



XTGF65N08Y

650V GaN HEMT Product Description

BV_{DSS}	650	V
I_D	8	A
$R_{DS(ON), Typ.}$	0.3	Ω

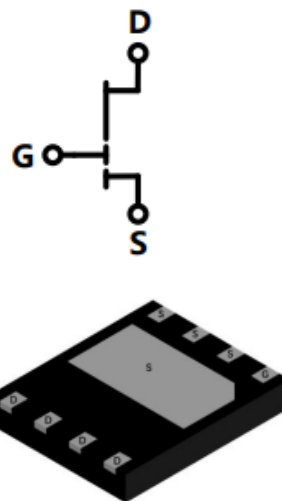
General Features

- Low conduction and switching losses
- no free-wheeling diode required
- RoHS compliant and Halogen-free

Applications

- Fast charger
- Renewable energy
- Telecom and data-com
- Servo motors
- Industrial

封装 Package



PQFN(5×6)

Device	Package	Marking
XTGF65N08Y	PQFN(5×6)	XTGF65N08Y

Absolute Maximum Ratings $T_j=25^{\circ}\text{C}$

Symbol	Parameter		Value	Unit
V_{DSS}	Drain-to-Source Voltage		650	V
$V_{DS(transient)}$	Drain to source voltage-transient		750	
V_{GSS}	Gate-to-Source Voltage		-10~+7	
I_D	Continuous Drain Current		8	A
	Continuous Drain Current @ $T_c=125^{\circ}\text{C}$		3.5	
I_{DM}	Pulse drain current (pulse width: 300 μs) @ $TC=25^{\circ}\text{C}$		11	
	Pulse drain current (pulse width: 300 μs) @ $TC=125^{\circ}\text{C}$		6	
P_D	Maximum power dissipation @ $TC=25^{\circ}\text{C}$		38	W
T_C	Operating temperature	Case	-55~150	$^{\circ}\text{C}$
T_J		Junction	-55~175	
T_S	Storage temperature		-55 to 150	



Caution: Stresses greater than those listed in the “Absolute Maximum Ratings” may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Junction-to-Case	3.3	$^{\circ}\text{C/W}$

Electrical Characteristics $T_j=25^{\circ}\text{C}$

OFF Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
BV_{DSS}	Drain-to-Source Voltage	650	-	-	V	$V_{GS}=0V$
I_{DSS}	Drain-to-Source Leakage Current	-	1	10	μA	$V_{DS}=650V, V_{GS}=0V$
		-	10	50		$V_{DS}=650V, V_{GS}=0V, T_j=150^{\circ}\text{C}$
I_{GSS}	Gate-to-Source Leakage Current	-	60	-	μA	$V_{GS}=6V, V_{DS}=0V$

ON Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
$R_{DS(ON)}$	Drain-Source On-Resistance	-	300	-	$m\Omega$	$V_{GS}=6V, I_D=1A, T_j=25^{\circ}\text{C}$
		-	660	-	$m\Omega$	$V_{GS}=6V, I_D=1A, T_j=150^{\circ}\text{C}$
$V_{GS(TH)}$	Gate Threshold Voltage	-	2.5	-	V	$I_{DS}=10 \mu A/mm, V_{DS}=1V, T_j=25^{\circ}\text{C}$
	Gate Threshold Voltage	-	3	-	V	$I_{DS}=10 \mu A/mm, V_{DS}=1V, T_j=125^{\circ}\text{C}$

**Dynamic Characteristics**

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
C _{iss}	Input Capacitance	-	46	-	pF	VGS=0V, VDS=400V, f=1MHz
C _{rss}	Reverse Transfer Capacitance	-	0.7	-		
C _{oss}	Output Capacitance	-	18	-		
Q _g	Total Gate Charge	-	1.0	-	nC	VDS=400V, VGS=0V to 6V, ID=1A
Q _{gs}	Gate-to-Source Charge	-	0.2	-		
Q _{gd}	Gate-to-Drain (Miller) Charge	-	0.4	-		

Reverse Device Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Condition
V _{SD}	Reverse voltage	-	3	-	V	VGS=0V, ISD=3A
Q _{rr}	Reverse Recovery Charge	-	0	-	nC	ISD=3A, VDS=400V



Electrical characteristics ($T_c=25^{\circ}\text{C}$ unless otherwise stated)

