

XP3N2R8AMT

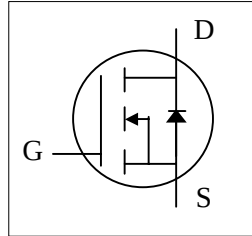
Halogen-Free Product

XSEMI

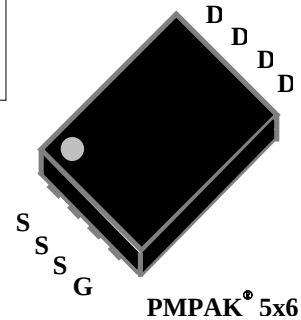
N-CHANNEL MOSFET WITH SCHOTTKY

DIODE

- ▼ 100% R_g & UIS Test
- ▼ Simple Drive Requirement
- ▼ Ultra Low On-resistance
- ▼ RoHS Compliant & Halogen-Free



BV_{DSS}	30V
$R_{DS(ON)}$	2.8m Ω



Description

XP3N2R8A series are innovative 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 PMPAK[®] 5x6 package is special for DC-DC converters application and the foot print is compatible with SO-8 with backside heat sink and lower profile.

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}\text{C}$	Drain Current, V_{GS} @ 10V ⁴ (Silicon Limited)	103	A
$I_D@T_C=25^{\circ}\text{C}$	Drain Current, V_{GS} @ 10V ⁴ (Package Limited)	60	A
$I_D@T_A=25^{\circ}\text{C}$	Drain Current, V_{GS} @ 10V ³	32.8	A
$I_D@T_A=70^{\circ}\text{C}$	Drain Current, V_{GS} @ 10V ³	26.2	A
I_{DM}	Pulsed Drain Current ¹	240	A
$P_D@T_C=25^{\circ}\text{C}$	Total Power Dissipation	50	W
$P_D@T_A=25^{\circ}\text{C}$	Total Power Dissipation ³	5	W
E_{AS}	Single Pulse Avalanche Energy ⁵	80	mJ
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	Unit
R_{thj-c}	Maximum Thermal Resistance, Junction-case	2.5	$^{\circ}\text{C}/\text{W}$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	25	$^{\circ}\text{C}/\text{W}$

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 =250uA	30	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =20A	-	-	2.8	mΩ
		V _{GS} =4.5V, I _D =12A	-	-	4.2	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =20A	-	84	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =20A	-	25	40	nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V	-	7	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	11	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V	-	18	-	ns
t _r	Rise Time	I _D =1A	-	9	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	43	-	ns
t _f	Fall Time	V _{GS} =10V	-	22	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	2550	4080	pF
C _{oss}	Output Capacitance	V _{DS} =15V	-	475	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	280	-	pF
R _g	Gate Resistance	f=1.0MHz	-	2	4	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =20A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _S =20A, V _{GS} =0V,	-	14	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	4.5	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t ≤10sec ; 60°C/W at steady state.
- 4.Package limitation current is 60A .
- 5.Starting T_j=25°C , V_{DD}=30V , L=0.1mH , R_G=25Ω , V_{GS}=10V

