Halogen-Free Product

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

YAGEO XSEMI

▼ **100% R_g & UIS Test**

▼ **SO-8 Compatible with Heatsink**

▼ **Ultra Low On-resistance**
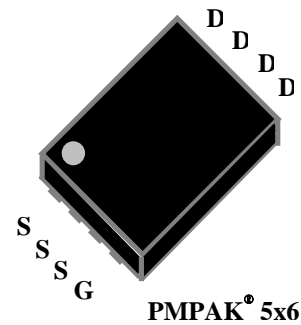
▼ **RoHS Compliant & Halogen-Free**

BV_{DSS}	80V
$R_{DS(ON)}$	3.5mΩ

PMPAK® 5x6

Description

XP8N3R5C 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 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°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	80	V
V_{GS}	Gate-Source Voltage	$\pm$20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V[4](Silicon Limited)	125	A
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V[4]	100	A
I_D@T_A=25℃	Drain Current, V_{GS} @ 10V[3]	28.2	A
I_D@T_A=70℃	Drain Current, V_{GS} @ 10V[3]	22.5	A
I_{DM}	Pulsed Drain Current[1]	260	A
P_D@T_C=25℃	Total Power Dissipation	104	W
P_D@T_A=25℃	Total Power Dissipation[3]	5	W
E_{AS}	Single Pulse Avalanche Energy[5]	240	mJ
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-c	Maximum Thermal Resistance, Junction-case	1.2	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[3]	25	℃/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	80	-	-	V
R$_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V$_{GS}$=10V, I$_D$=20A	-	-	3.5	mΩ
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$=V$_{GS}$, I$_D$=250uA	2	-	5	V
g$_{fs}$	Forward Transconductance	V$_{DS}$=10V, I$_D$=20A	-	50	-	S
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=64V, V$_{GS}$=0V	-	-	25	uA
I$_{GSS}$	Gate-Source Leakage	V$_{GS}$=$\pm$20V, V$_{DS}$=0V	-	-	$\pm$100	nA
Q$_g$	Total Gate Charge	I$_D$=20A	-	79	126	nC
Q$_{gs}$	Gate-Source Charge	V$_{DS}$=40V	-	21	-	nC
Q$_{gd}$	Gate-Drain ("Miller") Charge	V$_{GS}$=10V	-	25	-	nC
t$_{d(on)}$	Turn-on Delay Time	V$_{DS}$=40V	-	24	-	ns
t$_r$	Rise Time	I$_D$=20A	-	70	-	ns
t$_{d(off)}$	Turn-off Delay Time	R$_G$=6Ω	-	50	-	ns
t$_f$	Fall Time	V$_{GS}$=10V	-	72	-	ns
C$_{iss}$	Input Capacitance	V$_{GS}$=0V	-	4850	7760	pF
C$_{oss}$	Output Capacitance	V$_{DS}$=40V	-	1615	-	pF
C$_{rss}$	Reverse Transfer Capacitance	f=1.0MHz	-	55	-	pF
R$_g$	Gate Resistance	f=1.0MHz	-	1.7	3.4	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V$_{SD}$	Forward On Voltage[2]	I$_S$=20A, V$_{GS}$=0V	-	-	1.3	V
t$_{rr}$	Reverse Recovery Time	I$_S$=20A, V$_{GS}$=0V,	-	65	-	ns
Q$_{rr}$	Reverse Recovery Charge	dI/dt=100A/µs	-	100	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on 1 in^2 copper pad of FR4 board, t $\leq$10sec; 60°C/W at steady state.

4.Package limitation current is 100A .

5.Starting T$_j$=25°C , V$_{DD}$=40V , L=0.3mH , R$_G$=25Ω
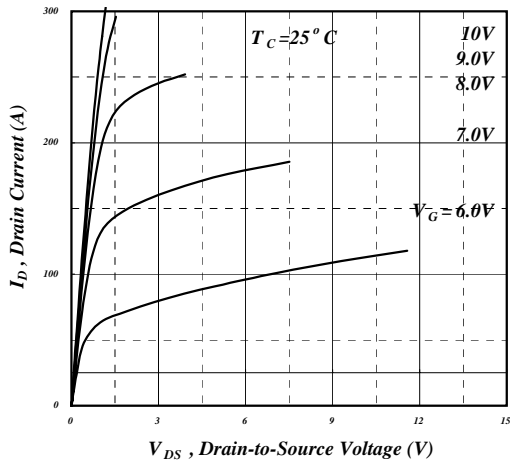
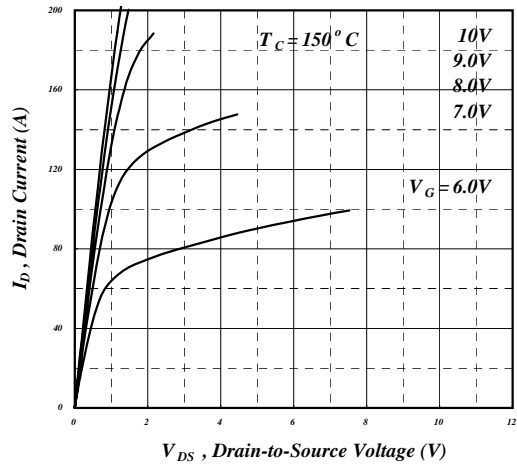**Fig 1. Typical Output Characteristics**

