XP60CM190EDT8

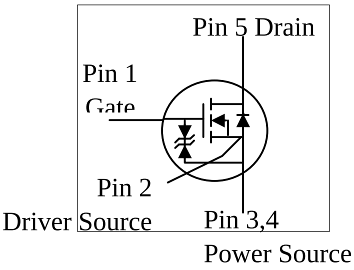
Halogen-Free Product

YAGEO XSEMI

N-CHANNEL ENHANCEMENT MODE

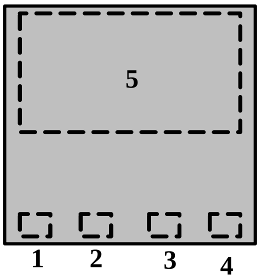
POWER MOSFET

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



BV_{DSS}	600V
$R_{DS(ON)}$	0.19Ω
I_D [3,4]	21.6A

Top View



PDFN 8X8_HV

Description

XP60CM190E 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 PDFN 8X8_HV package is a very low profile for commercial-industrial surface mount application and suited for switching power converters.

Absolute Maximum Ratings@T_j=25^{o}C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	$\pm$20	V
V_{GS}	Gate-Source Voltage, AC (f > 1Hz)	$\pm$30	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V[3,4]	21.6	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V[3,4]	13.6	A
I_{DM}	Pulsed Drain Current[1]	55	A
dv/dt	MOSFET dv/dt Ruggedness (V_{DS} = 0 …480V)	20	V/ns
P_D@T_C=25℃	Total Power Dissipation	104	W
P_D@T_A=25℃	Total Power Dissipation[7]	2.5	W
E_{AS}	Single Pulse Avalanche Energy[5]	200	mJ
dv/dt	Peak Diode Recovery dv/dt[6]	50	V/ns
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	1.2	℃/W
Rthj-a	Maximum Thermal Resistance, Junction-ambient[7]	50	℃/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=6A	-	-	0.19	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	-	4	V
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=6A	-	13	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=480V, V_{GS}=0V	-	-	100	uA
I_{GSS}	Gate-Source Leakage	V_{GS}=$\pm$20V, V_{DS}=0V	-	-	$\pm$1	uA
Q_g	Total Gate Charge[8]	I_D=6A	-	33	53	nC
Q_{gs}	Gate-Source Charge[8]	V_{DS}=480V	-	7	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge[8]	V_{GS}=10V	-	12	-	nC
$t_{d(on)}$	Turn-on Delay Time[8]	V_{DD}=300V	-	14	-	ns
t_r	Rise Time[8]	I_D=6A	-	17	-	ns
$t_{d(off)}$	Turn-off Delay Time[8]	R_G=3.3Ω	-	61	-	ns
t_f	Fall Time[8]	V_{GS}=10V	-	19	-	ns
C_{iss}	Input Capacitance[8]	V_{GS}=0V	-	1370	2192	pF
C_{oss}	Output Capacitance[8]	V_{DS}=100V	-	40	-	pF
C_{rss}	Reverse Transfer Capacitance[8]	f=1.0MHz	-	10	-	pF
R_g	Gate Resistance	f=1.0MHz	-	9.5	19	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=6A, V_{GS}=0V	-	-	1.5	V
t_{rr}	Reverse Recovery Time[8]	I_S=6A, V_{GS}=0V	-	215	-	ns
Q_{rr}	Reverse Recovery Charge[8]	dI/dt=100A/μs	-	2	-	μC

Notes:

1.Pulse width limited by max. junction temperature.

2.Pulse test

3.Limited by max. junction temperature. Maximum duty cycle D=0.5

4.Ensure that the junction temperature does not exceed $T_{Jmax.}$.

5.Starting T_j=25°C , V_{DD}=90V , L=100mH , R_G=25Ω , V_{GS}=10V , I_{AS}=2A

6.$I_{SD} \leqq I_D$, $V_{DD} \leqq BV_{DSS}$, starting T_J = 25°C

7.Surface mounted on 1 in^2 copper pad of FR4 board

8.Guaranteed by design.

