200V N-Channel Enhancement Mode Power MOSFET

Features

- 200V/80A
  $R_{DS\ (ON)}$ =17mΩ(Typ.)@V_{GS}=10V
- Advanced HEFE ® Technology
- Ultra Low On-Resistanc
- Excellent $_{g}$x$R_{DS(on)}$ Product
- 100% avalanche testedh t t d
- 175°C Operating Temperatur
- Lead Free and Green Devices Available (RoHS Compliant

Applications

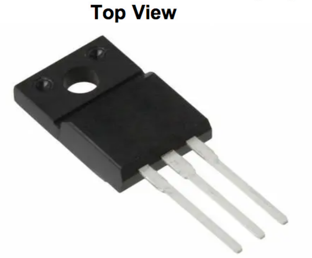
- Motor Drive
- Uninterruptible Power Supplie
- DC/DC converte
- General Purpose Application

Pb-Free RoHS HF Halogen-Free

- **Pin Configurations**

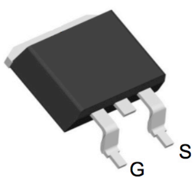
TO220

Top View

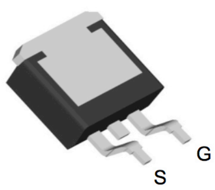


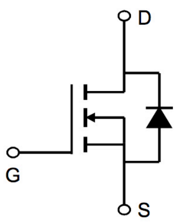
TO-263
D²PAK

Top View



Bottom View





Product ID	Pack	Marking	Qty(PCS)
XPX80N20TT	TO-220F-3L	XPX80N20TTXXX YYYY	1000
XPX80N20TV	TO-263-3L	XPX80N20TV XXX YYYY	800

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

Symbol	Parameter	Rating	Units
VDSS	Drain-to-Source Voltage	200	V
ID@TA=25℃	Continuous Drain Current VGS @ 10V	75	A
ID@TA=70℃	Continuous Drain Current VGS @ 10V	52	A
IDM[a1]	Pulsed Drain Current (pulse width limited by T_{JM})	300	A
VGS	Gate-to-Source Voltage	±30	V
EAS	Single Pulse Avalanche Energy	300	mJ
EAra1	Avalanche Energy, Repetitive	75	mJ
IAR a1	Avalanche Current	45	A
dv/dt[a2]	Peak Diode Recovery dv/dt	5.0	V/ns
PD	Power Dissipation	375	W
TJ，Tstg	Operating Junction and Storage Temperature Range	150，–55 to 150	℃
TL	Maximum Temperature for Soldering	300	℃
RθJC	Thermal Resistance, Junction-to-Case	0.45	℃/ W
RθJA	Thermal Resistance, Junction-to-Ambient	60	℃/ W

200V N-Channel Enhancement Mode MOSFET

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
VDSS	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	200	220	--	V
IDSS	Drain to Source Leakage Current	V_{DS}=200V, V_{GS}=0V,T_a=25℃	--	--	1.0	μA
		V_{DS}=200V, V_{GS}=0V,T_a=125℃	--	--	100	μA
IGSS(F)	Gate to Source Forward Leakage	V_{GS}=+20V	--	--	100	nA
IGSS(R)	Gate to Source Reverse Leakage	V_{GS}=-20V	--	--	-100	nA
RDS(ON)	Drain-to-Source On-Resistance	V_{GS}=10V, I_D=40A	--	17	20	mΩ
VGS(TH)	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	3.6	--	5.0	V
gfs	Forward Trans conductance	V_{DS}=25V, I_D=40A	50	65	--	S
R_g	Gate Resistance	V_{GS}=0V V_{DS} open f=1.0MHz		1.3		Ω
Ciss	Input Capacitance	V_{GS}=0V V_{DS}=25V f=1.0MHz	--	7450	--	pF
Coss	Output Capacitance		--	500	--	pF
Crss	Reverse Transfer Capacitance		--	210	--	pF
td(ON)	Turn-on Delay Time	I_D=40A, V_{DS}=50V V_{GS}=10V, R_g=2.5Ω	--	45	--	ns
t_r	Rise Time		--	70	--	ns
td(OFF)	Turn-Off Delay Time		--	110	--	ns
tf	Fall Time		--	90	--	ns
Q_g	Total Gate Charge	I_D=40A, V_{DD}=100V V_{GS}=10V	--	85	--	nC
Qgs	Gate to Source Charge		--	15	--	nC
Qgd	Gate to Drain (“Miller”) Charge		--	25	--	nC
ISD	Continuous Source Current (Body Diode)		--	--	75	A
ISM	Maximum Pulsed Current (Body Diode)		--	--	300	A
VSD	Diode Forward Voltage	I_S=40A, V_{GS}=0V	--	--	1.2	V
trr	Reverse Recovery Time	I_S=30A,T_j=25℃， V_{DD}=50V dI_F/dt=100A/μs, V_{GS}=0V	--	110	--	ns
Q_{rr}	Reverse Recovery Charge		--	0.55	--	uC