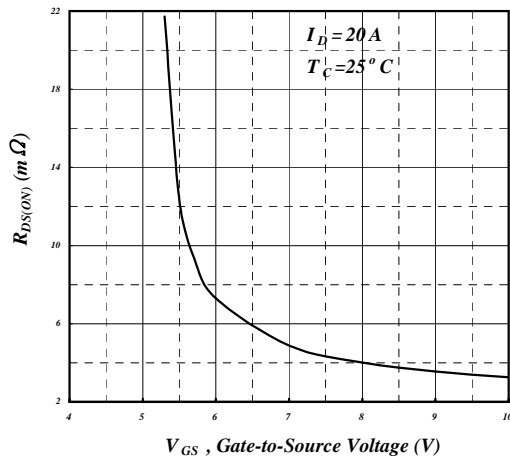**Fig 2. Typical Output Characteristics**

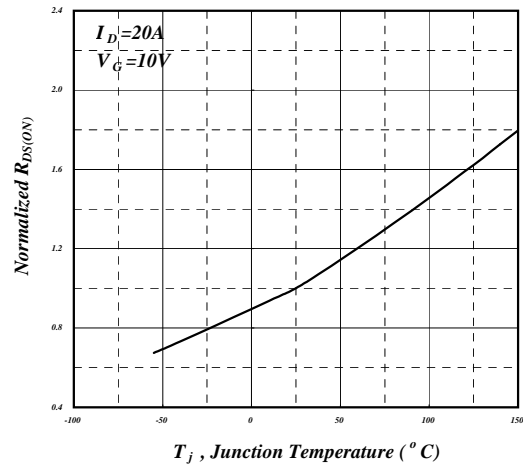**Fig 3. On-Resistance v.s. Gate Voltage**

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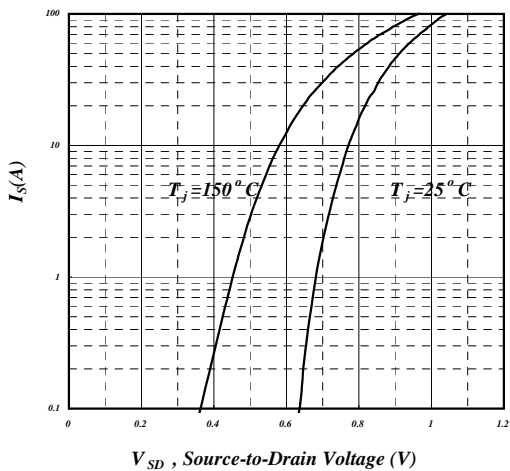v.s. Junction Temperature**

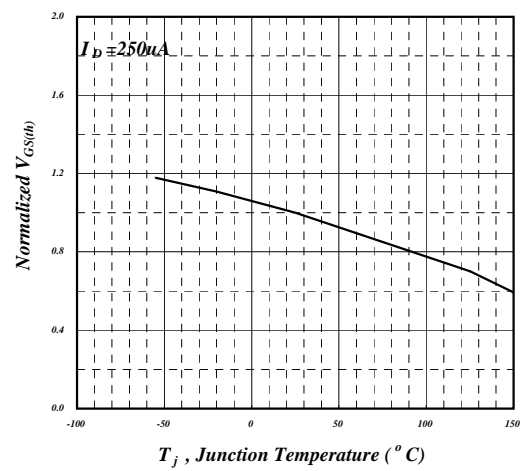**Fig 5. Forward Characteristic of
Reverse Diode**

