Halogen-Free Product

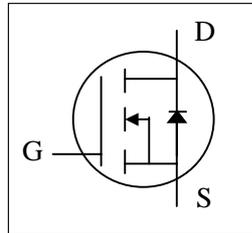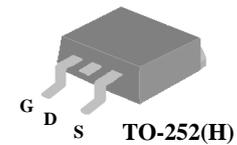**YAGEO**
XSEMI

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

▼ **Simple Drive Requirement**

▼ **Low On-resistance**

▼ **Fast Switching Characteristic**

▼ **RoHS Compliant & Halogen-Free**

BV_{DSS}	80V
$R_{DS(ON)}$	8mΩ
I_D	60A

TO-252(H)

Description

XP8N8R0 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.

TO-252 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for high current application due to the low connection resistance.

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	60	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	37.8	A
I_{DM}	Pulsed Drain Current[1]	200	A
P_D@T_C=25℃	Total Power Dissipation	52	W
P_D@T_A=25℃	Total Power Dissipation[4]	2	W
E_{AS}	Single Pulse Avalanche Energy[3]	45	mJ
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Maximum Thermal Resistance, Junction-case	2.4	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient (PCB mount)[4]	62.5	℃/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=30A	-	-	8	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=30A	-	46	-	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=30A	-	42	67.2	nC
Q_{gs}	Gate-Source Charge	V_{DS}=40V	-	13	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=10V	-	11.5	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=40V	-	15	-	ns
t_r	Rise Time	I_D=30A	-	58	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=6Ω	-	28	-	ns
t_f	Fall Time	V_{GS}=10V	-	63	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	2450	3920	pF
C_{oss}	Output Capacitance	V_{DS}=40V	-	930	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	35	-	pF
R_g	Gate Resistance	f=1.0MHz	-	1	2	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=30A, V_{GS}=0V	-	-	1.3	V
t_{rr}	Reverse Recovery Time	I_S=30A, V_{GS}=0V,	-	37	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/µs	-	28	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Starting T_j=25°C , V_{DD}=40V , L=0.1mH , R_G=25Ω

4.Surface mounted on 1 in^2 copper pad of FR4 board
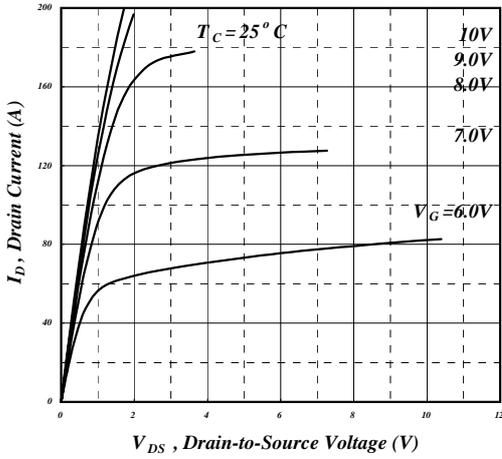
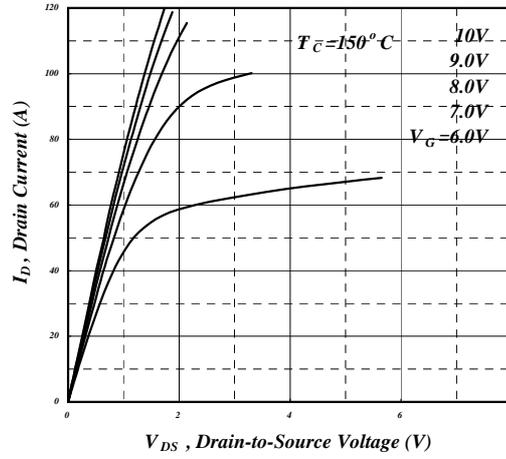**Fig 1. Typical Output Characteristics**

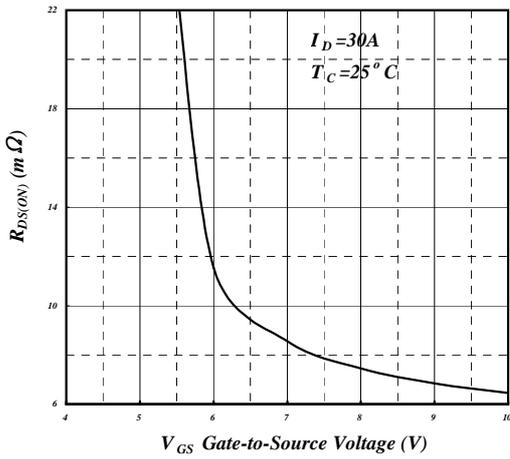**Fig 2. Typical Output Characteristics**

