

**N channel 650V MOSFET**
**Features**

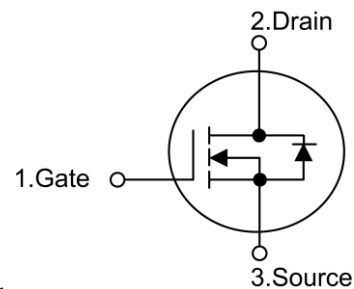
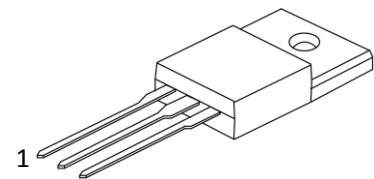
- $R_{DS(on)} \leq 1.1\Omega$  (Typ.)@  $V_{GS} = 10V$
- Low Gate Charge (Typ. 28nC)
- Fast Switching
- Avalanche energy specified
- Improved dv/dt capability

**Description**

The FS7N65F 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.

**Pin configuration**

Order Number	Package
FS7N65F	TO-220F


**Maximum Ratings  $T_c = 25^\circ\text{C}$  unless otherwise noted\***

Parameter	Symbol	Ratings	Units
Drain-Source Voltage	$V_{DSS}$	650	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Continuous Drain Current	ID	$T_c=25^\circ\text{C}$	7*
		$T_c=100^\circ\text{C}$	4.8*
Pulsed Drain Current	IDM	27	A
Power Dissipation	PD	$T_c=25^\circ\text{C}$	48
		Derate above $25^\circ\text{C}$	0.38
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55~+150	$^\circ\text{C}$

\*Drain current limited by maximum junction temperature

**Thermal Characteristics**

Parameter	Symbol	Ratings	Units
Thermal resistance, case to sink typ.	$R_{thCS}$	—	$^\circ\text{C}/\text{W}$
Thermal resistance junction to case.	$R_{thJC}$	2.6	$^\circ\text{C}/\text{W}$
Thermal resistance junction to ambient.	$R_{thJA}$	62.5	$^\circ\text{C}/\text{W}$

# FS7N65F

## N channel 650V MOSFET

### Electrical characteristics (TA =25°C Unless Otherwise Specified)

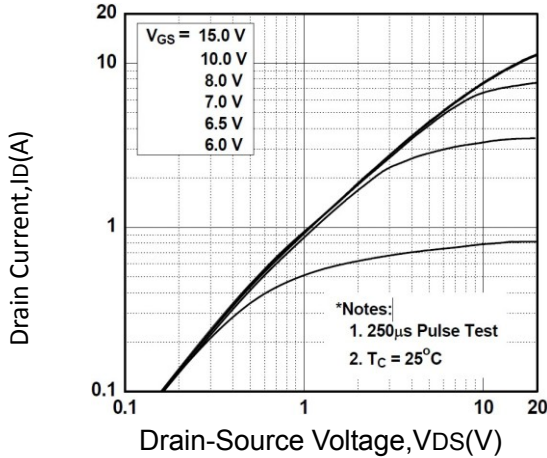
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
<b>STATIC</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	650	—	—	V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2	—	4	V
IGSS	Gate-Body Leakage	VDS=0V, VGS=±30V	—	—	±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=650V, VGS=0V	—	—	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.

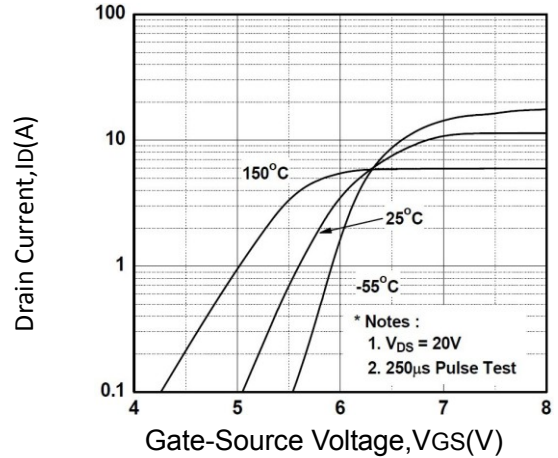
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### Typical Characteristics (T<sub>J</sub> = 25°C Noted)