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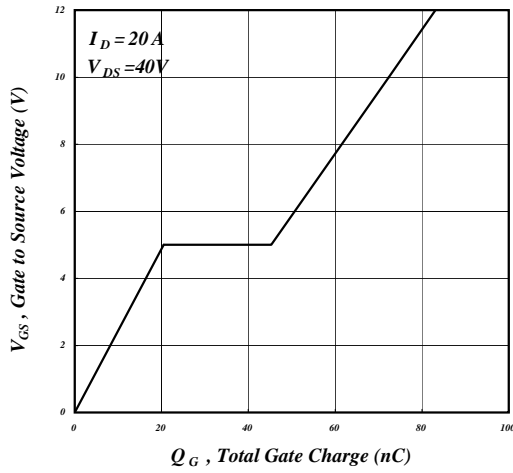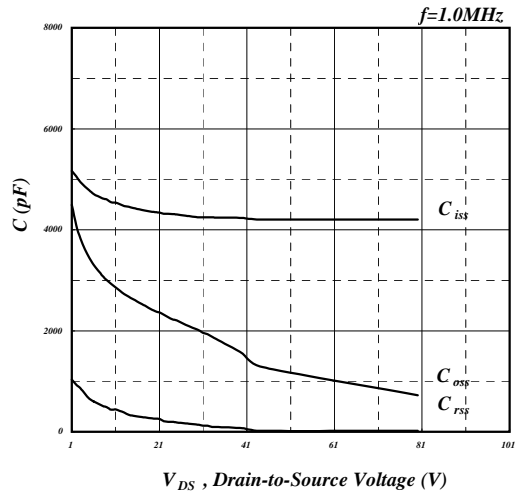Junction Temperature**

Fig 7. Gate Charge Characteristics
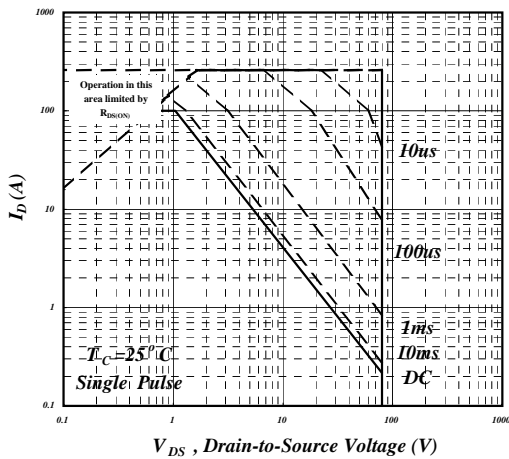
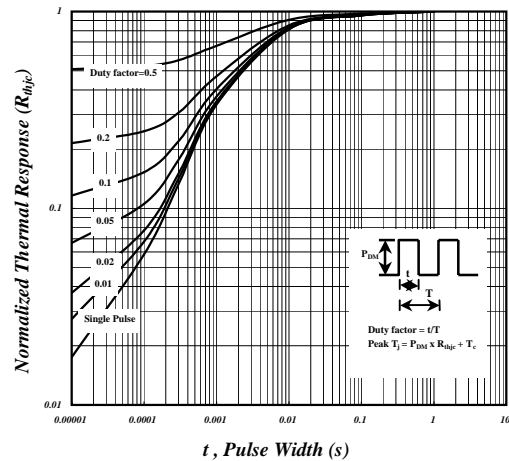Fig 8. Typical Capacitance Characteristics

