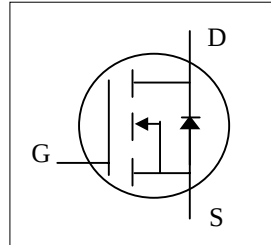


- ▼ 100% R_g & UIS Test
- ▼ Low t_{rr} / Q_{rr}
- ▼ Simple Drive Requirement
- ▼ RoHS Compliant & Halogen-Free

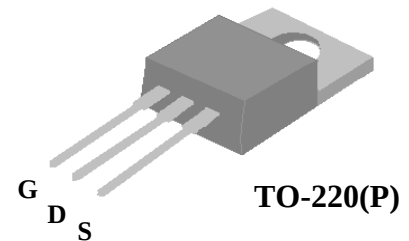


BV_{DSS}	600V
$R_{DS(ON)}$	95m Ω
$I_D^{3,6}$	31A

Description

XP60SC095D 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@ $T_j=25^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	± 20	V
V_{GS}	Gate-Source Voltage, AC ($f > 1\text{Hz}$)	± 30	V
$I_D@T_C=25^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^{3,6}$	31	A
$I_D@T_C=100^\circ\text{C}$	Drain Current, $V_{GS} @ 10V^{3,6}$	19.7	A
I_{DM}	Pulsed Drain Current ¹	80	A
dv/dt	MOSFET dv/dt Ruggedness ($V_{DS} = 0 \dots 480V$)	20	V/ns
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	178.5	W
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	2	W
E_{AS}	Single Pulse Avalanche Energy ⁴	200	mJ
dv/dt	Peak Diode Recovery dv/dt^5	15	V/ns
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
R_{thj-c}	Maximum Thermal Resistance, Junction-case	0.7	$^\circ\text{C}/\text{W}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	62	$^\circ\text{C}/\text{W}$

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 =1mA	600	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =10A	-	-	95	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	2	-	4	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =10A	-	20	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =480V, V _{GS} =0V	-	-	100	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±1	uA
Q _g	Total Gate Charge ⁷	I _D =10A	-	70	112	nC
Q _{gs}	Gate-Source Charge ⁷	V _{DS} =480V	-	20	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge ⁷	V _{GS} =10V	-	30	-	nC
t _{d(on)}	Turn-on Delay Time ⁷	V _{DD} =300V	-	41	-	ns
t _r	Rise Time ⁷	I _D =10A	-	52	-	ns
t _{d(off)}	Turn-off Delay Time ⁷	R _G =12Ω	-	140	-	ns
t _f	Fall Time ⁷	V _{GS} =10V	-	33	-	ns
C _{iss}	Input Capacitance ⁷	V _{GS} =0V	-	2860	4576	pF
C _{oss}	Output Capacitance ⁷	V _{DS} =400V	-	70	-	pF
C _{rss}	Reverse Transfer Capacitance ⁷	f=1.0MHz	-	10	-	pF
R _g	Gate Resistance	f=1.0MHz	-	6	12	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =10A, V _{GS} =0V	-	-	1.5	V
t _{rr}	Reverse Recovery Time ⁷	I _S =5A, V _{GS} =0V	-	167	-	ns
Q _{rr}	Reverse Recovery Charge ⁷	di/dt=100A/μs	-	1.3	-	uC

Notes:

- 1.Pulse width limited by max. junction temperature.
- 2.Pulse test
- 3.Ensure that the junction temperature does not exceed T_{Jmax}.
- 4.Starting T_j=25°C , V_{DD}=90V , L=100mH , R_G=25Ω , V_{GS}=10V
- 5.I_{SD} ≤ I_D, V_{DD} ≤ BV_{DSS}, starting T_J = 25°C
- 6.Limited by max. junction temperature. Maximum duty cycle D=0.75
- 7.Guaranteed by design.

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

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT, AUTOMOTIVE 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.