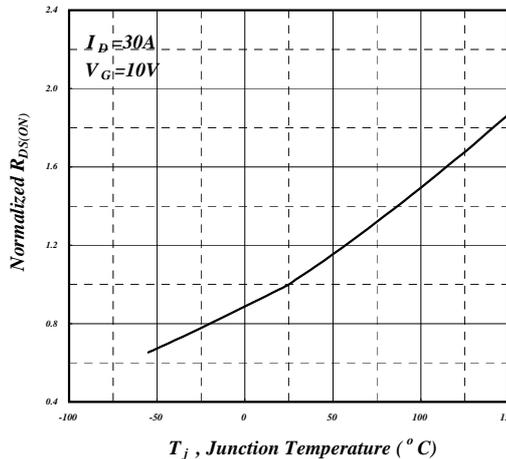**Fig 3. On-Resistance v.s. Gate Voltage**

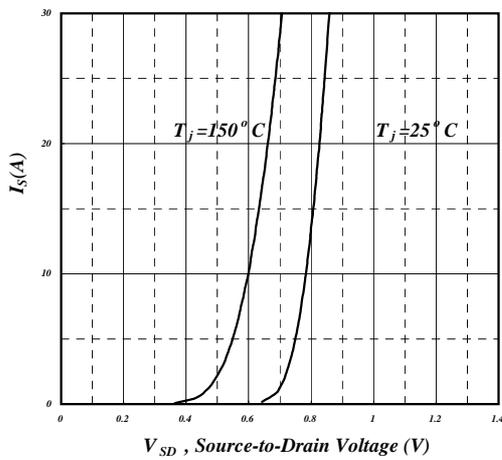**Fig 4. Normalized On-Resistance v.s. Junction Temperature**

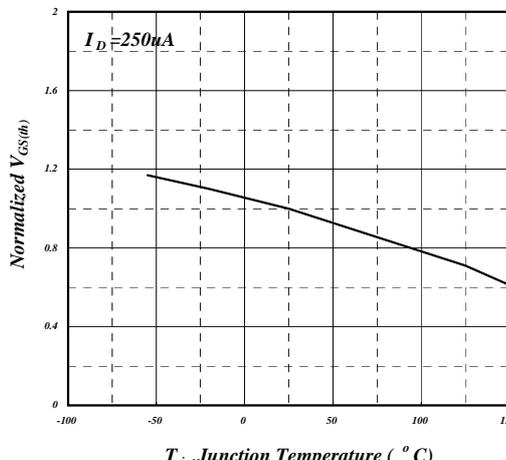**Fig 5. Forward Characteristic of Reverse Diode**

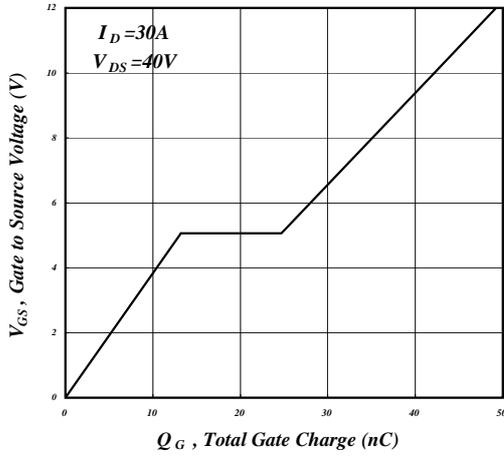**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**

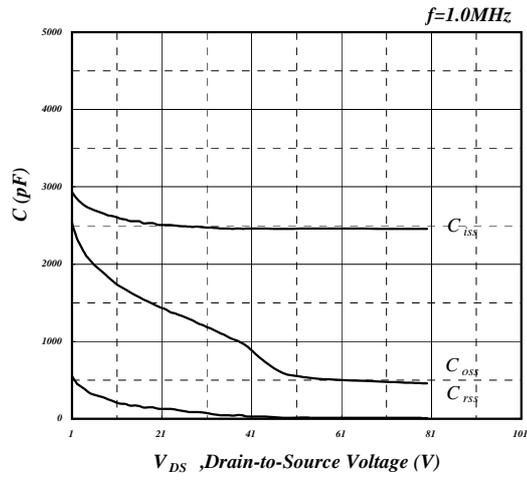Fig 7. Gate Charge Characteristics
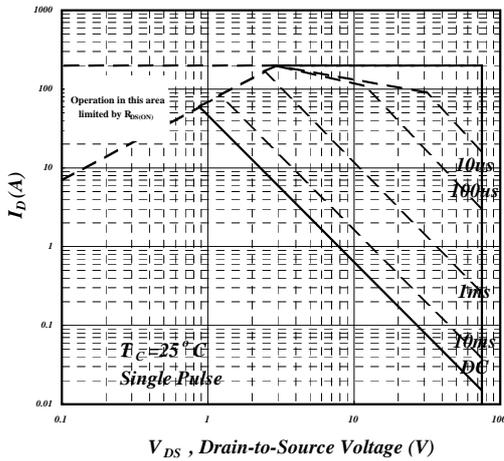