Note :

1、The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3、The EAS data shows Max. rating . The test condition is TJ = 25°C, L = 0.3mH, R_G = 25Ω, V_{DD}=50V， V_{GS}=10V a2

4、The I_{SD}=40A,di/dt≤100A/us, V_{DD}≤BV_{DS}, Start T_J=25℃

5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Characteristics Curve:

Figure 1. Maximum Effective Thermal Impedance, Junction-to-Case

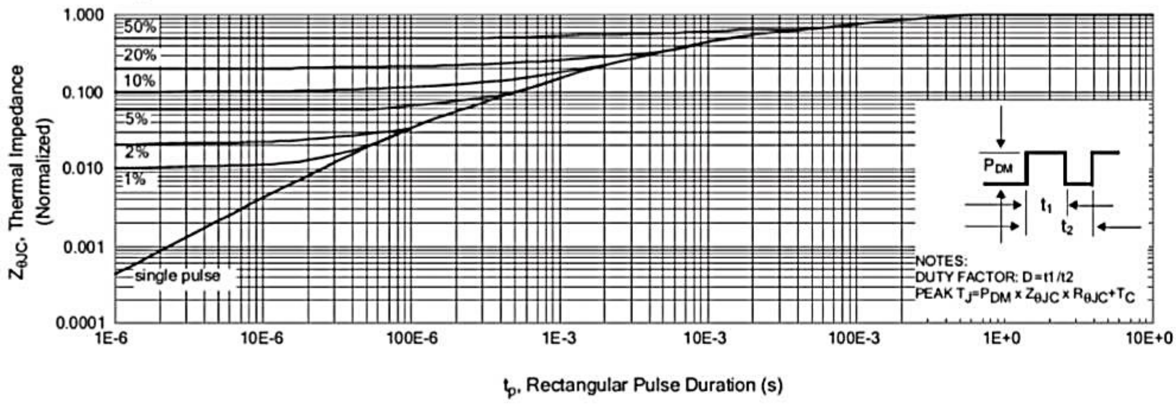


Figure 2 . Max. Power Dissipation vs Case Temperature

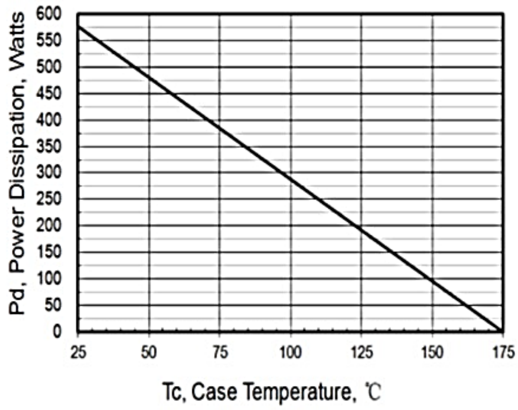


Figure 3 .Maximum Continuous Drain Current vs Tc

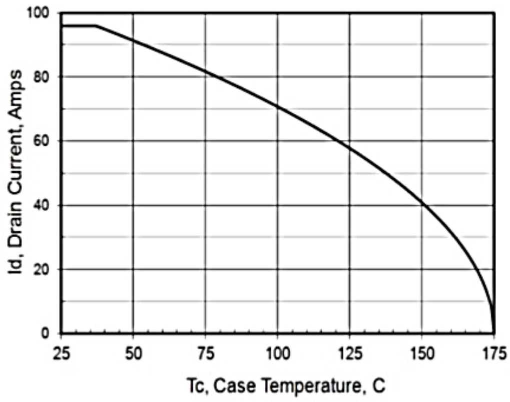