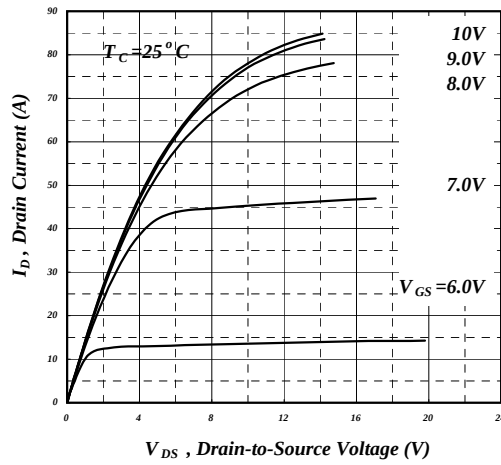


Fig 1. Typical Output Characteristics

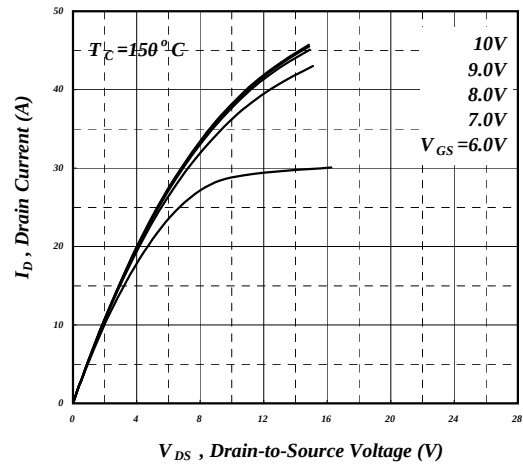


Fig 2. Typical Output Characteristics

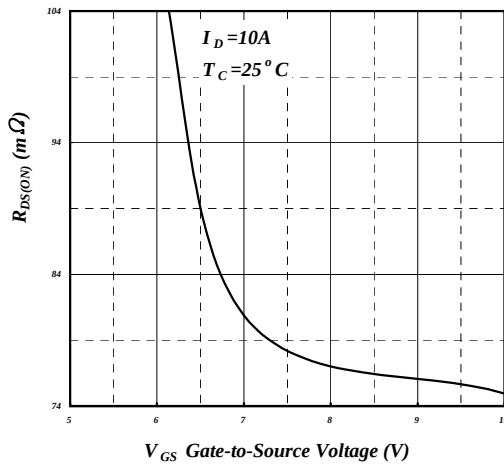


Fig 3. On-Resistance v.s. Gate Voltage

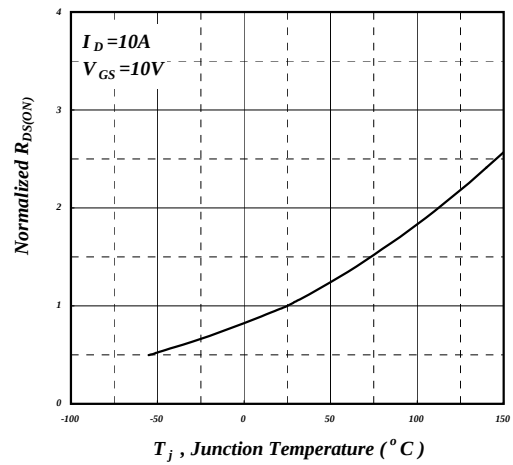


Fig 4. Normalized On-Resistance v.s. Junction Temperature

