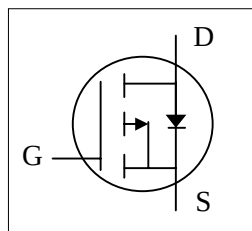


- ▼ 100% R_g & UIS Test
- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free

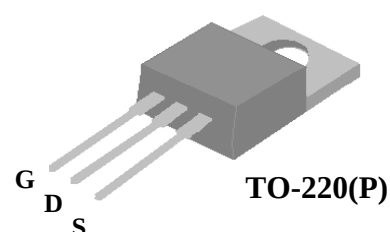


BV _{DSS}	-60V
R _{DS(ON)}	25mΩ
I _D	-40A

Description

XP6P025 series are innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The TO-220 package is widely preferred for all commercial-industrial through hole applications. The low thermal resistance and low package cost contribute to the worldwide popular package.



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

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-60	V
V _{GS}	Gate-Source Voltage	+20	V
I _D @T _C =25°C	Drain Current, V _{GS} @ 10V	-40	A
I _D @T _C =100°C	Drain Current, V _{GS} @ 10V	-25	A
I _{DM}	Pulsed Drain Current ¹	-160	A
P _D @T _C =25°C	Total Power Dissipation	62.5	W
P _D @T _A =25°C	Total Power Dissipation	2	W
E _{AS}	Single Pulse Avalanche Energy ⁴	28.8	mJ
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Units
R _{thj-c}	Maximum Thermal Resistance, Junction-case	2	°C/W
R _{thj-a}	Maximum Thermal Resistance, Junction-ambient	62	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-60	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-20A	-	-	25	mΩ
		V _{GS} =-4.5V, I _D =-15A	-	-	30	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1	-	-3	V
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-20A	-	47	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-48V, V _{GS} =0V	-	-	-25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =-15A	-	37	59.2	nC
Q _{gs}	Gate-Source Charge	V _{DS} =-48V	-	12	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =-4.5V	-	15	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =-30V	-	11	-	ns
t _r	Rise Time	I _D =-20A	-	40	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	84	-	ns
t _f	Fall Time	V _{GS} =-10V	-	79	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	4000	6400	pF
C _{oss}	Output Capacitance	V _{DS} =-25V	-	240	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	170	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =-20A, V _{GS} =0V	-	-	-1.3	V
t _{rr}	Reverse Recovery Time	I _S =-20A, V _{GS} =0V,	-	23	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=-100A/μs	-	17	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Starting T_j=25°C , V_{DD}=-30V , L=1mH , R_G=25Ω

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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XSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN.