Fig 8. Typical Capacitance Characteristics
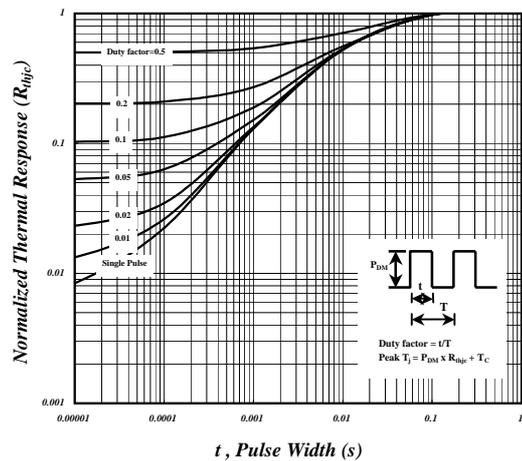

Fig 9. Maximum Safe Operating Area
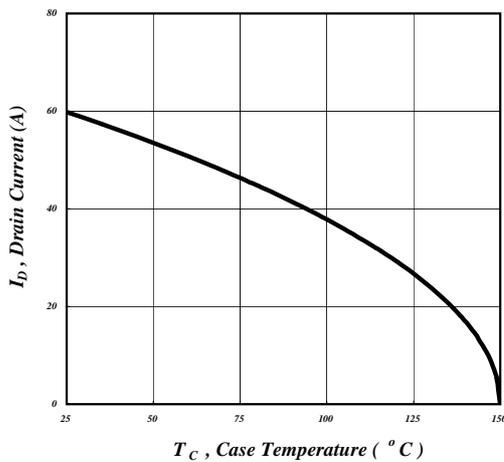

Fig 10. Effective Transient Thermal Impedance
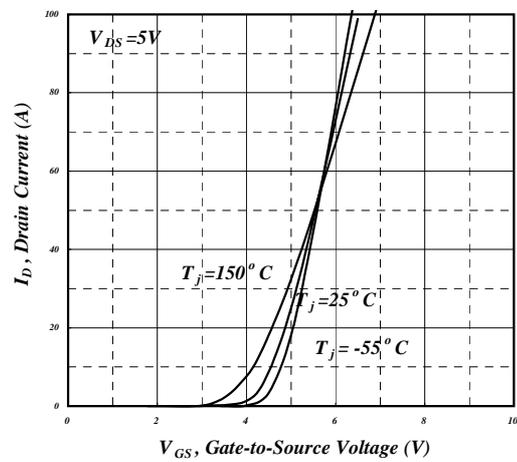

Fig 11. Drain Current v.s. Case Temperature

Fig 12. Transfer Characteristics
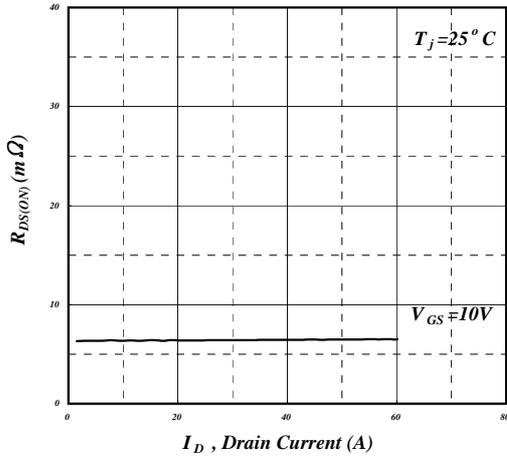
Fig 13.
$R_{DS(ON)}(m\Omega)$
$T_j=25^oC$
$V_{GS}=10V$
I_D , Drain Current (A)

Fig 13. Typ. Drain-Source on State Resistance

Fig 14.
P_D, Power Dissipation(W)
T_C, Case Temperature(^oC)
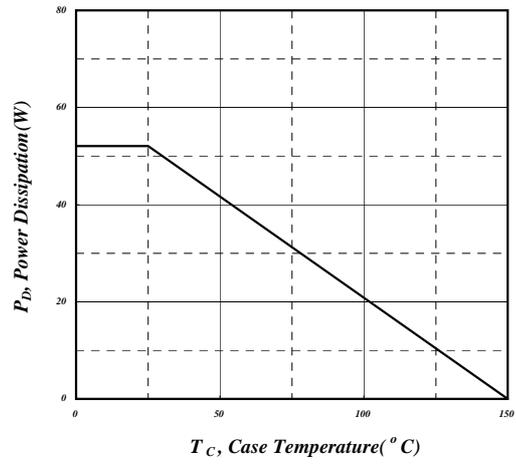
Fig 14. Total Power Dissipation

