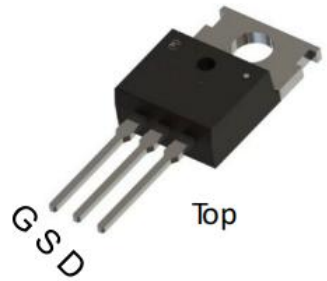
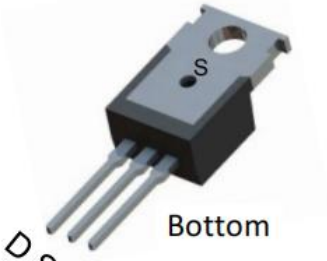
HGT65R110D2-NN

GaN Power Device

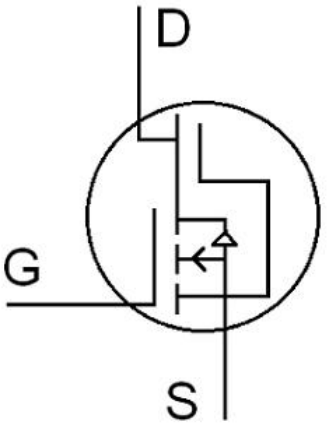
● Descriptions:

HGT65R110D2-NN is a 650V GaN power device with enhancement-mode operation and belongs to Huake GaN Series. It combines a low voltage Si MOSFET and a high voltage GaN device, compose cascode circuit. It is extremely easy to use, Fully compatible with conventional gate drivers. It features excellent gate noise immunity and is fully compatible with conventional gate drivers for Si MOSFET.HGT65R110D2-NN also features low on-resistance and low intrinsic capacitance with low reverse recovery charge, that enable the device to switch at extremely high frequency with low energy loss. The device is suitable for high voltage high power conversions with improved power density.





TO-220C



● Features:

- 21.0A, 650V, $R_{DS(on)(Typ)}$ =110mΩ@V_{GS}=10V
- Low gate charge
- Low C_{rss}
- Fast switching
- Easy to use
- Fully compatible with conventional gate drivers

● Application:

- High frequency switching mode power supply
- Servo motors
- Adapter

Absolute Maximum Ratings(Tc=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DSS}	Drain-Source Voltage	650	V
I_D	Drain Current - Continuous(Tc=25°C) note	21	A
	Drain Current - Continuous(Tc=125°C) note	9	A
I_{DM}	Pulse Drain Current -Pulse Width:10us	35	A
V_{GSS}	Gate-Source Voltage	±20	V
P_D	Power Dissipation(T_C =25°C)	125	W
Tj	Operating Junction Temperature	150	°C
Tstg	Storage Temperature Range	-55 to+150	°C

note:For increased stability at high current operation

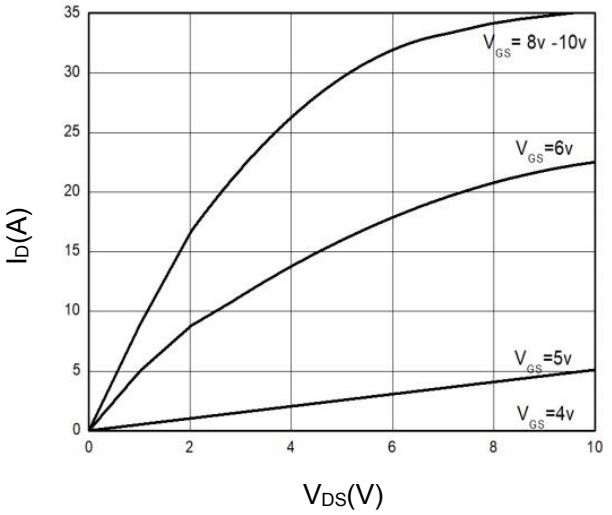
Electrical Characteristics(Tc=25°C unless otherwise noted)