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

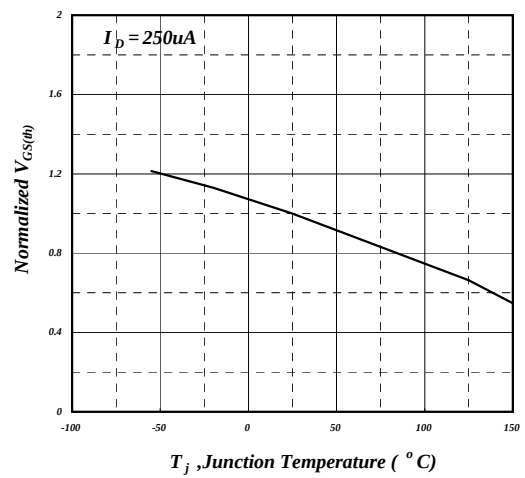
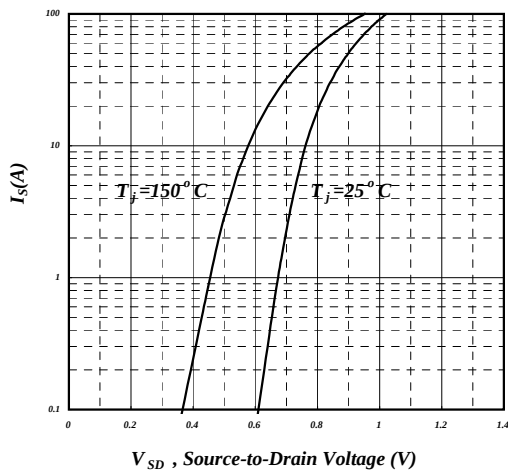
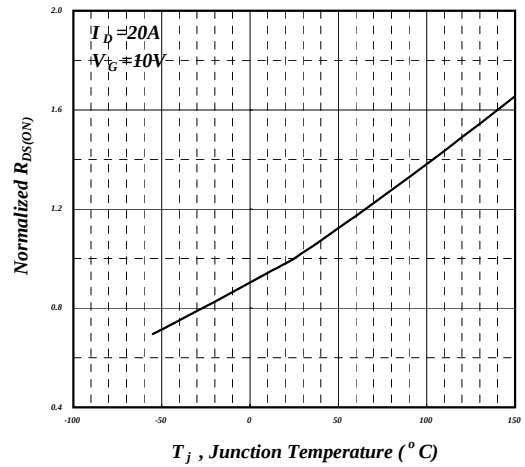
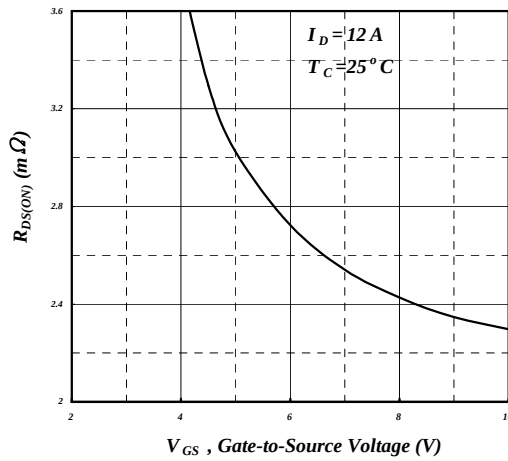
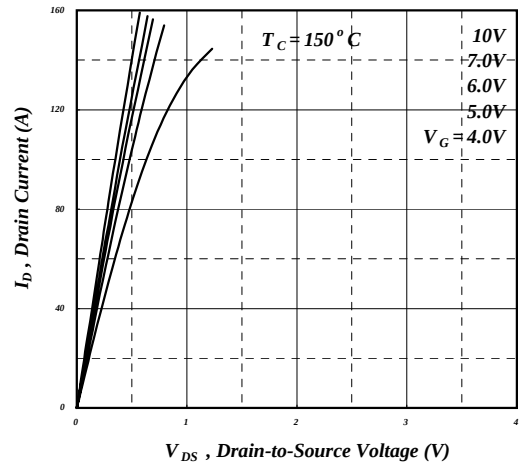
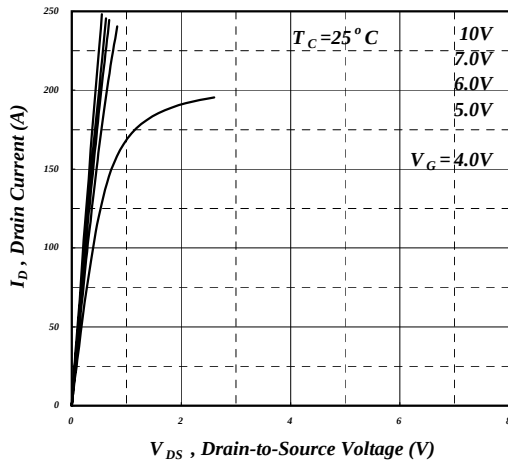
