

## N channel 650V MOSFET

### 1. Description

The GT7N65F N-Channel enhancement mode silicon gate power MOSFET is designed for high voltage, high speed power switching applications such as switching regulators, switching converters, solenoid, motor drivers, relay drivers.

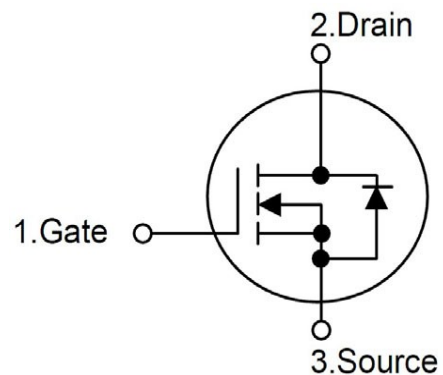
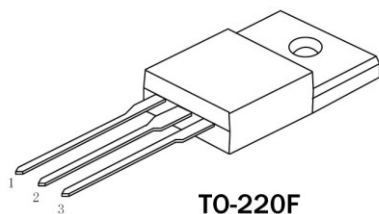
### 2. Feature

- R<sub>DS(ON)</sub> Typ =1.1Ω@V<sub>GS</sub> =10 V
- Low gate charge ( typical 28nC)
- Fast switching capability
- Avalanche energy specified
- Improved dv/dt capability

V <sub>DS</sub>	650	V
R <sub>DS(on)</sub> Typ	1.1	Ω
I <sub>D</sub>	7	A

### 3. Pin configuration

Order Number	Package
GT7N65F	TO-220F



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**4. Absolute maximum ratings (Tc=25°C Unless Otherwise Noted)**

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V <sub>DSS</sub>	650	V
Gate-Source Voltage		V <sub>GSS</sub>	±30	V
Continuous Drain Current	T <sub>c</sub> =25°C	I <sub>D</sub>	7	A
	T <sub>c</sub> =70°C		4.8	A
Pulsed Drain Current		I <sub>DM</sub>	27	A
Power Dissipation	T <sub>c</sub> =25°C	PD	48	W
	Derate above 25 °C		0.38	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55~+150	°C

**5. Thermal characteristics**

Parameter	Symbol	Ratings	Units
Thermal resistance, case to sink typ.	R <sub>thCS</sub>	-	°C/W
Thermal resistance junction to case.	R <sub>thJC</sub>	2.6	°C/W
Thermal resistance junction to ambient.	R <sub>thJA</sub>	62.5	°C/W

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**6. Electrical characteristics (TA =25°C Unless Otherwise Specified)**

Symbol	Parameter	Limit	Min	Typ	Max	Unit
<b>STATIC</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	650	-	-	V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2	-	4	V
IGSS	Gate-Body Leakage	VDS=0V, VGS=±30V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=650V, VGS=0V	-	-	10	μA
RDS(ON)	Drain-Source On-Resistance	VGS=10V, ID=3.5A	-	1.1	1.4	Ω
VSD	Diode Forward Voltage	IS=7A, VGS=0V	-	-	1.4	V
<b>DYNAMIC</b>						
Qg	Total Gate Charge	VDD=480V, VGS=10V, ID=7A	-	28	-	nC
Qgs	Gate-Source Charge		-	5.8	-	
Qgd	Gate-Drain Charge		-	23	-	
Ciss	Input Capacitance	VDS=25V, VGS=0V, f=1MHz	-	1100	-	pF
Coss	Output Capacitance		-	110	-	
Crss	Reverse Transfer Capacitance		-	23	-	
td(on)	Turn-On Delay Time	VDD=300V, RG=25Ω, ID=7A	-	30	-	ns
tr	Turn-On Rise Time		-	80	-	
td(off)	Turn-Off Delay Time		-	125	-	
tf	Turn-Off Fall Time		-	85	-	
ISD	Continuous drain-source current		-	-	7	A
ISM	Pulsed drain-source current		-	-	27	A

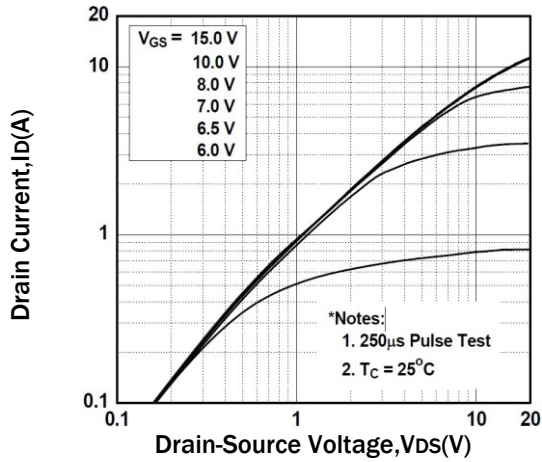
Notes :a. pulse test:pulse width 300 us,duty cycle 2% ,Guaranteed by design,not subject to production testing.

b. The YGMOS reserves the right to improve product design,functions and reliability without notice.