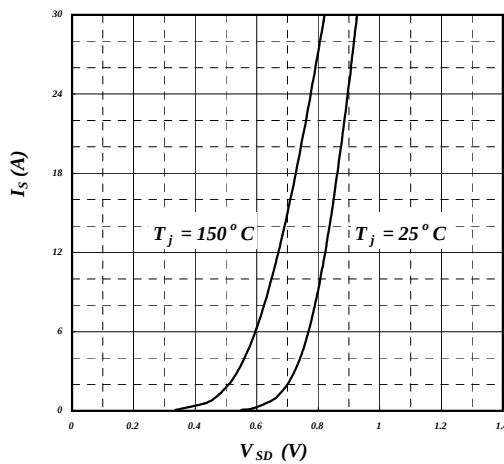


Fig 5. Forward Characteristic of Reverse Diode

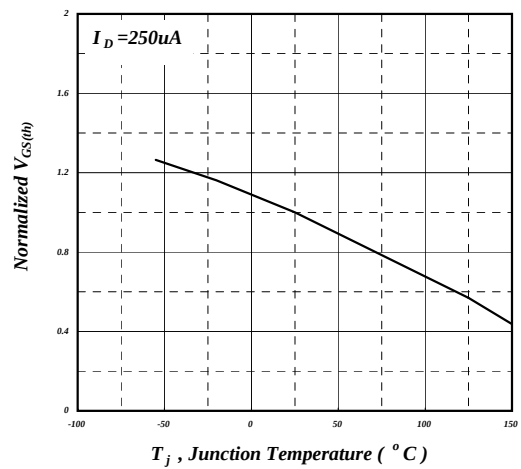
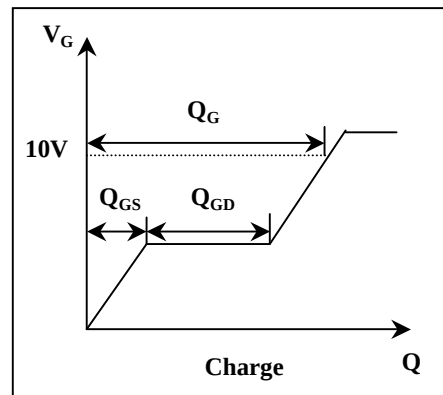
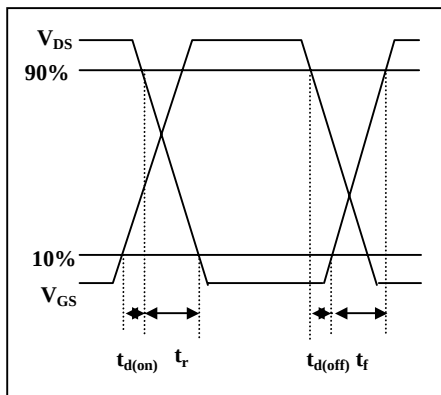
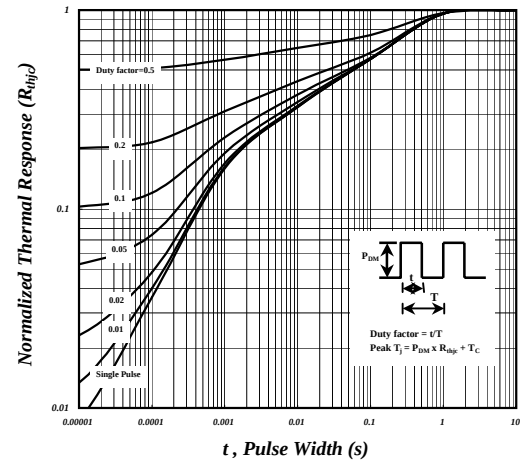
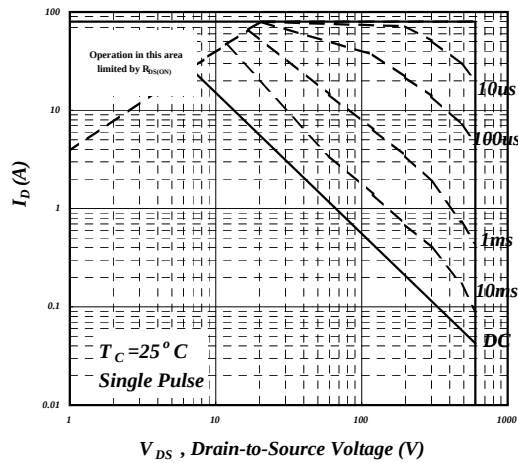
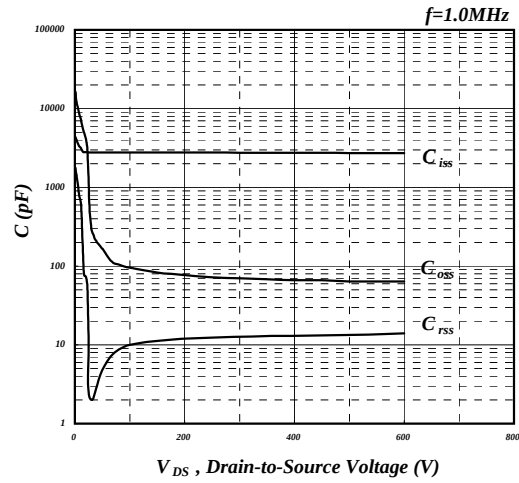
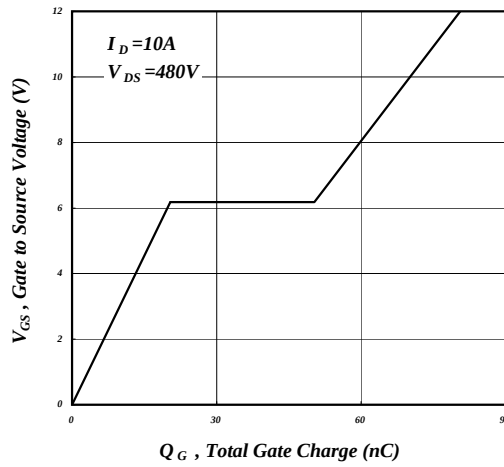