Fig 9. Maximum Safe Operating Area

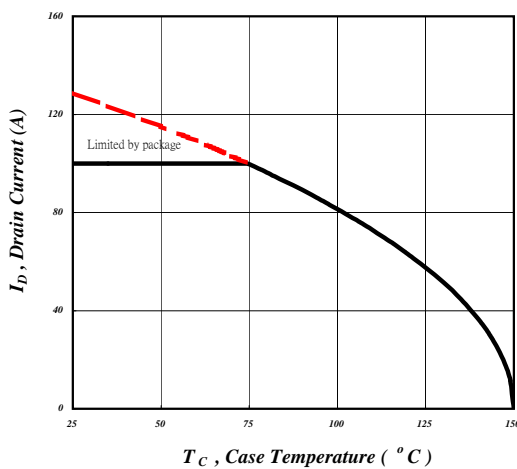Fig 10. Effective Transient Thermal Impedance
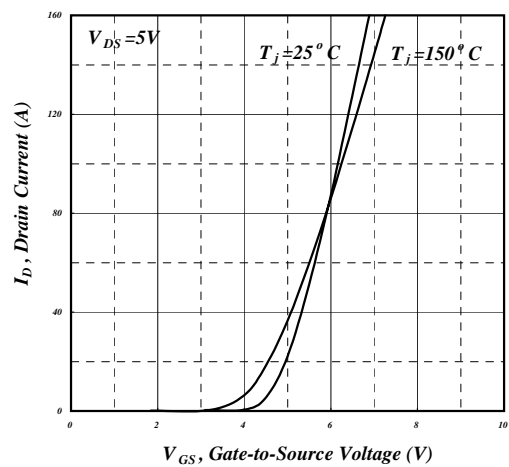
Fig 11. Drain Current v.s. Case Temperature
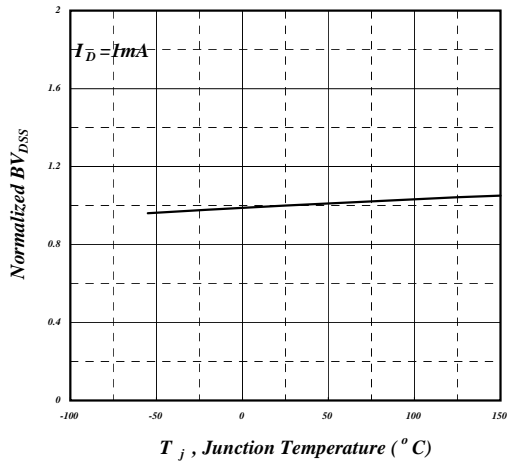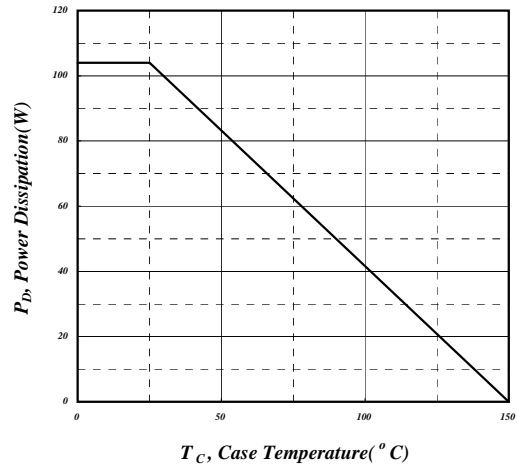
Fig 12. Transfer Characteristics

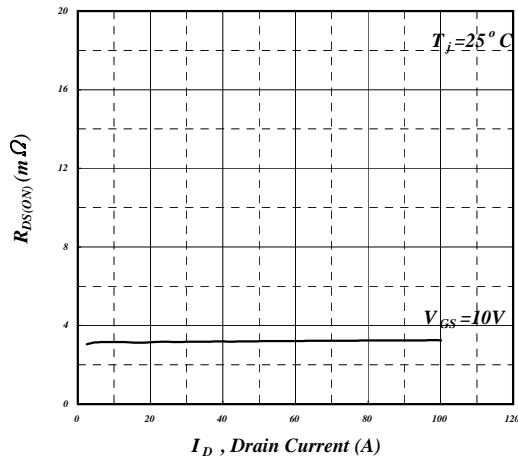Fig 13. Normalized BV$_{DSS}$ v.s. Junction Temperature
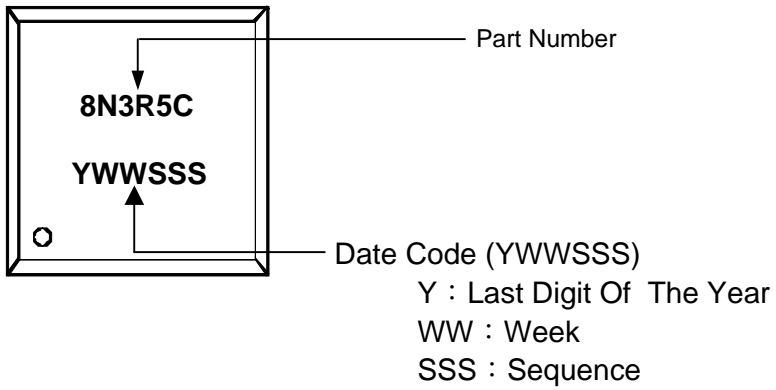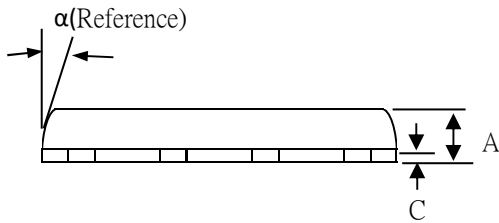
Fig 14. Total Power Dissipation