Symbol	Parameter	Test Conditons	Min	Typ	Max	Unit
Off Characteristics						
V_{DSS}	Drain-source Voltage	V_{GS}=0V ,I_D=250μA	650	--	--	V
I_{DSS}	Drain-to-source Leakage current	V_{DS}=650V,V_{GS}=0V	--	--	10	μA
		V_{DS}=520V,Tc=125°C	--	--	100	μA
I_{GSSF}	Gate-Body Leakage Current,Forward	V_{GS}=+20V, V_{DS}=0V	--	--	1	μA
I_{GSSR}	Gate-Body Leakage Current,Reverse	V_{GS}=-20V, V_{DS}=0V	--	--	-1	μA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=1mA	3.0	3.9	5.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS}=10 V, I_D=1.0A	--	110	160	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=400V,V_{GS}=0V, f=1.0MHz	--	330	--	pF
C_{oss}	Output Capacitance		--	33	--	pF
C_{rss}	Reverse Transfer Capacitance		--	1.6	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 400 V, I_D = 2.1 A, V_{GS}=0 to 10V, $R_{G-on(ext)}$=6.8Ω, $R_{G-off(ext)}$=2.2Ω, L=250μH	--	4.4	--	ns
t_r	Turn-On Rise Time		--	7.3	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	8	--	ns
t_f	Turn-Off Fall Time		--	30	--	ns
Q_g	Total Gate Charge	V_{DS} = 400 V, I_D =1.0 A, V_{GS}=0 to 10V,	--	6.9	--	nC
Q_{gs}	Gate-Source Charge		--	2	--	nC
Q_{gd}	Gate-Drain Charge		--	3	--	nC
Q_{oss}	Output Charge	V_{DS}=0 to 400V, V_{GS} = 0 V, f=1.0MHz,	--	48	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} =0V,I_S=10A	--	2.1	--	V
t_{rr}	Reverse Recovery Time	V_{DD} =400V, I_F=10 A, d I_F /dt=165A/μs	--	14	--	ns
Q_{rr}	Reverse Recovery Charge		--	6.5	--	nC

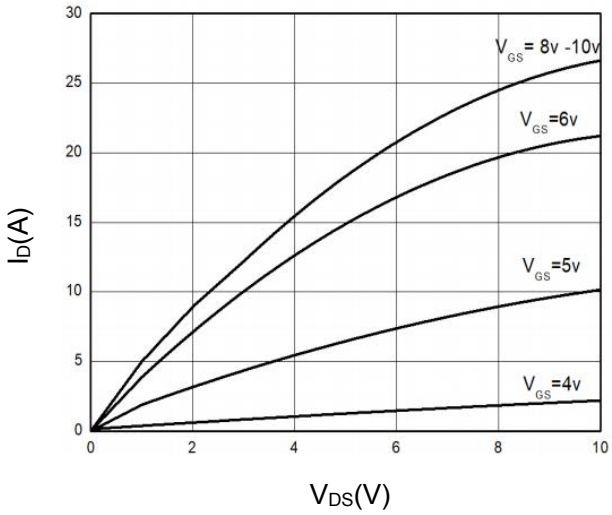
Thermal Characteristics

Symbol	Parameter	Max	Unit
$R_{\theta JC}$	Thermal Resistance,Junction to Case	1.0	°C /W

