-60V P-Channel Enhancement Mode MOSFET

Description

The XPX80P06TU uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 6V. This device is suitable for use as a Battery protection or in other Switching application.

Applications

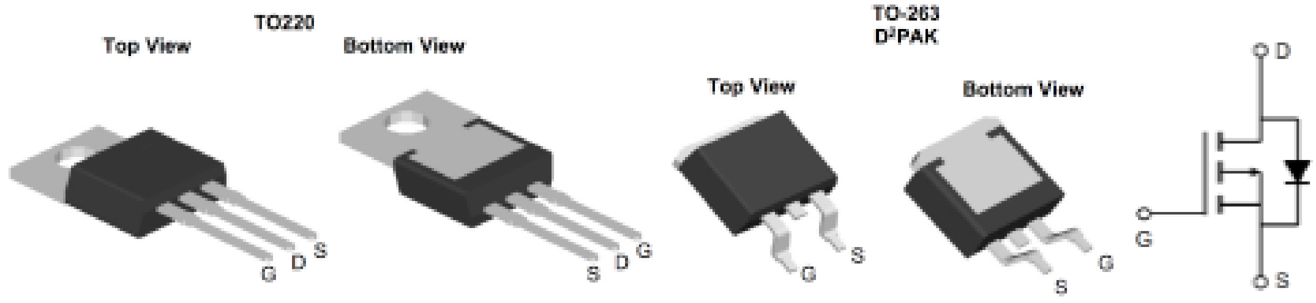
Pb-Free RoHS HF Halogen-Free

- Motor Drives
- Uninterruptible Power Supplies
- DC/DC converter
- General Purpose Applications

General Features

V_{DS} = -60V I_D =-82A

RDS(ON) < 10mΩ @VGS=-10V



Product ID	Pack	Marking	Qty(PCS)
XPX80P06TU	TO-220-3L	XPX80P06TU XXX YYYY	1000
XPX80P06TU	TO-263-3L	XPX80P06TU XXX YYYY	800

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25˚C	Continuous Drain Current, $-V_{GS}$ @ -10V[1]	-82	A
I_D@T_C=100˚C	Continuous Drain Current, $-V_{GS}$ @ -10V[1]	-52	A
I_{DM}	Pulsed Drain Current[2]	-328	A
EAS	Single Pulse Avalanche Energy[3]	450	mJ
I_{AS}	Avalanche Current	52	A
P_D@T_C=25˚C	Total Power Dissipation[4]	110	W
T_{STG}	Storage Temperature Range	-55 to 150	˚C
T_J	Operating Junction Temperature Range	-55 to 150	˚C
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	0.70	˚C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	60	˚C/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BVDSS	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-60	-68	---	V
△BVDSS/△TJ	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA	---	-0.035	---	V/℃
RDS(ON)	Static Drain-Source On-Resistance[2]	V_{GS}=-10V , I_D=-20A	---	10	12	mΩ
		V_{GS}=-4.5V , I_D=-15A	---	13	16	
VGS(th)	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	-2.1	-3.0	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4.28	---	mV/℃
IDSS	Drain-Source Leakage Current	V_{DS}=-60V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=-60V , V_{GS}=0V , T_J=55℃	---	---	5	
IGSS	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-5V , I_D=-20A	---	50	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.0	---	Ω
Q_g	Total Gate Charge (-4.5V)	V_{DS}=-30V , V_{GS}=-10V , I_D=-20A	---	56	---	nC
Q_{gs}	Gate-Source Charge		---	11	---	
Q_{gd}	Gate-Drain Charge		---	9	---	
Td(on)	Turn-On Delay Time	V_{DD}=-30V , V_{GS}=-10V , R_G=3Ω, I_D=-20A	---	4.5	---	ns
T_r	Rise Time		---	2.5	---	
Td(off)	Turn-Off Delay Time		---	14.5	---	
T_f	Fall Time		---	3.8	---	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , f=1MHz	---	3500	---	pF
Coss	Output Capacitance		---	600	---	
Crss	Reverse Transfer Capacitance		---	25	---	
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	-80	A
ISM	Pulsed Source Current[2,5]		---	---	-240	A
VSD	Diode Forward Voltage[2]	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V

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 VDD =-48V，VGS =-10V，L=0.1mH，IAS =-52A