Figure 4. Typical Output Characteristics

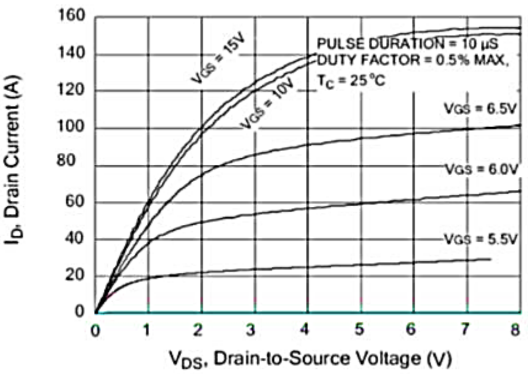


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

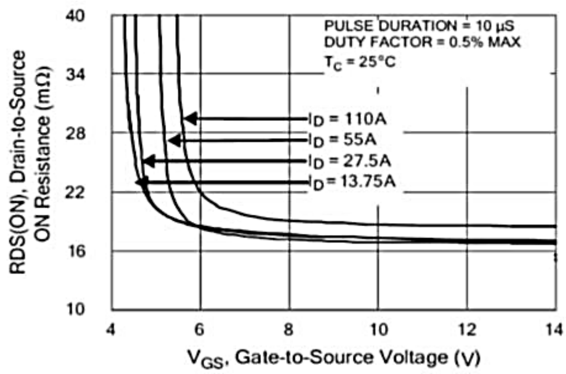


Figure 6. Peak Current Capability

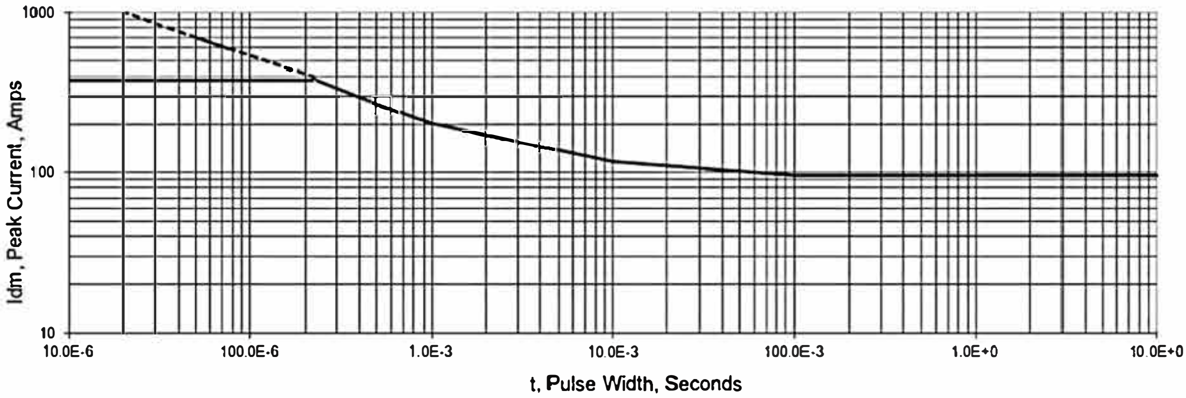


Figure 7. Typical Transfer Characteristics

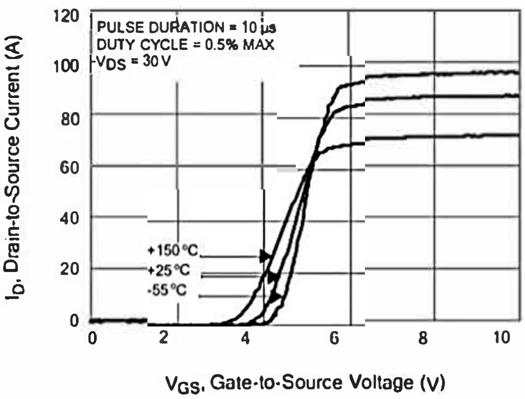


Figure 8. Unclamped Inductive Switching Capability

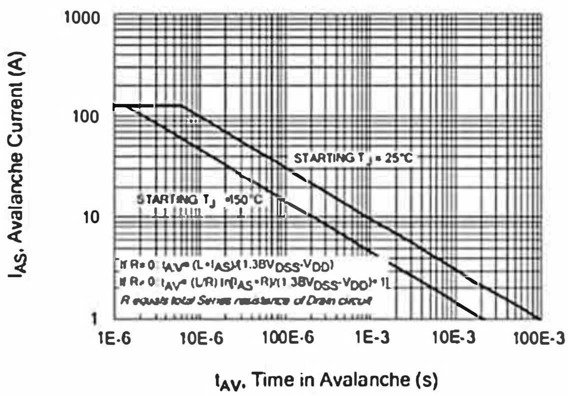


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

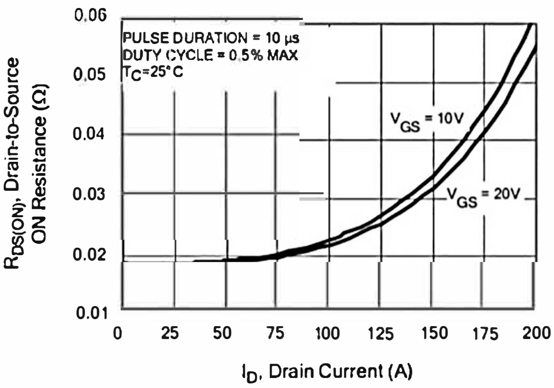


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

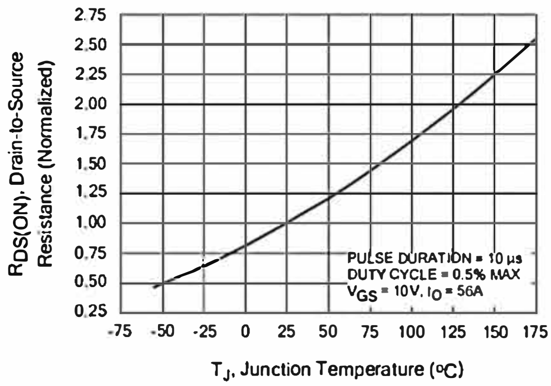