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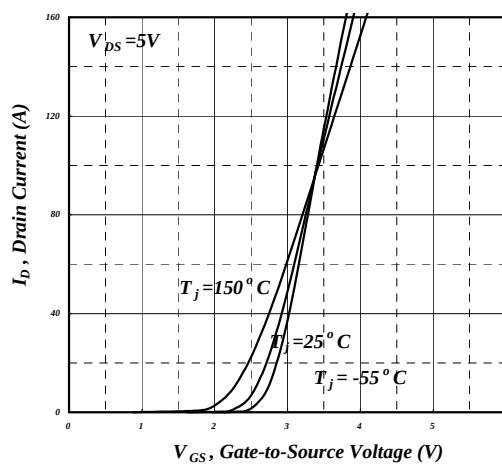
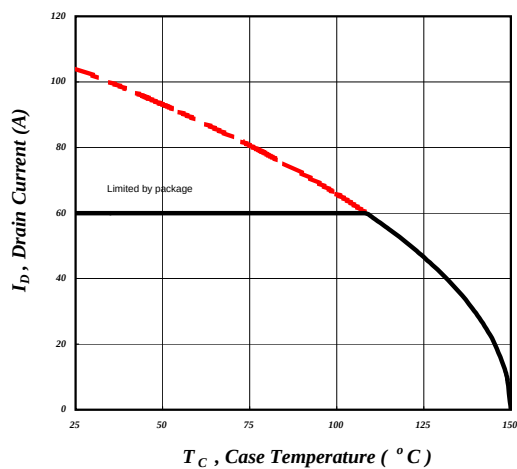
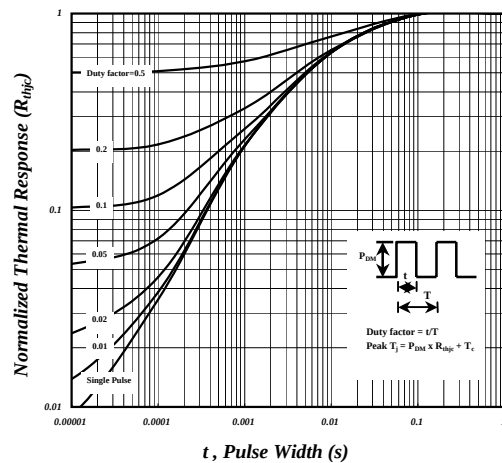
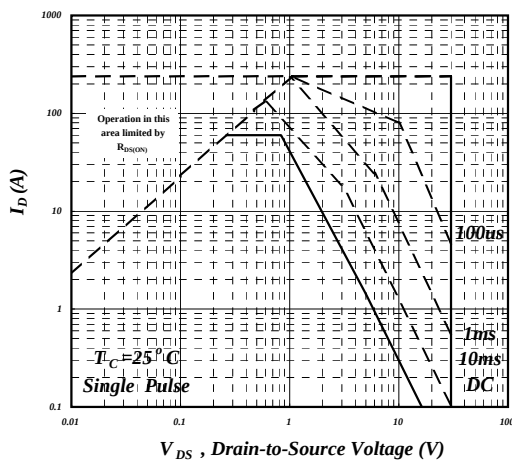
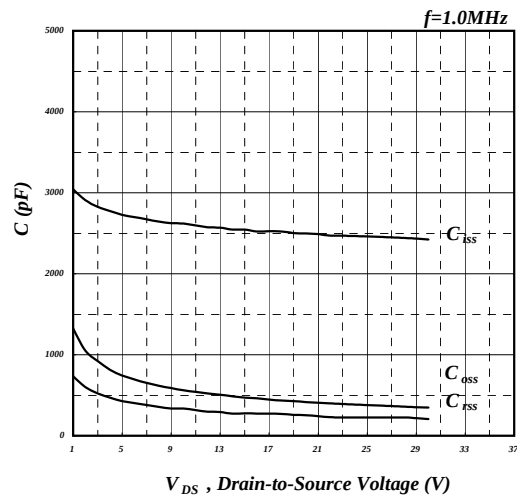
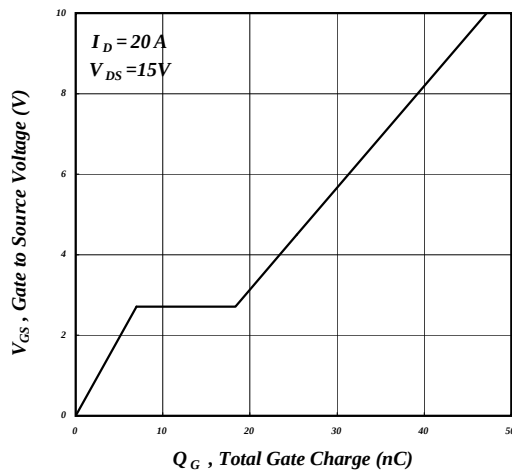
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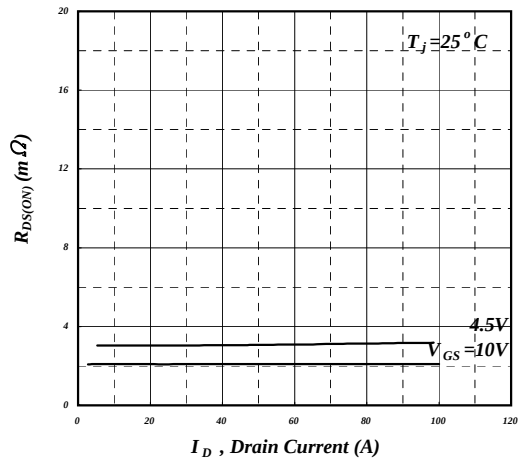