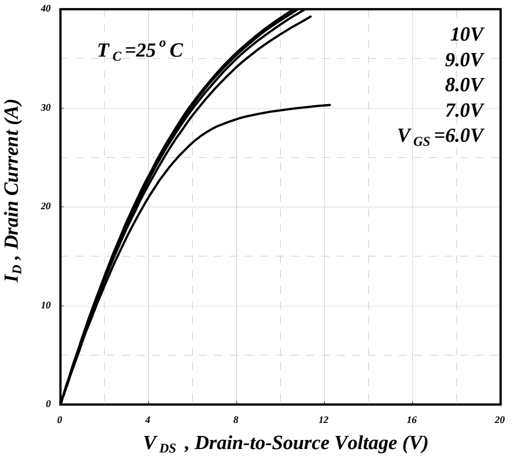


Fig 1. Typical Output Characteristics

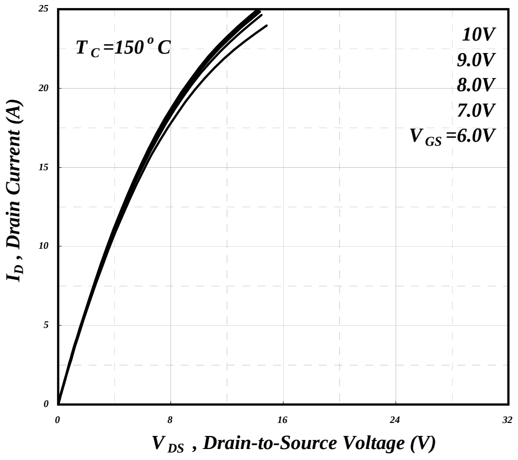


Fig 2. Typical Output Characteristics

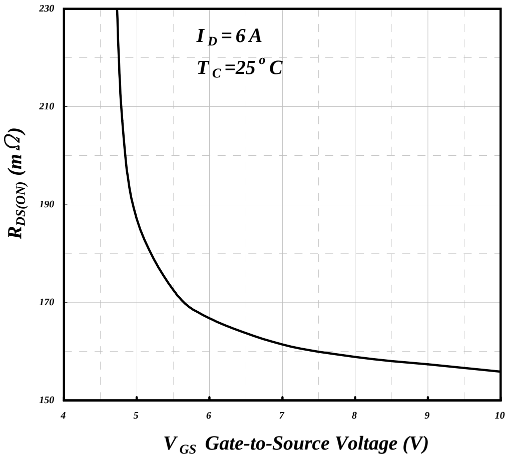


Fig 3. On-Resistance v.s. Gate Voltage

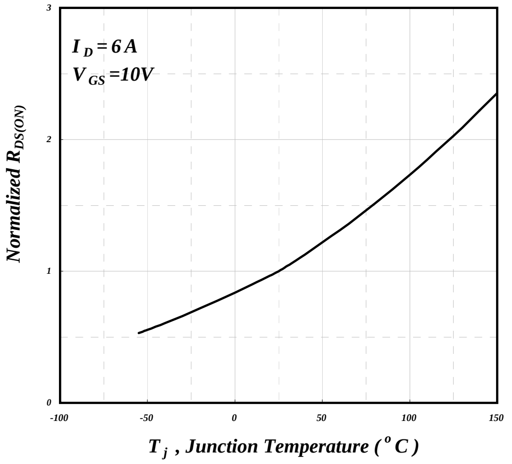


Fig 4. Normalized On-Resistance v.s. Junction Temperature

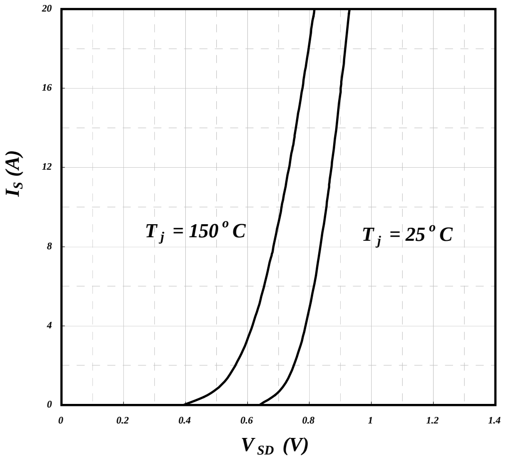