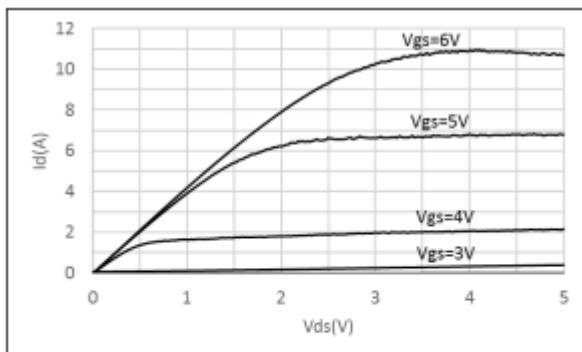


Figure 1. Typical output characteristics
 $T_j=25^{\circ}\text{C}$

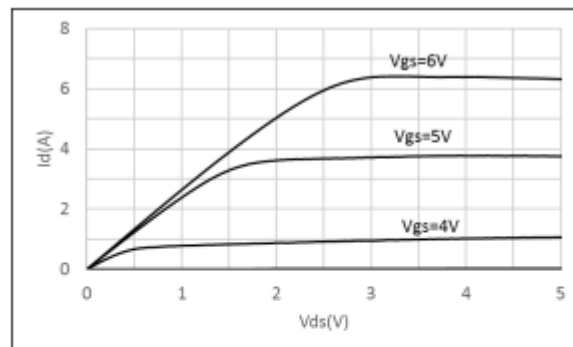


Figure 2. Typical output characteristics
 $T_j=125^{\circ}\text{C}$

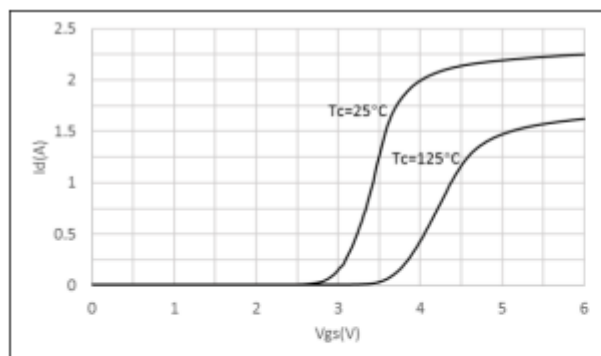


Figure 3. Typical transfer characteristics
 $V_{ds}=1\text{V}$

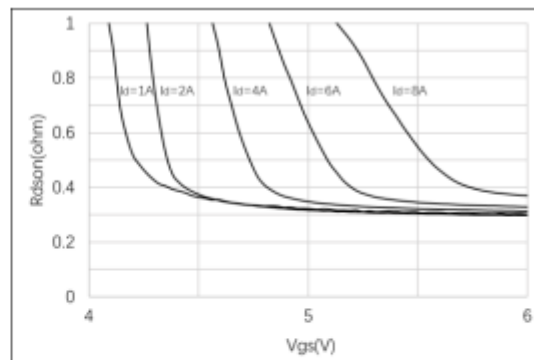


Figure 4. Typical on-state resistance
 $T_j=25^{\circ}\text{C}$

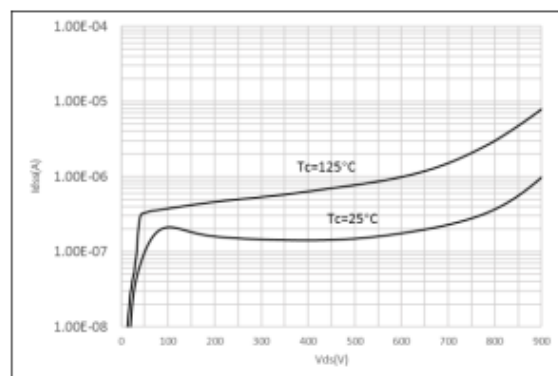


Figure 5. Drain-source leakage characteristics

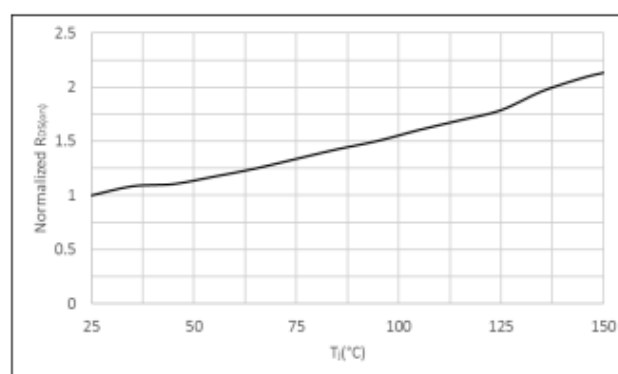


Figure 6. Drain-source on-state resistance



Electrical characteristics (Tc=25°C unless otherwise stated)