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

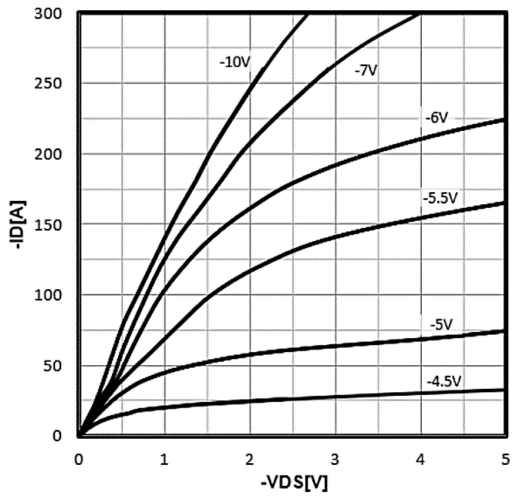


Figure 1. Type. Output Characteristics (Tj=25 ℃)

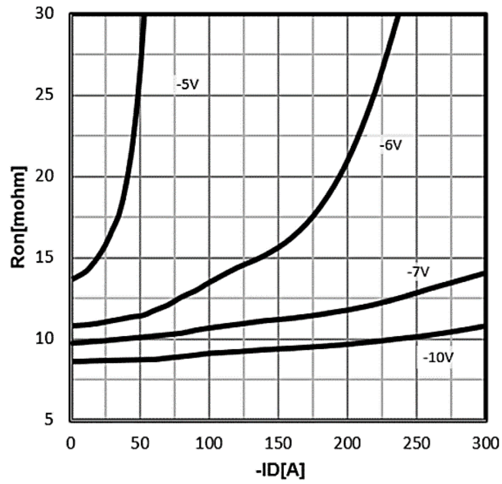


Figure 2. Type. drain-source on resistance

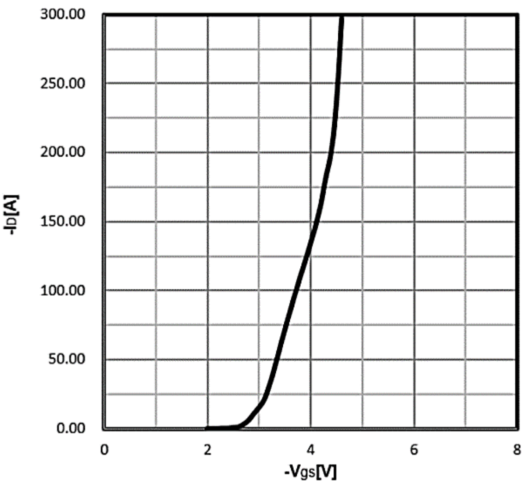


Figure 3. Type. transfer characteristics

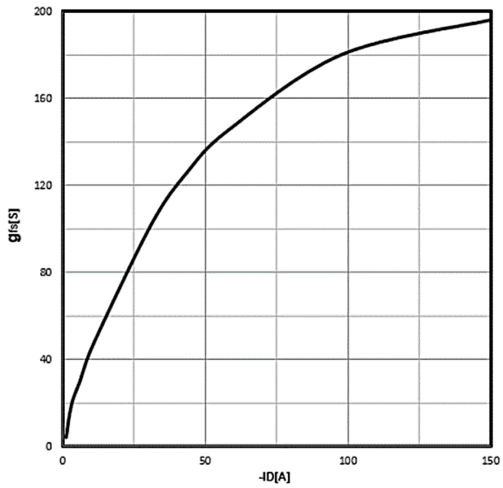


Figure 4. Type. forward transconductance

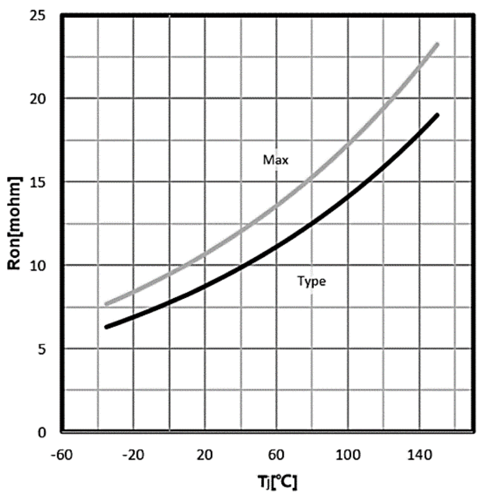


Figure 5. Drain-source on-state resistance