Fig 13. Typ. Drain-Source on State Resistance

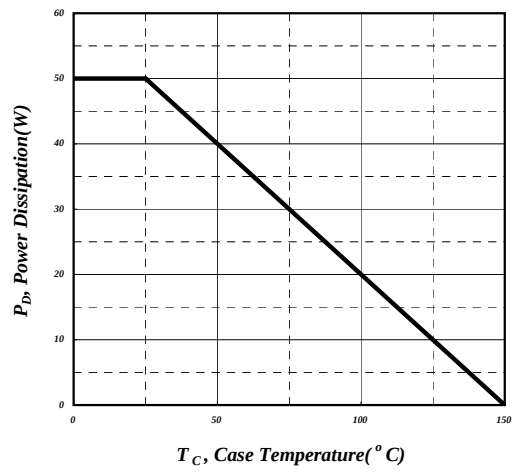
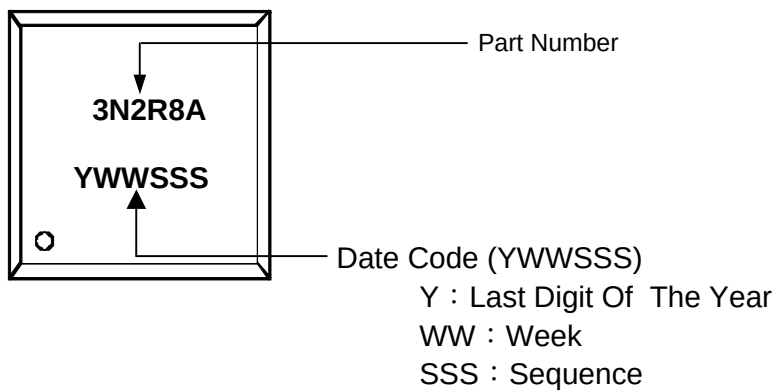


Fig 14. Total Power Dissipation

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