Fig 5. Forward Characteristic of Reverse Diode

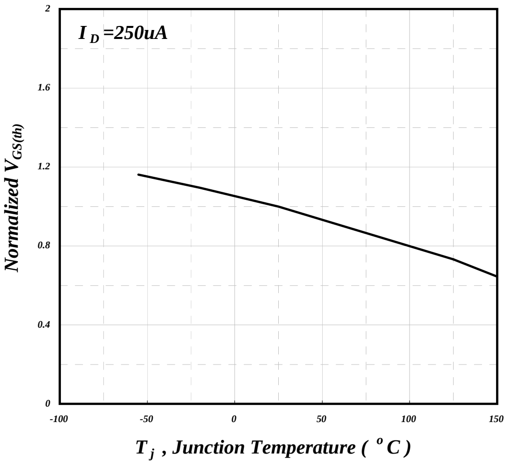
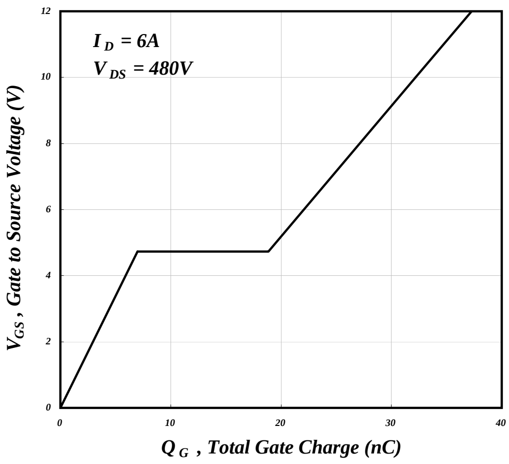


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



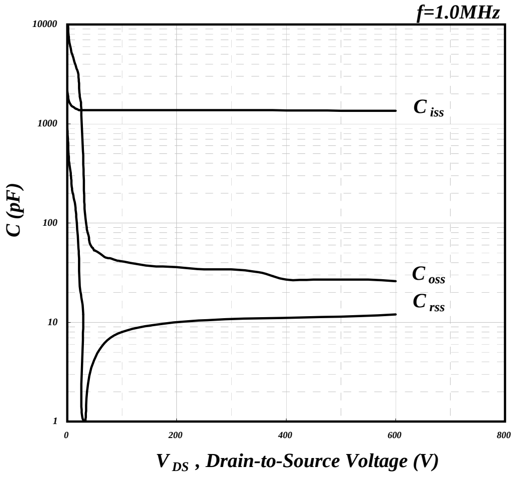
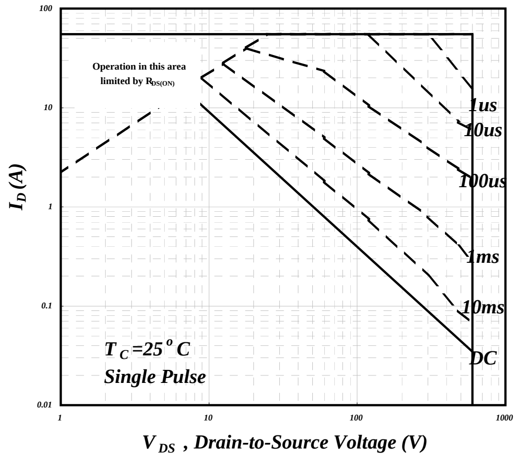


Fig 7. Gate Charge Characteristics

Fig 8. Typical Capacitance Characteristics



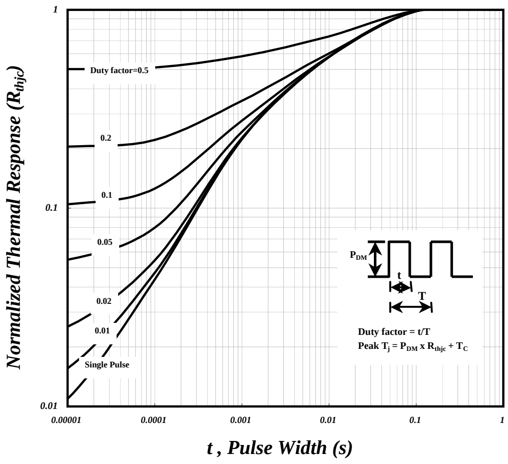
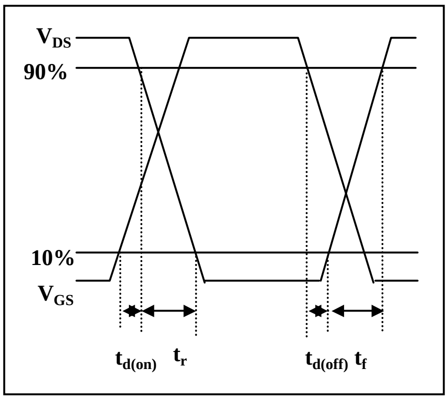