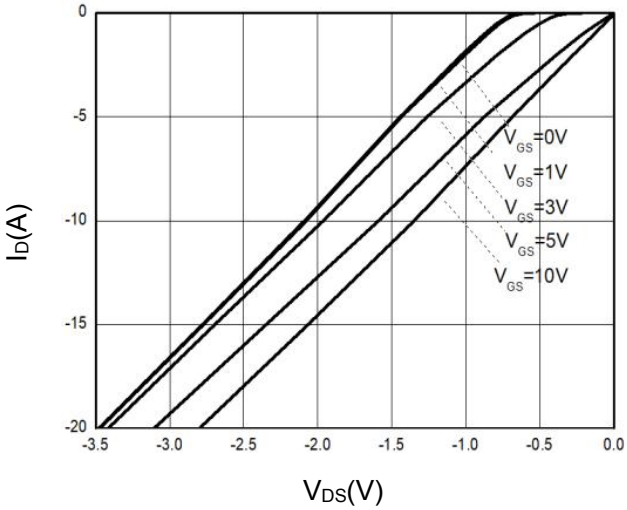
Typical Output Characteristic,Tj=25°C



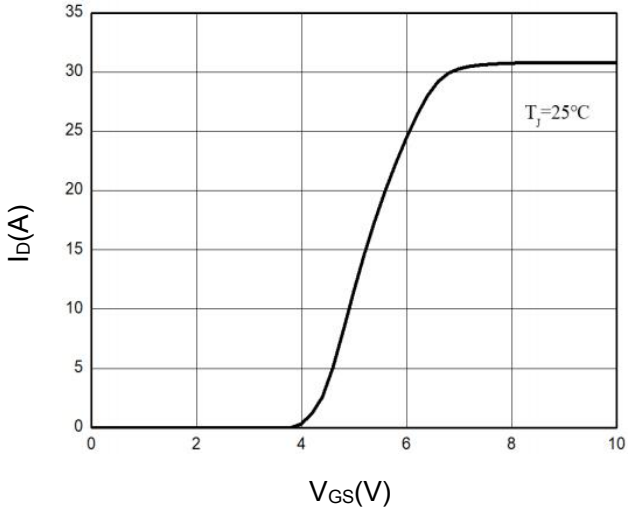
Typical Output Characteristic,Tj=125°C



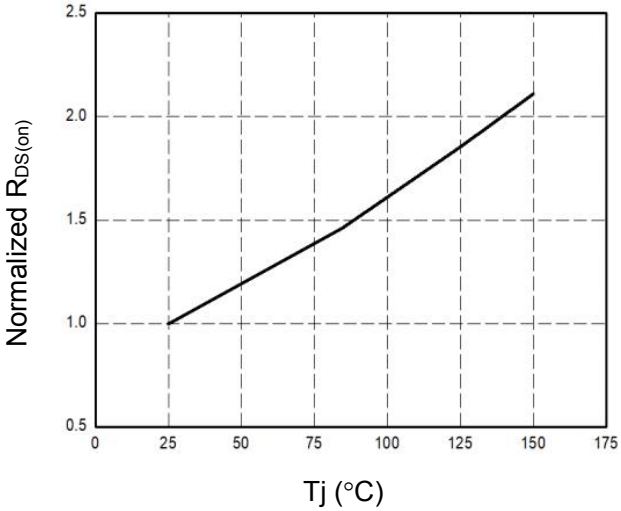
Channel Reverse Characteristic,Tj=25°C



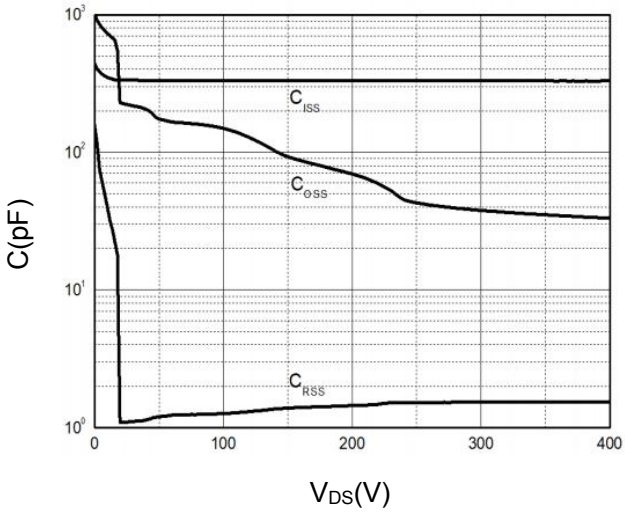
Typical Transfer Characteristics (V_{DS}=10V)