Figure 11. Typical Breakdown Voltage vs Junction Temperature

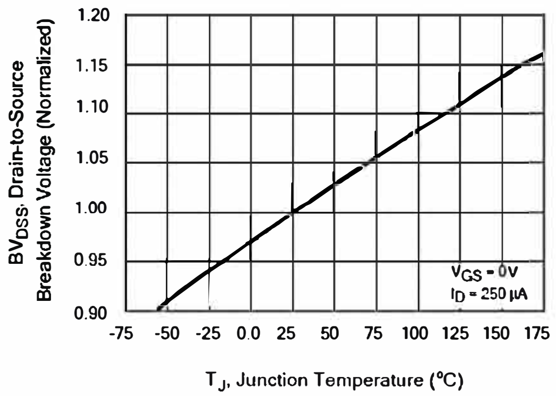


Figure 12. Typical Threshold Voltage vs Junction Temperature

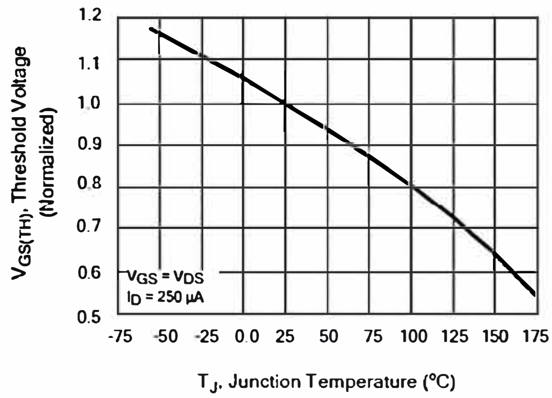


Figure 13 . Maximum Safe Operating Area

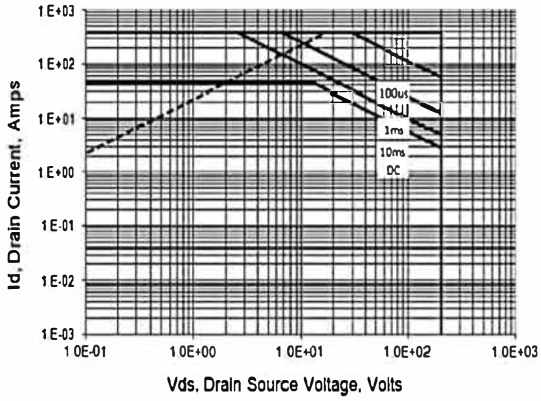


Figure 14. Capacitance vs Vds

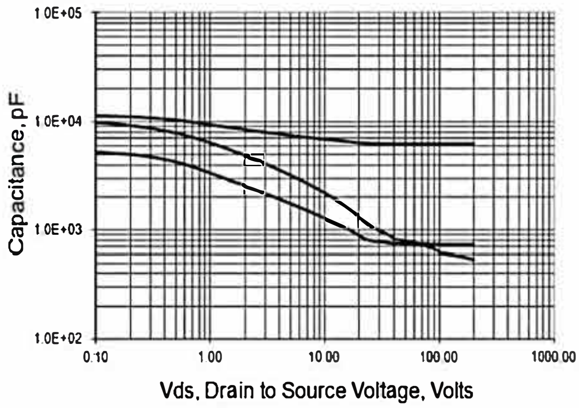


Figure 15 .Typical Gate Charge

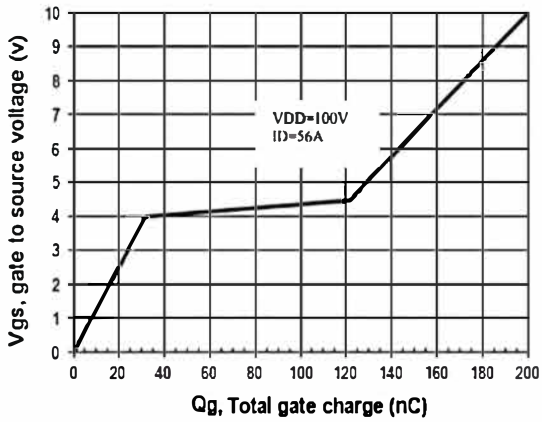
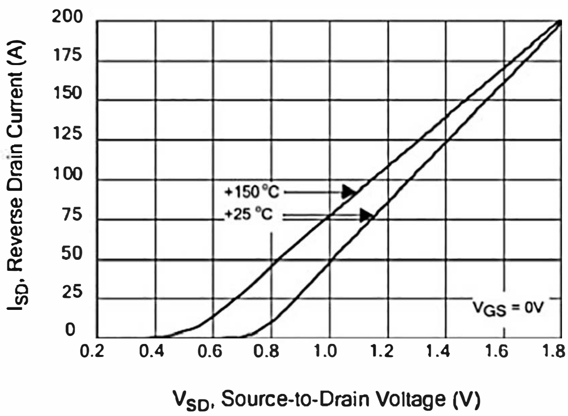
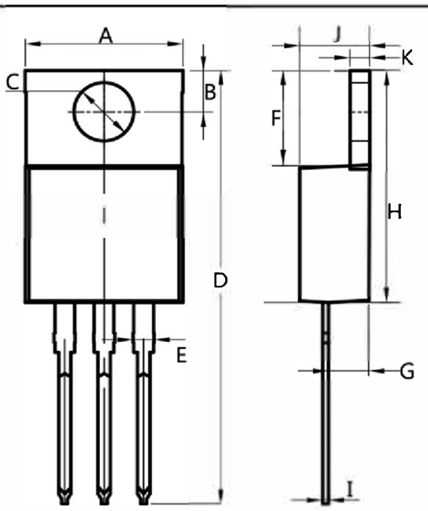


Figure 16. Typical Body Diode Transfer Characteristics

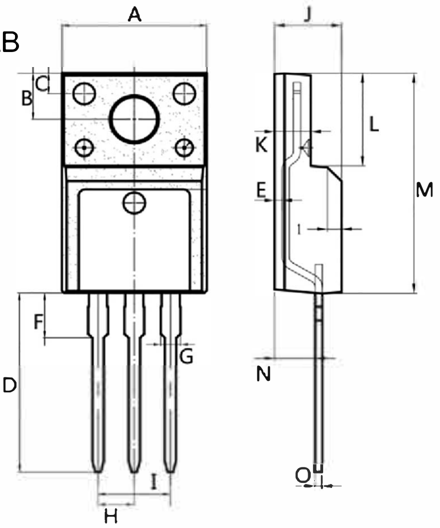


TO-220AB



Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

ITO-220AB



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2. 7
L	6.35	6.75
M	15.0	16.0
N	2.75	3.15
O	0.45	0.60
All Dimensions in millimeter		

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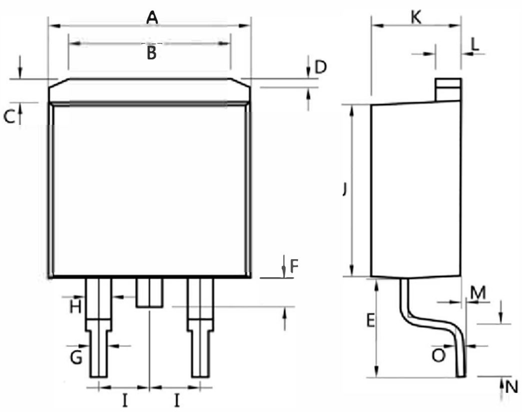

Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		

Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245℃±5℃	5sec±1sec
Pb-Free device	260℃+0/-5℃	5sec±1sec

This integrated circuit can be damaged by ESD UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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