Fig 9. Maximum Safe Operating Area

Fig10. Effective Transient Thermal Impedance



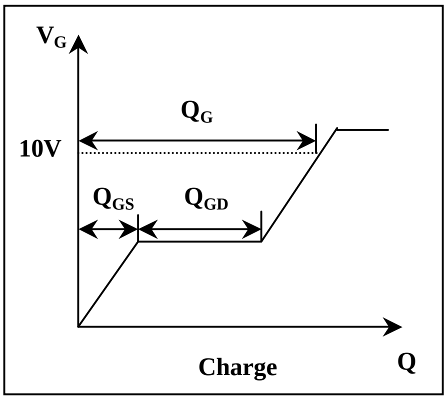


Fig 11. Switching Time Waveform

Fig 12. Gate Charge Waveform

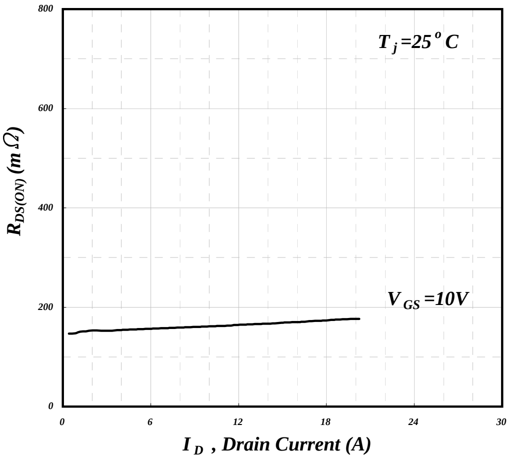


Fig 13. Typ. Drain-Source on State Resistance

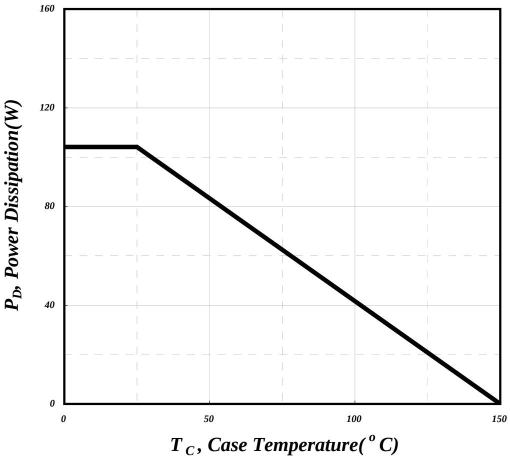


Fig 14. Total Power Dissipation

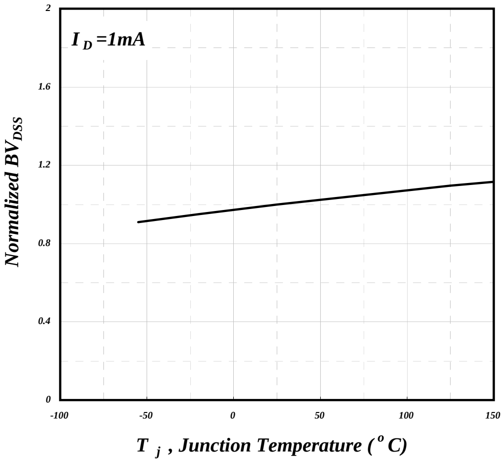
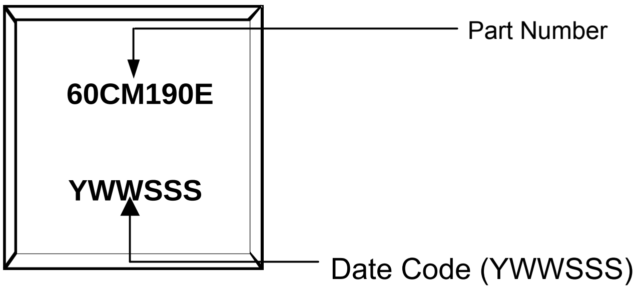