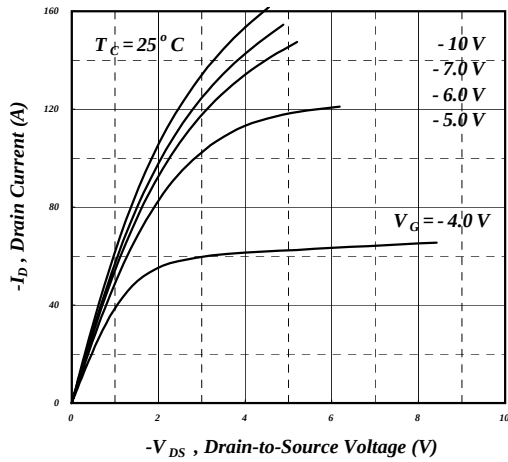


Fig 1. Typical Output Characteristics

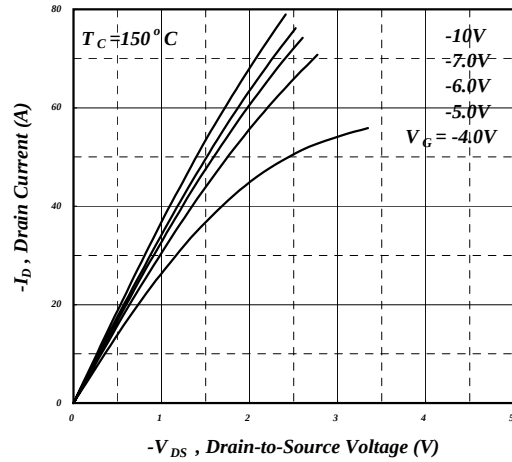


Fig 2. Typical Output Characteristics

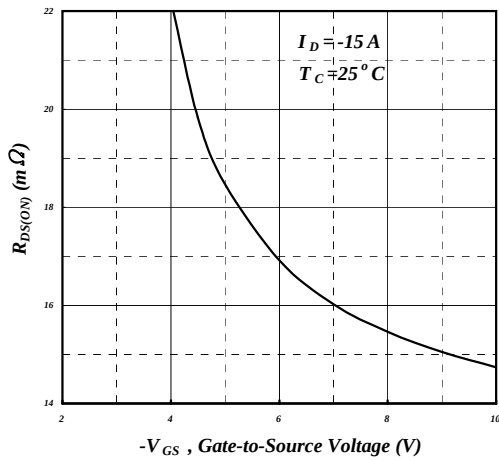
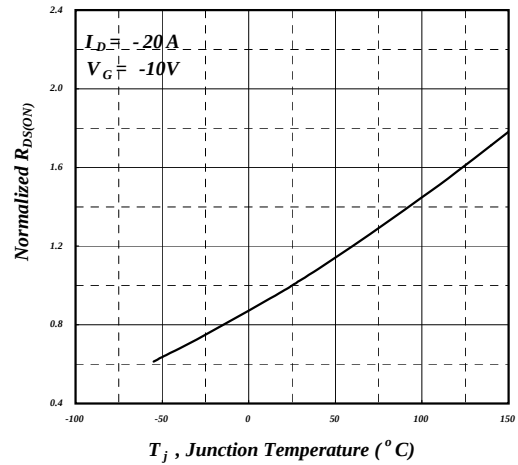
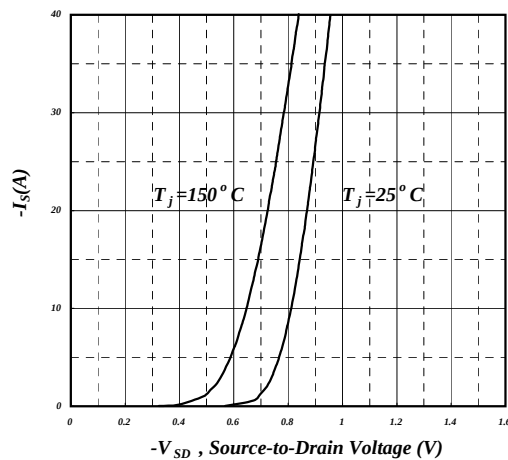