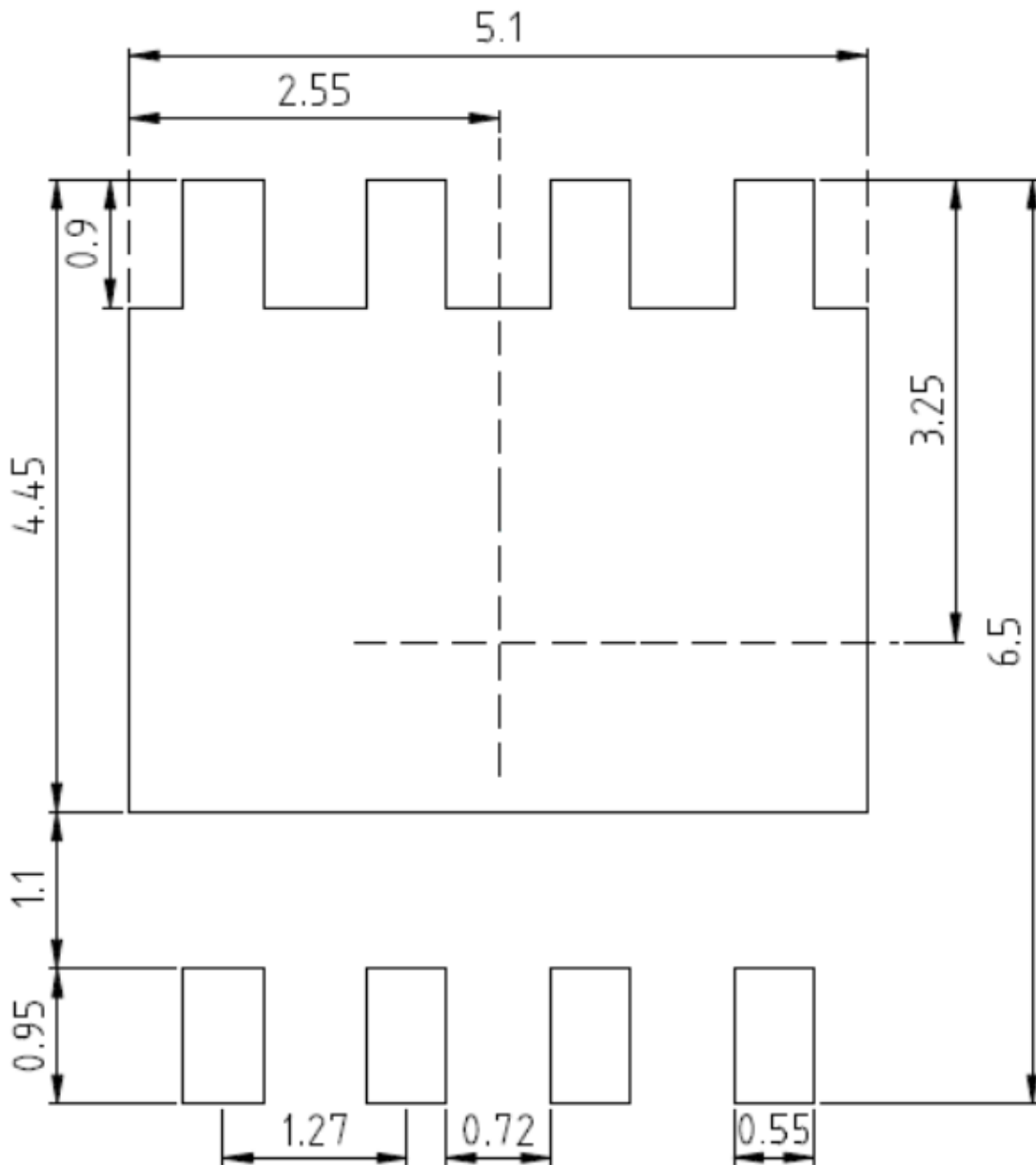Fig 15. Typ. Drain-Source on State Resistance

MARKING INFORMATION

Part Number

8N3R5C

YWWSSS

Date Code (YWWSSS)
Y：Last Digit Of The Year
WW：Week
SSS：Sequence

Package Outline : PMPAK 5x6

BACKSIDE VIEW

α(Reference)

SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.90	1.10	1.30
b	0.33	0.41	0.51
C	0.254(Ref.)		
D1	4.80	4.90	5.10
D2	3.61	4.00	4.40
E	5.80	6.03	6.25
E1 (Ref.)	5.60	5.75	5.90
E2 (Ref.)	3.30	3.55	3.80
e	1.27 BSC		
H	0.35	—	0.90
K (Ref.)	1.00	1.275	—
L	0.35	0.55	0.75
L1	0.06	0.13	0.20
α(Ref.)	0°	—	12°

1.All dimension are in millimeters.

2.Dimension does not include burrs and mold flash/protrusions.

3.The outline schematic is not to scale and slightly different from the actual product appearance.

Draw No. M1-MT-8-EIFMRL-G-v08

PMPAK 5X6(E-TYPE)　FOOTPRINT：

UNIT: mm