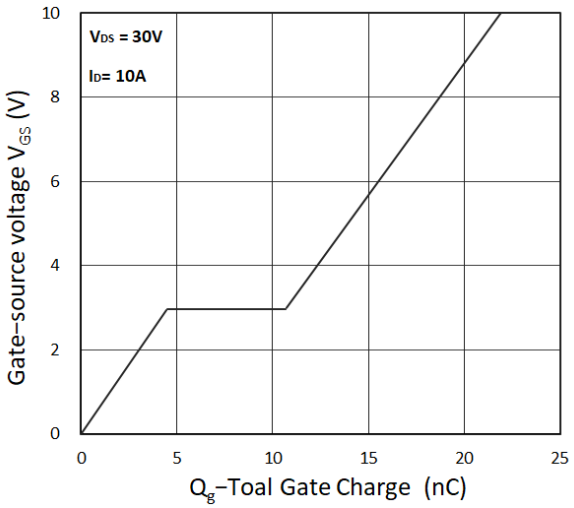


Figure 8. Gate Charge Characteristics

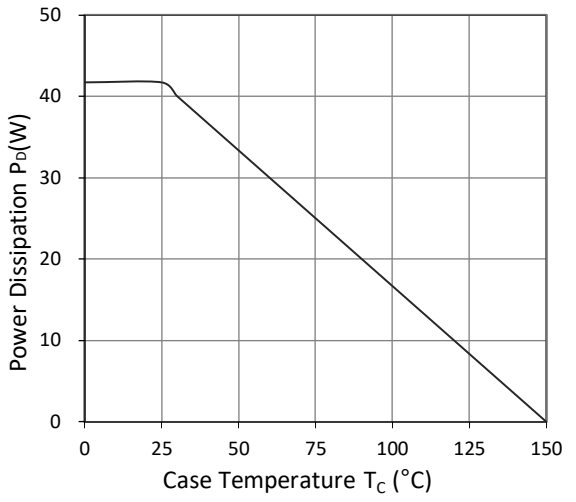


Figure 9. Power Dissipation

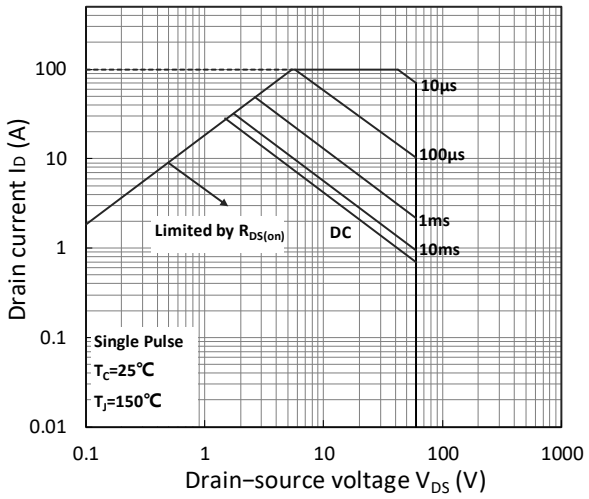


Figure10. Safe Operating Area

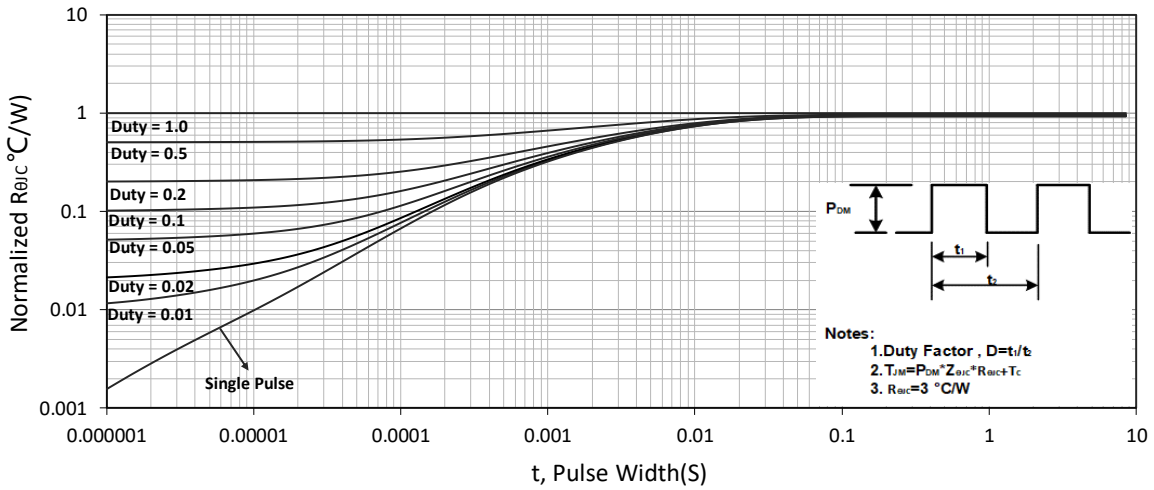


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data TO 251