Fig 15. Normalized BV_{DSS} v.s. Junction Temperature

MARKING INFORMATION



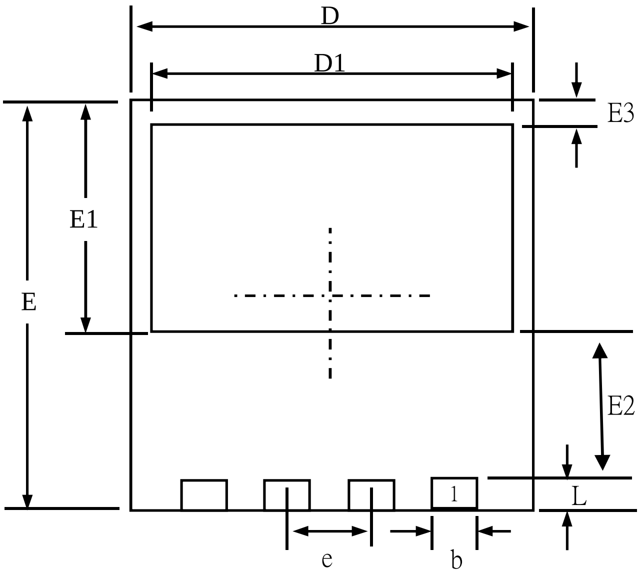
Date Code (YWWSSS)

Y：Last Digit Of The Year

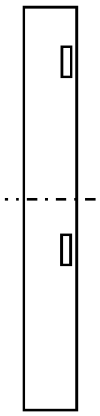
WW ：Week

SSS：Sequence

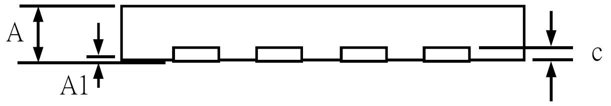
Package Outline : PDFN 8x8_HV



BOTTOM VIEW



SYMBOLS	Millimeters		
	MIN	NOM	MAX
A	0.75	0.93	1.10
A1	0.00	--	0.05
b	0.90	1.00	1.10
c	0.10	0.20	0.30
D	7.90	8.00	8.10
D1	7.10	7.20	7.30
E	7.90	8.00	8.10
E1	4.25	4.55	4.85
E2	2.65	2.75	2.85
E3	0.30	0.40	0.50
e	2.00BSC		
L	0.40	0.50	0.60

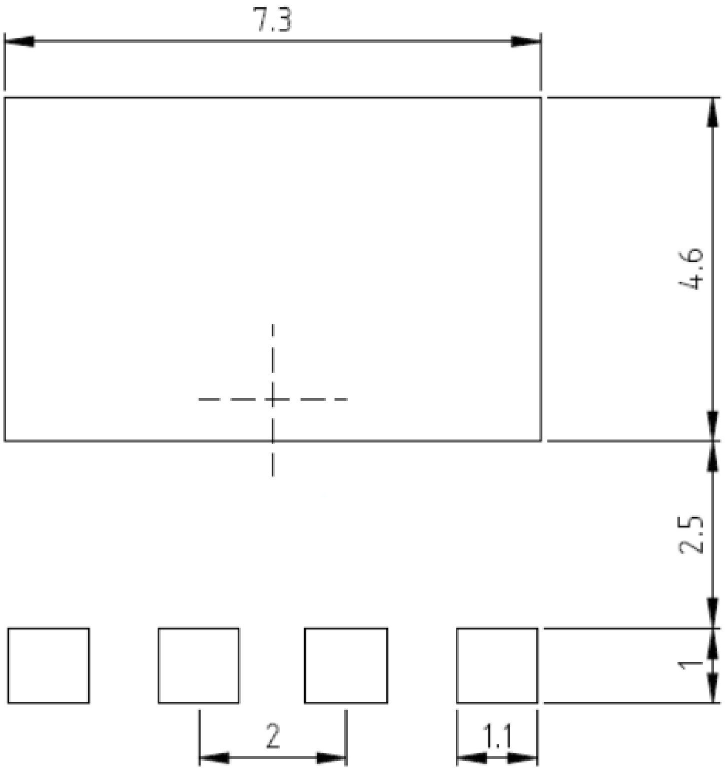


1.All Dimension Are In Millimeters.

2.Dimension Does Not Include Burrs And Mold Flash.

Draw No. M1-DT8EF-G-v03

PDFN 8x8 HV FOOTPRINT：



UNIT: mm