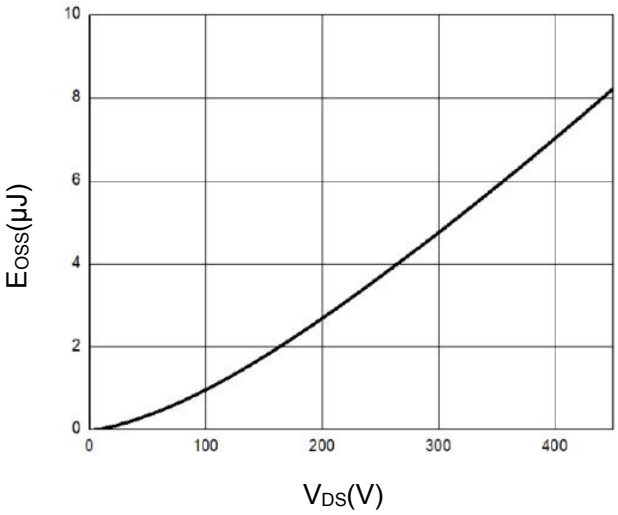
Normalized On-resistance



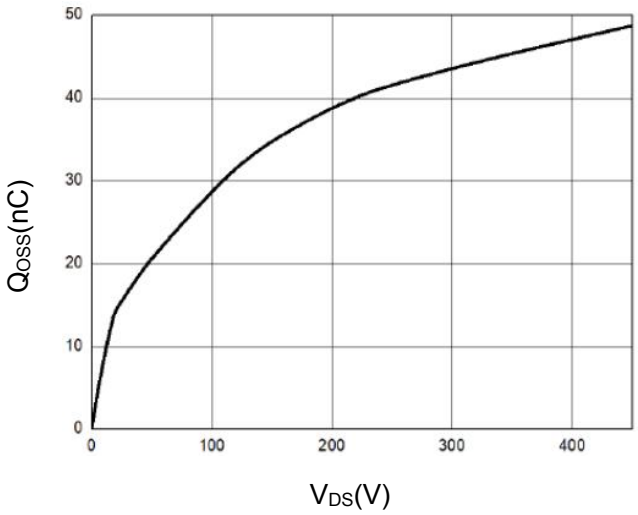
Typical Capacitance (f=1MHz)



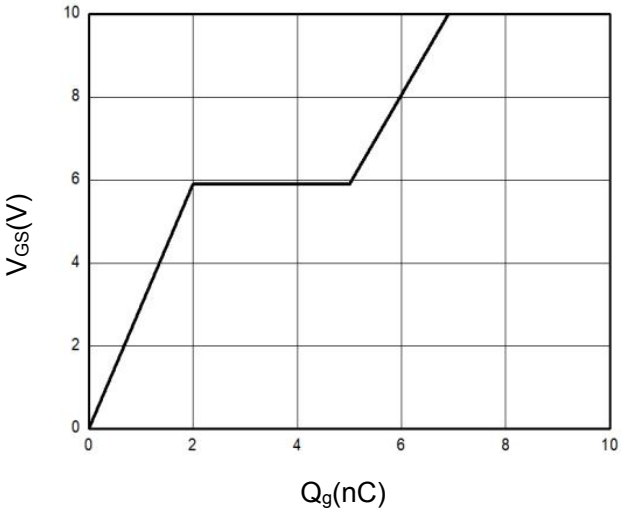
Typical Coss Stored Energy



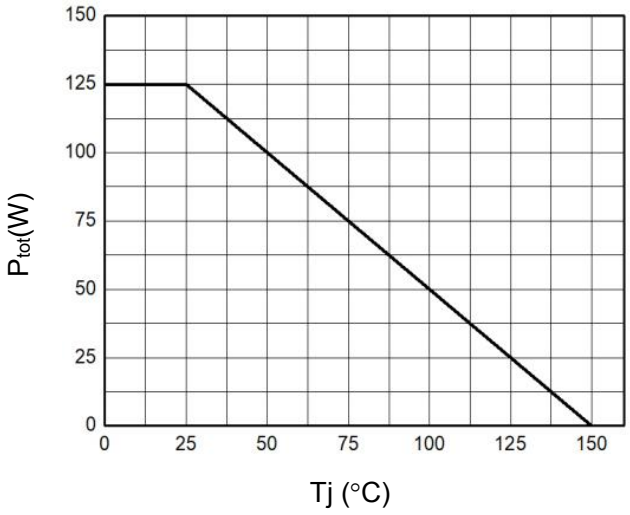
Typical Qoss



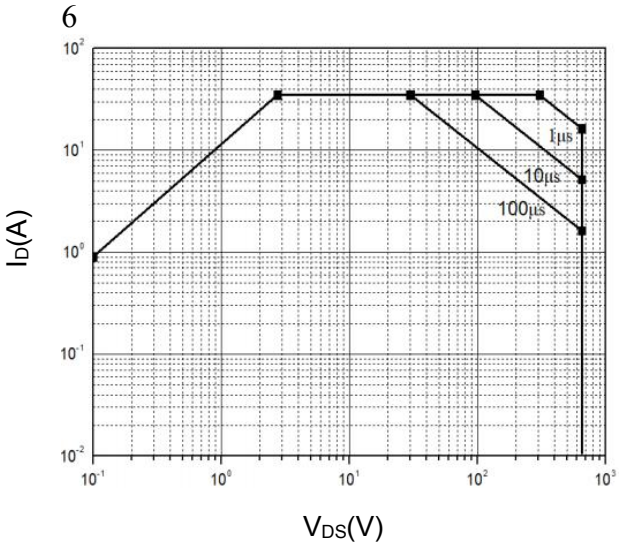
Typical Gate Charge (V_{DS}=400V, I_D=1A)