MARKING INFORMATION

Part Number

8N8R0

YWWSSS

Date Code (YWWSSS)
Y：Last Digit Of The Year
WW：Week
SSS：Sequence
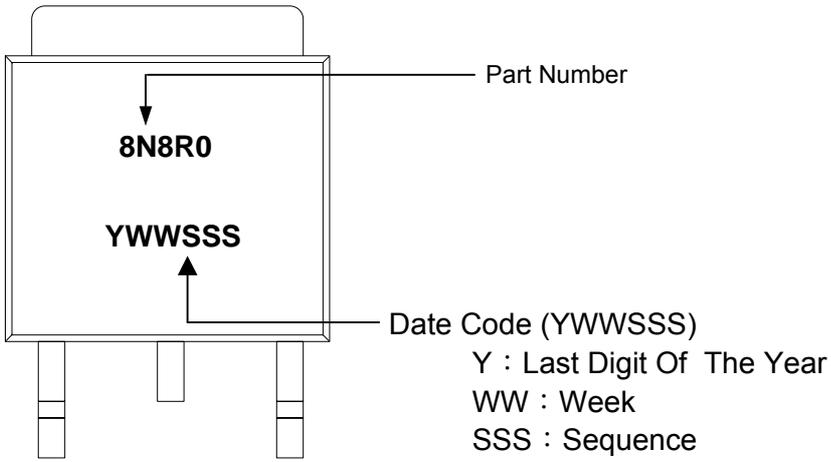
Package Outline : TO-252
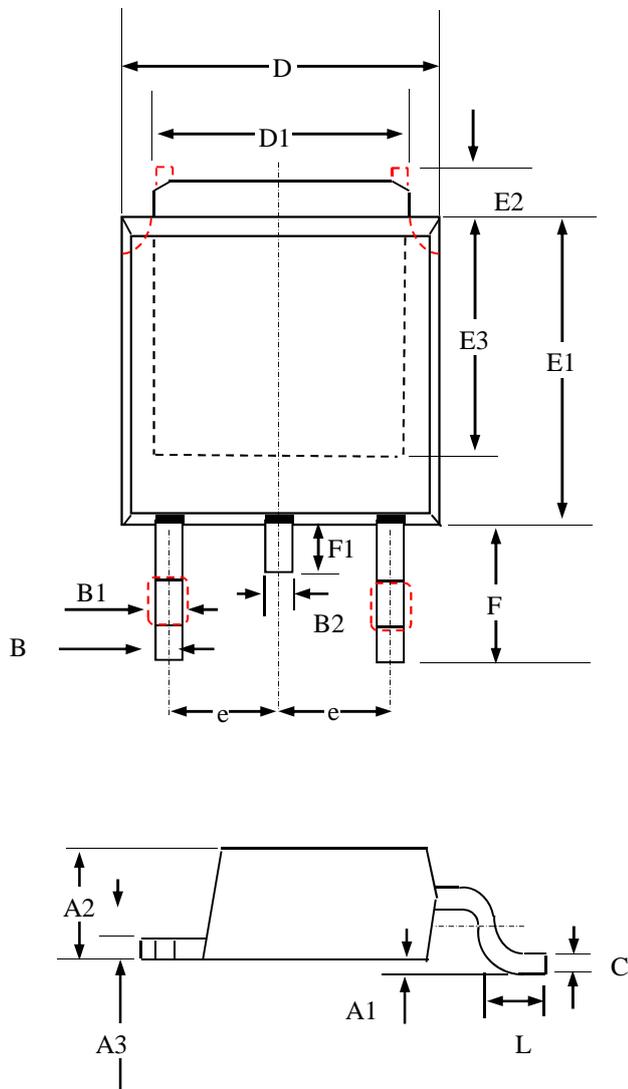
SYMBOLS	Millimeters		
	MIN	NOM	MAX
A2	2.18	2.30	2.40
A3	0.40	0.50	0.65
B	0.40	0.70	1.00
B1	0.50	0.85	1.20
D	6.00	6.50	6.80
D1	4.80	5.35	5.90
E3	4.00 (ref.)		
F	2.00	2.63	3.05
F1	0.50	0.85	1.20
E1	5.00	5.70	6.30
E2	0.50	1.10	1.80
e	2.3 (ref)		
C	0.35	0.525	0.70
A1	0.00	–	0.25
B2	–	–	1.25
L	0.90	1.34	1.78

1.All Dimensions Are in Millimeters.

2.Dimension Does Not Include Mold Protrusions.

3. Thermal PAD, Body and Pin contour is for reference, it may has little difference by option.

Draw No. M1-H3EFIMT-G-v10

TO-252 FOOTPRINT：

UNIT: mm