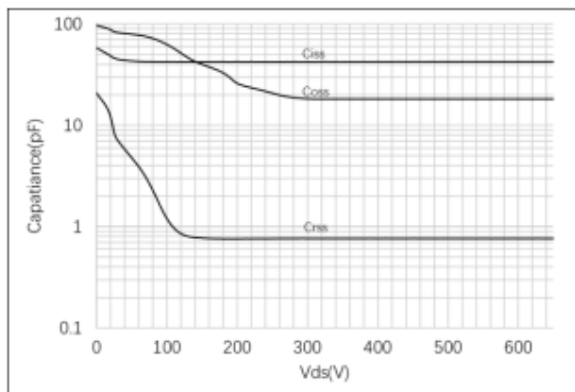


Figure 7. Typical capacitance
 $f=1\text{MHz}$

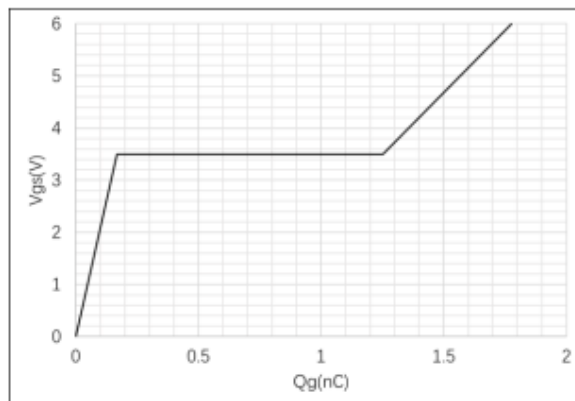


Figure 8. Typical gate charge
 $V_{ds}=400\text{V}; I_d=1\text{A}$

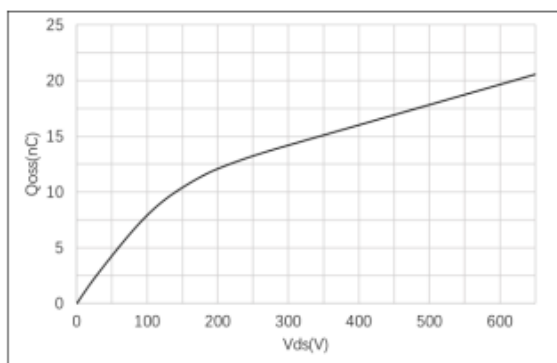


Figure 9. Typical output charge
 $f=1\text{MHz}$

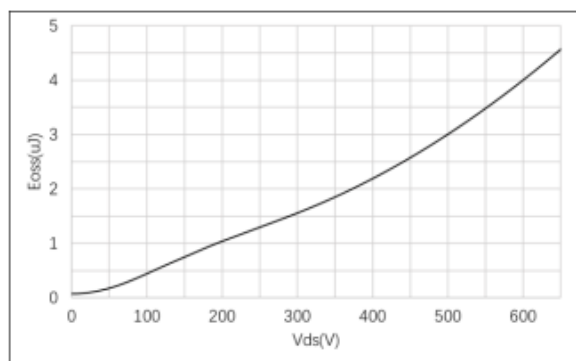


Figure 10. Typical Coss stored energy
 $f=1\text{MHz}$



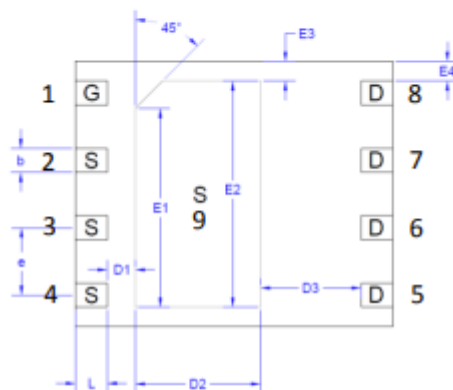
PACKAGE DIMENSIONS

DFN5*6-8L-A

Top View



Bottom View



Side View(left/right)



Symbol	Min. (mm)	Mean. (mm)	Max. (mm)
A	0.85	0.90	0.95
A1	0	0.02	0.05
A2	0.203REF		
D	5.9	6	6.1
E	4.9	5	5.1
D1	0.43	0.53	0.63
D2	2.27	2.37	2.47
D3	1.8	1.9	2
E1	3.65	3.75	3.85
E2	4.16	4.26	4.36
E3	0.27	0.37	0.47
E4	0.27	0.37	0.47
b	0.4	0.45	0.5
e	1.17	1.27	1.37
L	0.5	0.6	0.7