Power Dissipation



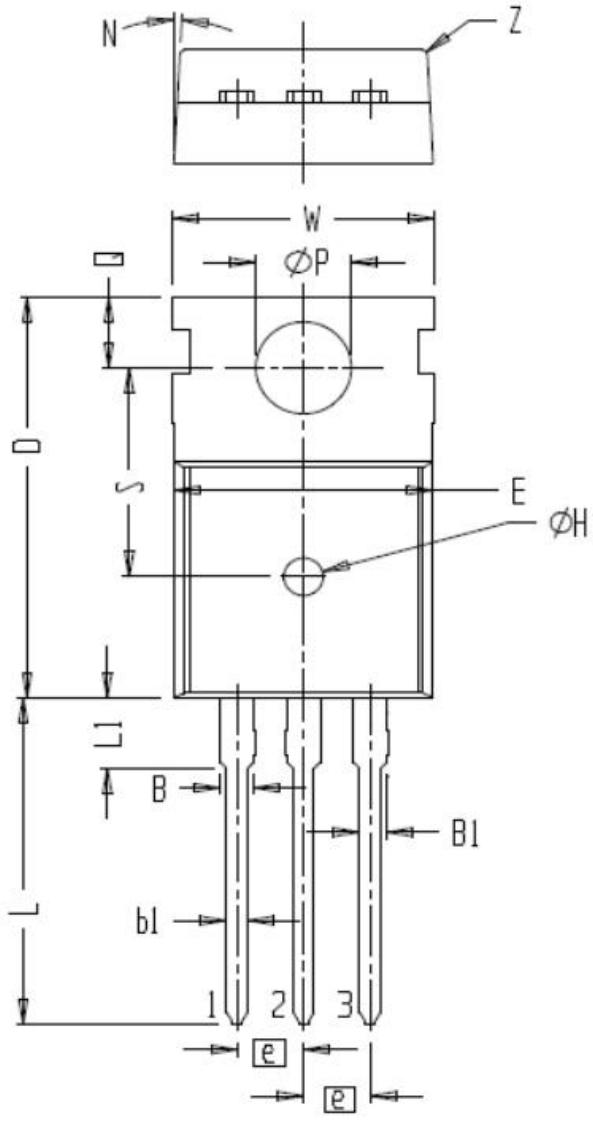
Safe Operating Area,Tj=25°C

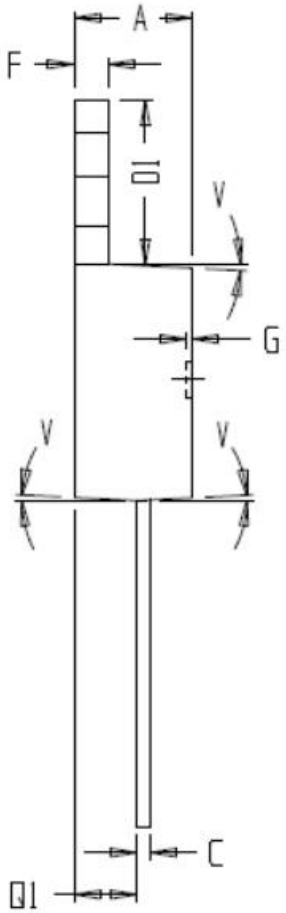


TO-220C Package Dimensions

UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	4.10	4.50	4.90	E	9.40	9.90	10.40
B	1.17	1.32	1.47	e		2.54	
B1	0.90	1.06	1.22	F	1.15	1.30	1.45
b1	0.65	0.80	0.95	L	12.10	13.10	14.10
c	0.40	0.50	0.60	L1	2.50	3.00	3.50
D	14.70	15.70	16.80	Q	2.30	2.80	3.30
D1	6.00	6.50	7.00	Q1	1.90	2.40	2.90
W	9.50	10.00	10.50	ϕP	3.40	3.65	3.90
S		6.20		Z	0		0.20
ϕH		1.50		N		3 °	
G		0.10		V		3 °	





注意事项：

1、在电路设计时请不要超过器件的最大额定值，否则会影响整机的可靠性。

2、GaN Power Device产品为静电敏感型器件，使用时应注意采取防静电保护措施，如佩戴防静电手环、设备接地等。

3、如需安装散热片，请注意控制扭力大小及散热片的平整度。

4、该规格书由华科公司制作，并可能不定期更改，恕不另行通知。

5、如有疑问，请及时联系我司销售代表。

版本履历表：

序号	版本号	修改时间	修改记录
1	V1.0	2023-12-20	首次发行