RDS(on) =f(Tj); ID =80A; VGS =10V

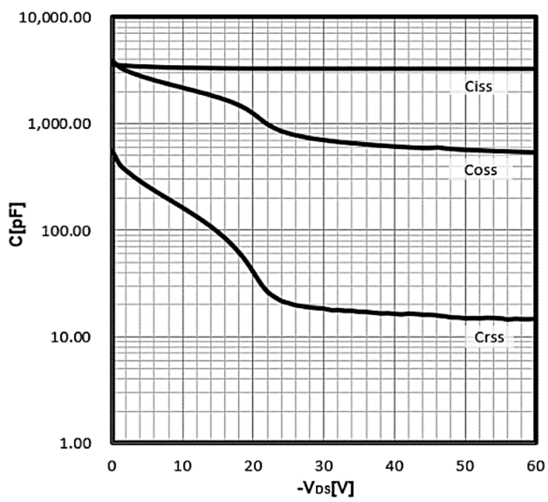


Figure 6 . Body-Diode Characteristics
C=f(VDS); VGS =0V; f=1MHz

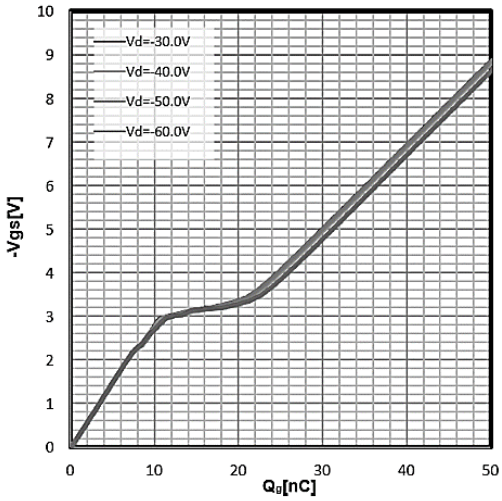


Figure 7. Typ. gate charge
VGS =f(Q gate) ; ID =20A

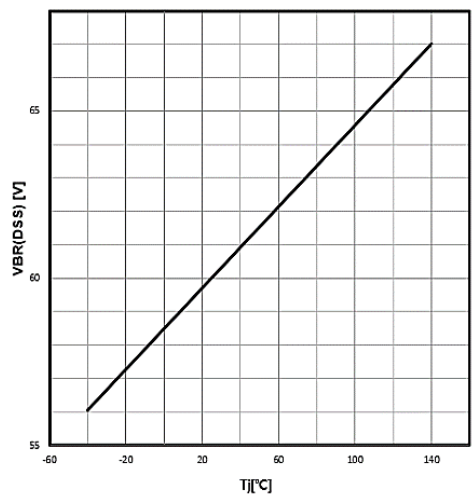


Figure 8. Drain Current Derating
VBR(DSS) =f(T j); I D =250uA

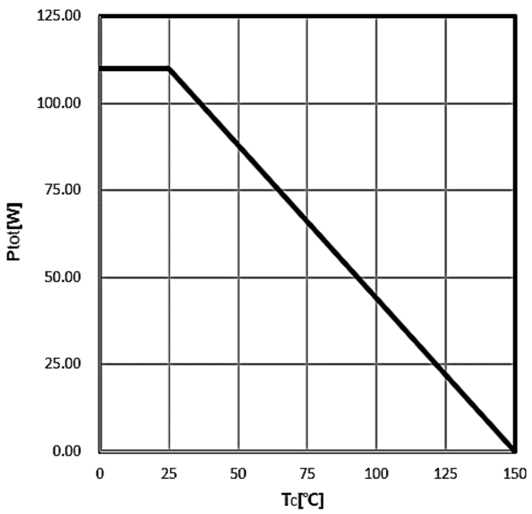


Figure 7. Power Dissipation

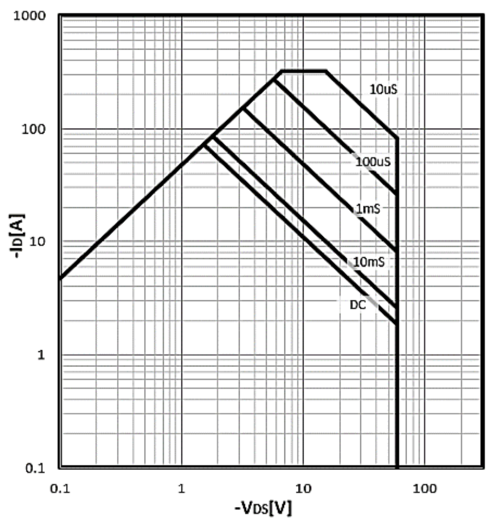