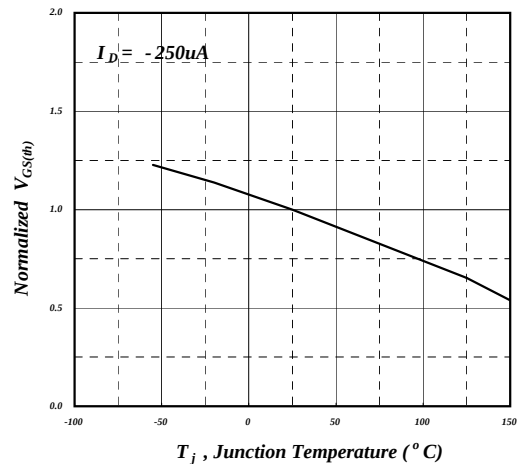
Fig 3. On-Resistance v.s. Gate Voltage



**Fig 4. Normalized On-Resistance
v.s. Junction Temperature**



**Fig 5. Forward Characteristic of
Reverse Diode**



**Fig 6. Gate Threshold Voltage v.s.
Junction Temperature**

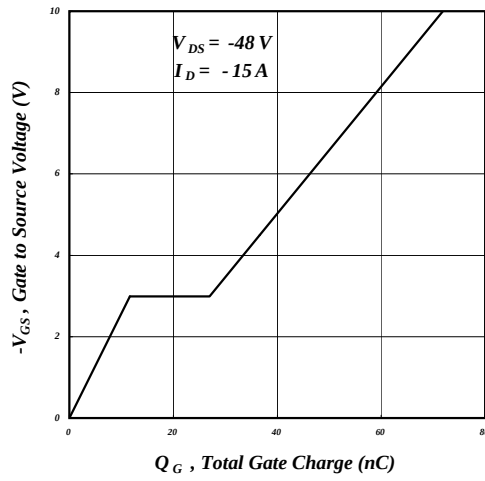


Fig 7. Gate Charge Characteristics

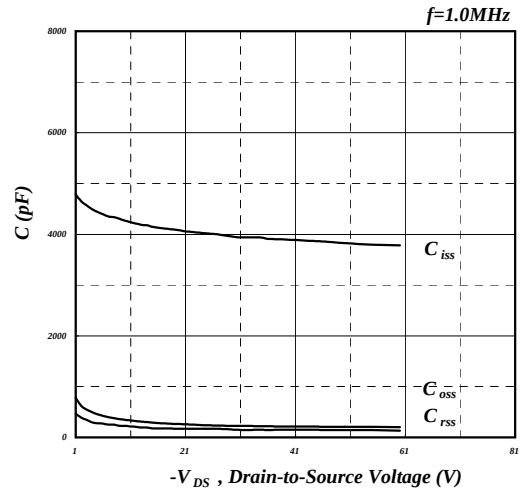


Fig 8. Typical Capacitance Characteristics

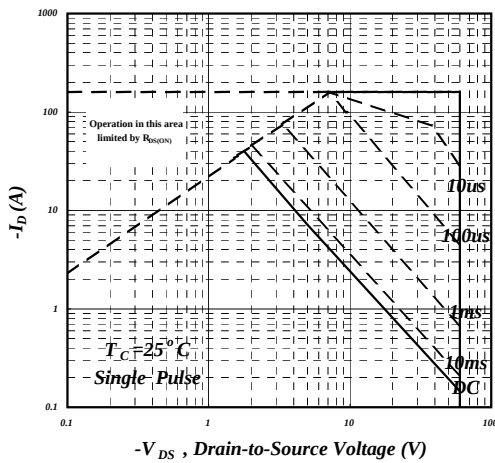