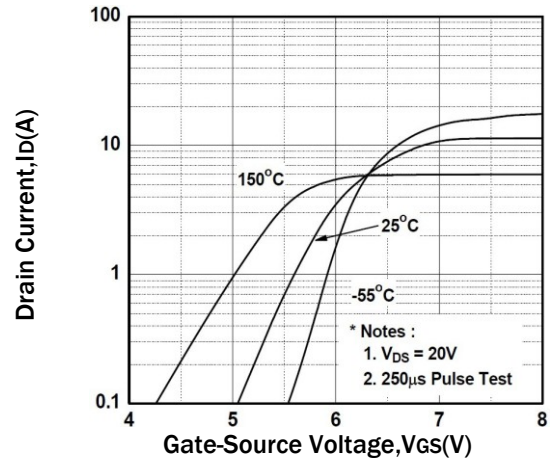
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### 7. Typical Characteristics (T<sub>J</sub> = 25°C Noted)

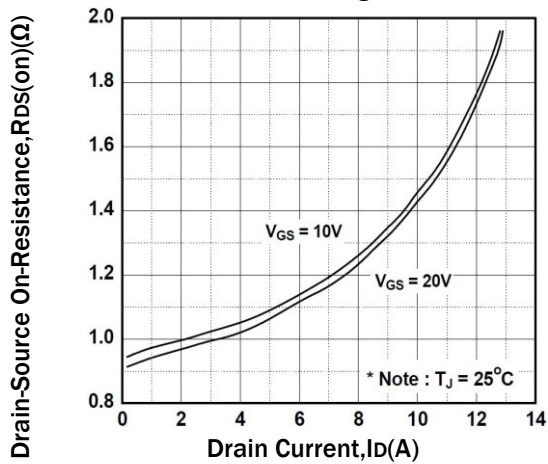
On-Region Characteristics



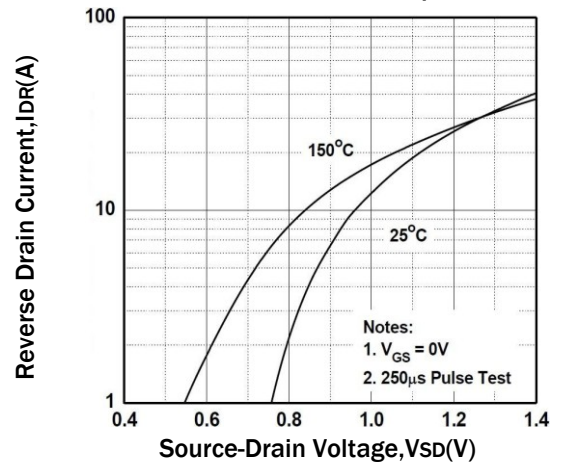
Transfer Characteristics



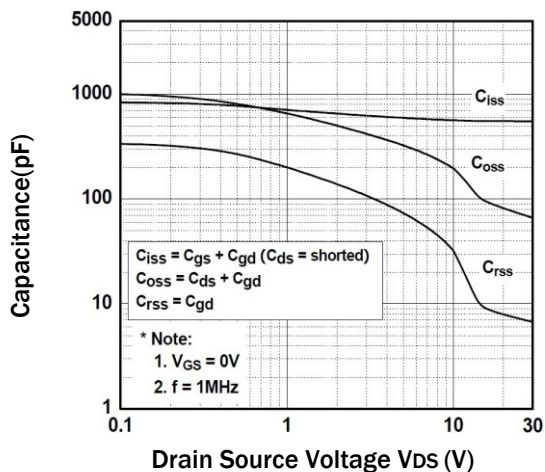
On-Resistance Variation vs. Drain Current and Gate Voltage



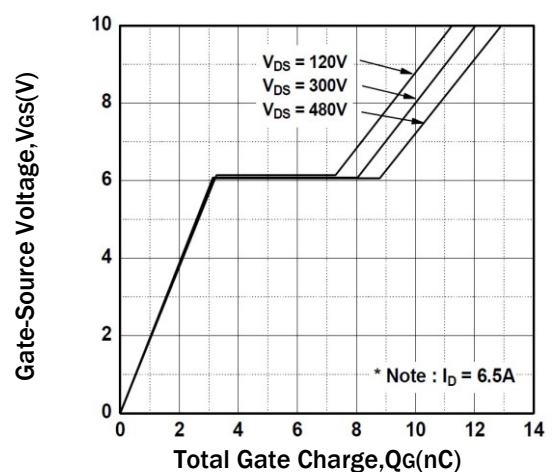
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance vs. Drain-Source Voltage



Gate Charge vs. Gate-to-Source Voltage



## N channel 650V MOSFET

### TO-220FP Dimension

3-Lead TO-220FP  
Plastic Package  
YG MOS Package Code: F

**Marking:**

**Pb Free Mark**  
Pb-Free: "●" (Note)  
Normal: None

**Note:** Green label is used for pb-free packing

**Pin Style:** 1.Gate 2.Drain 3.Source

**Material:**

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	6.48	7.40
C	4.40	4.90
D	2.34	3.00
E	0.45	0.80
F	9.80	10.36
G	3.10	3.60
I	2.70	3.43
J	0.60	1.00
K	2.34	2.74
L	12.48	13.60
M	15.67	16.20
N	0.90	1.47
O	2.00	2.96
$\alpha 1/2/4/5$	-	*5°
$\alpha 3$	-	*27°

\*: Typical, Unit: mm