Figure 8. Safe operating area

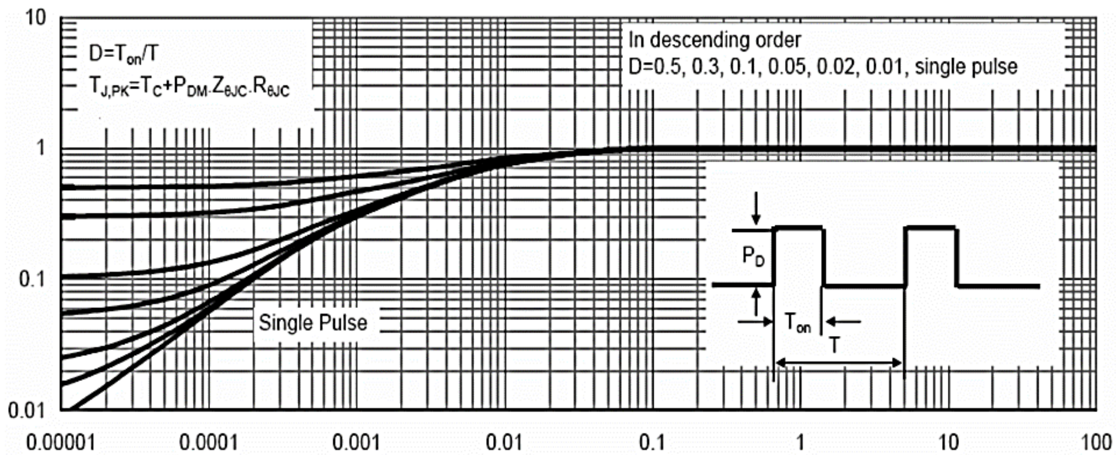
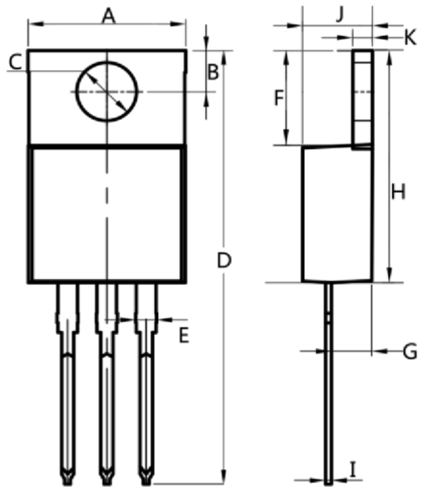


Figure 10. Max. transient thermal impedance

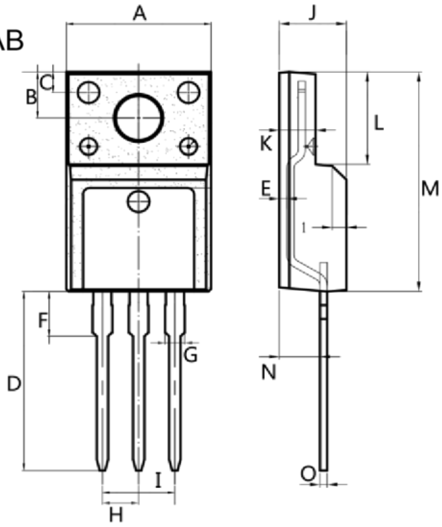
ZthJC =f(tp)

TO-220AB



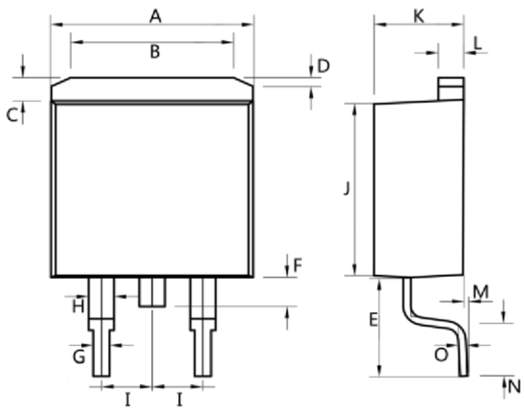
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

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		

TO-263



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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