Fig 9. Maximum Safe Operating Area

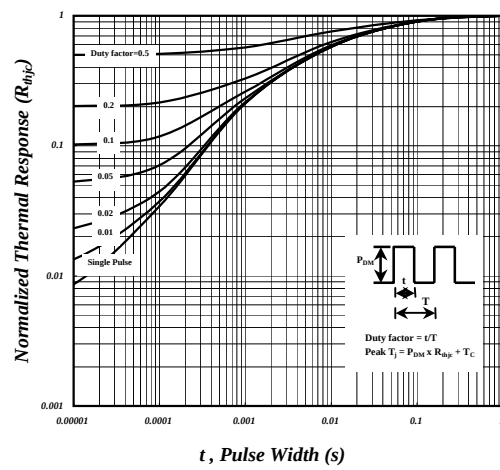


Fig 10. Effective Transient Thermal Impedance

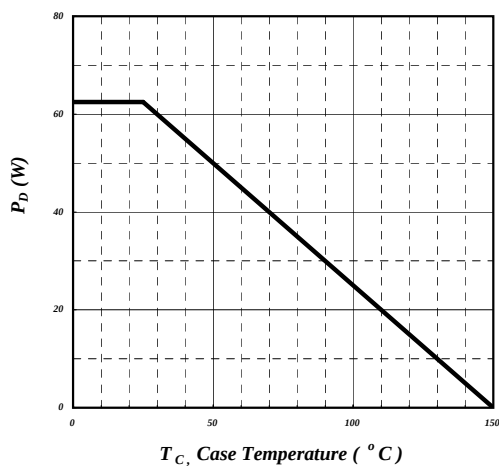


Fig 11. Typical Power Dissipation

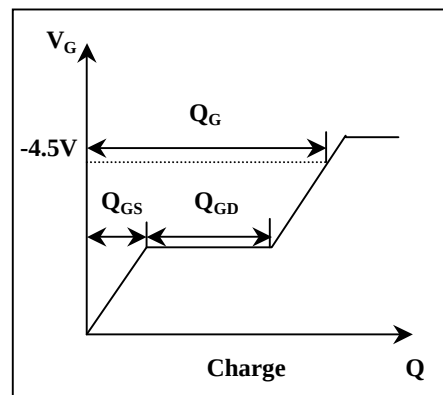
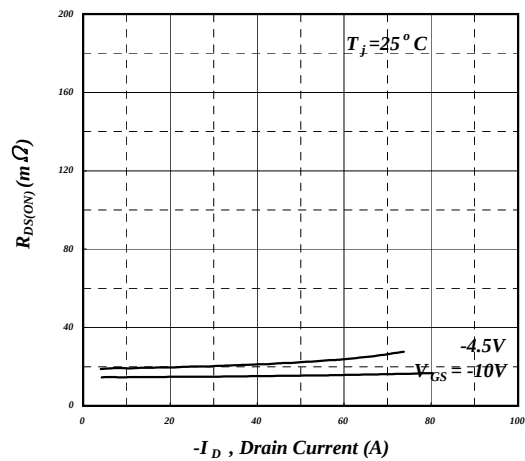
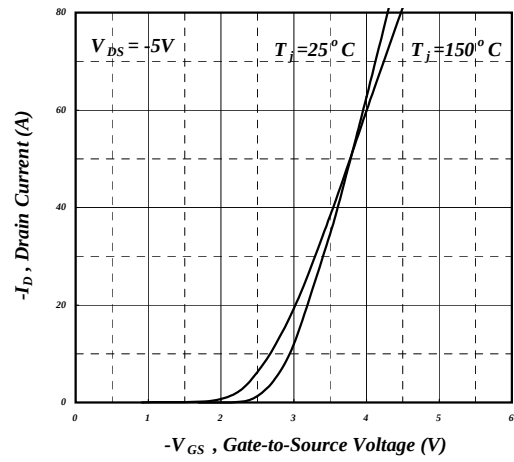
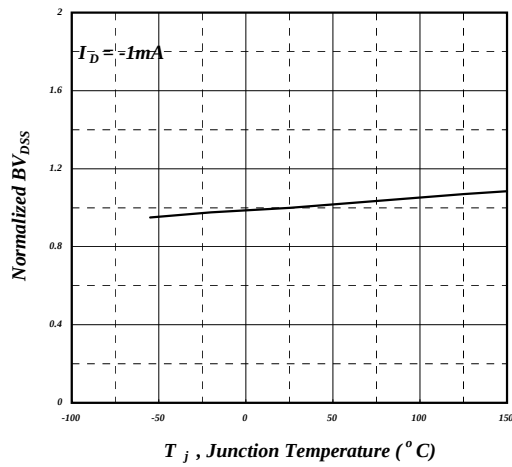
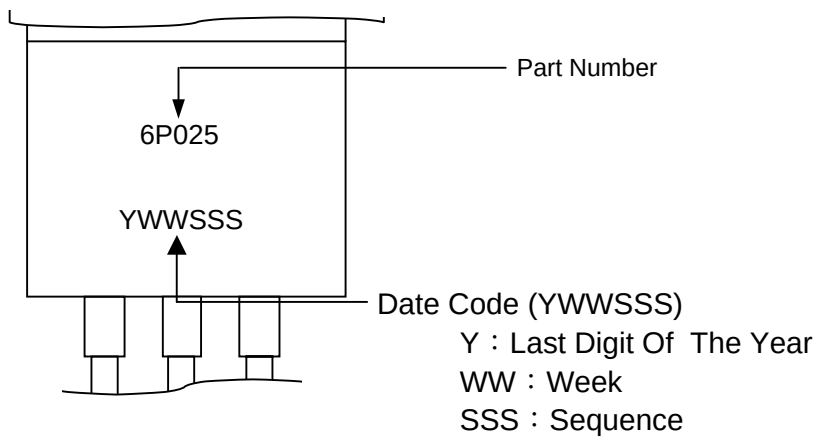


Fig 12. Gate Charge Waveform



MARKING INFORMATION

TO-220 FOOTPRINT :