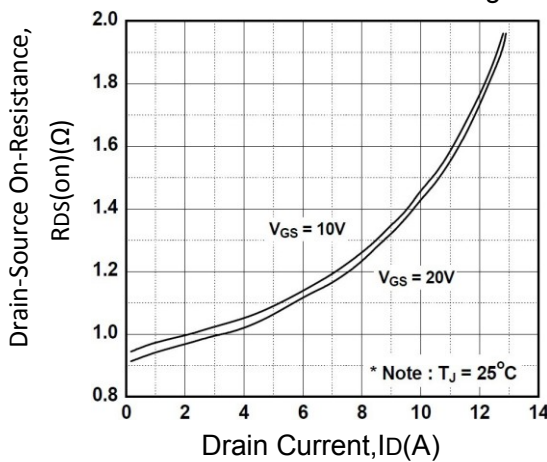
On-Region Characteristics



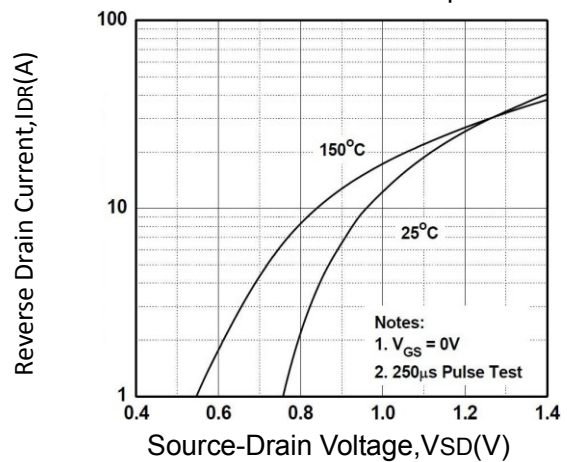
Transfer Characteristics



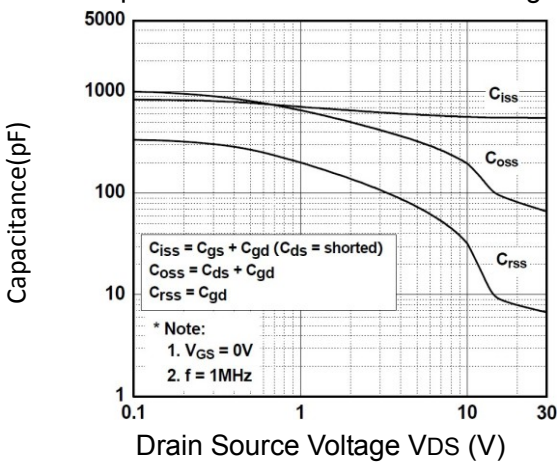
On-Resistance Variation vs. Drain Current and Gate Voltage



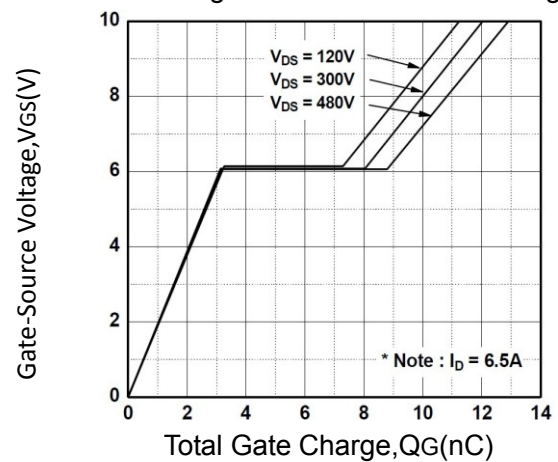
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance vs. Drain-Source Voltage



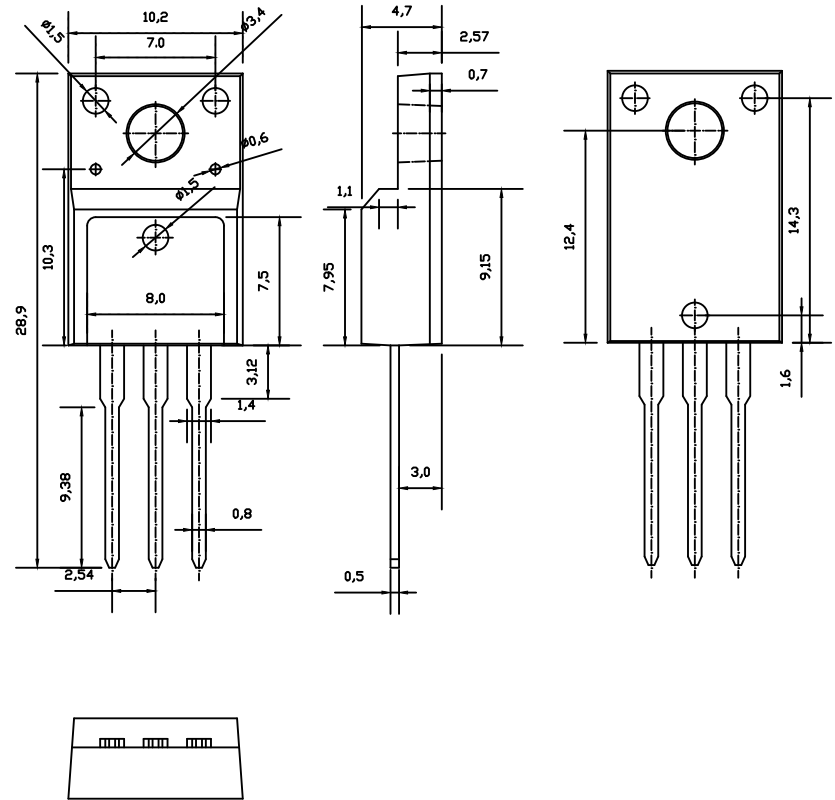
Gate Charge vs. Gate-to-Source Voltage



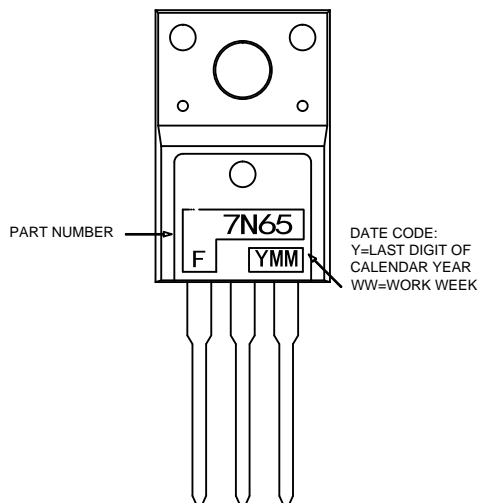
# FS7N65F

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## Mechanical Dimensions



## Making



## N channel 650V MOSFET

### Packing specification

Common Packing: (5 inner boxes/carton)