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



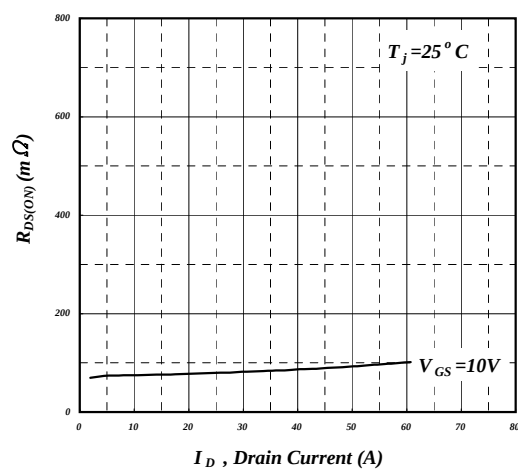


Fig 13. Typ. Drain-Source on State Resistance

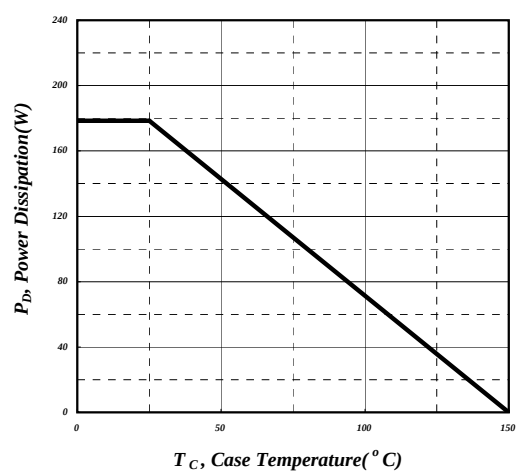
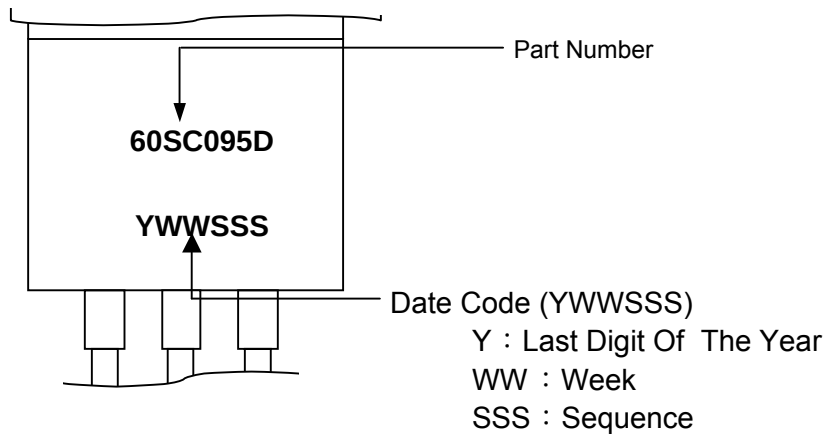


Fig 14. Total Power Dissipation

MARKING INFORMATION

TO-220 FOOTPRINT :

