

BMF7N70

N-Channel MOSFET

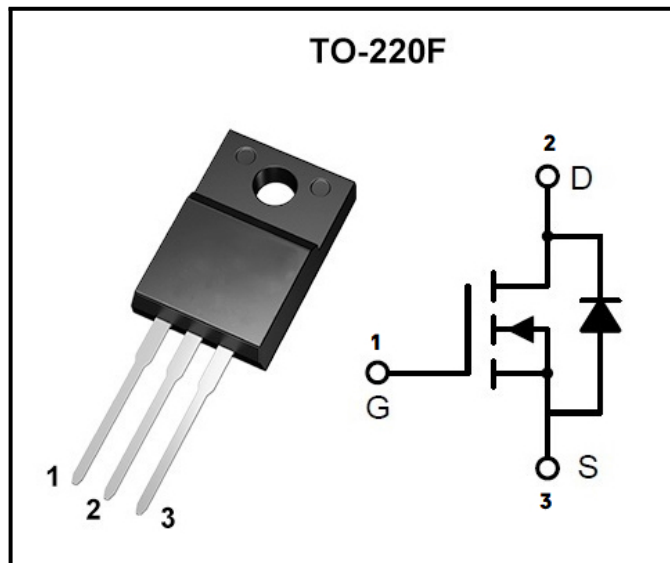
Features

- $V_{DS}=700V$
- $I_D=7A$
- $R_{DS(ON)}@V_{GS}=10V, TYP=1.4\Omega$
- Fast Switching
- Low Gate Charge

Applications

- Power switch circuit of adaptor and charger
- LED power supplies
- Cell Phone Charger
- Standby Power

Package



Mechanical Data

- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106
- Case: Molded plastic
- Mounting Position: Any

Ordering information

Order code	Package	Base qty	Delivery mode
BMF7N70/G	TO-220F	50pcs/tube	1kpcs/box 5kpcs/carton

Note: The order code with "G" means using a thick frame.



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Maximum Ratings (@T_A=25°C unless otherwise noted)

Symbol	Parameters		Value	Unit
V _{DS}	Drain-Source Voltage		700	V
V _{GS}	Gate-Source Voltage		±30	V
I _D	Continue Drain Current		7	A
I _{DM}	Pulsed Drain Current (Note1)		14	A
P _D	Power Dissipation	T _C =25°C	63	W
		T _A =25°C	2.5	W
E _{AS}	Single Pulse Avalanche Energy (Note1)		245	mJ
T _{STG}	Operating Junction and Storage Temperature Range		-55 to +150	°C
R _{θJC}	Typical Thermal Resistance, Junction to Case		1.97	°C/W
R _{θJA}	Typical Rthermal Resistance, Junction to Ambient		50	°C/W

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

Symbol	Parameters	Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D =250uA	700	—	—	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 700V, V _{GS} =0V	—	—	1	μA
I _{GSS}	Gate- Source Leakage Current	V _{GS} = ±30V, V _{DS} =0V	—	—	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D =250uA	2	3.3	4	V
R _{DS(on)}	Static Drain-source On Resistance	V _{GS} =10V, I _D =3A	—	1.4	1.8	Ω
g _{fs}	Forward Transconductance	V _{DS} =20V, I _D =3A	—	2	—	S
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} =0V, f = 1MHz	—	1200	—	pF
C _{oss}	Output capacitance		—	93	—	
C _{rss}	Reverse transfer capacitance		—	6	—	
T _{d(on)}	Turn-on delay time (Note1)	V _{DD} =350V, I _D =6A, R _G =10Ω V _{GS} =10V	—	11	—	ns
T _r	Turn-on Rise time (Note1)		—	13	—	
T _{d(off)}	Turn -Off Delay Time (Note1)		—	20	—	
T _f	Turn -Off Fall time (Note1)		—	33	—	
Q _{gs}	Gate to Source Charge (Note1)	V _{DD} =560V, V _{GS} =10V, I _D =6A	—	7	—	nC
Q _{gd}	Gate to Drain Charge (Note1)		—	4	—	
Q _g	Total Gate Charge (Note1)		—	22	—	
V _{SD}	Diode Forward Voltage	I _{SD} =3A	—	—	1.2	V
I _S	Diode Forward Current	—	—	—	7	A
I _{SM}	Diode Pulsed Current	—	—	—	14	A
T _{rr}	Reverse Recovery Time (Note1)	V _{DS} =30V,V _{GS} =0V,	—	368	—	ns
Q _{rr}	Reverse Recovery Charge (Note1)	I _S =1A, di/dt=100A/μs	—	670	—	nC

Note1: Pulse test: 300 μs pulse width, 2% duty cycle.

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Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information. Revision: 2022-Jan-1-A



Typical Performance Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Figure 1: Output characteristic

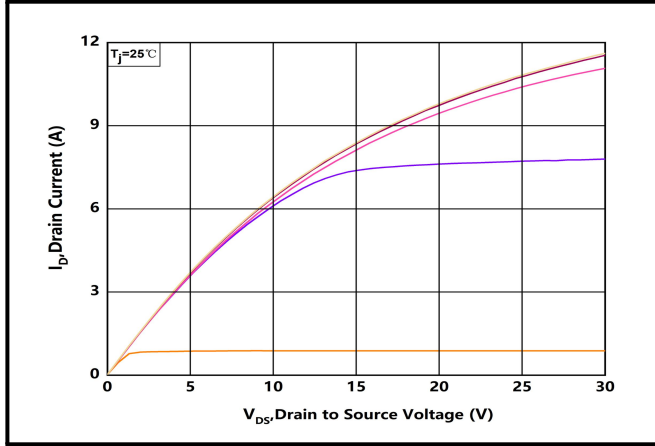


Figure 2: Transfer Characteristic

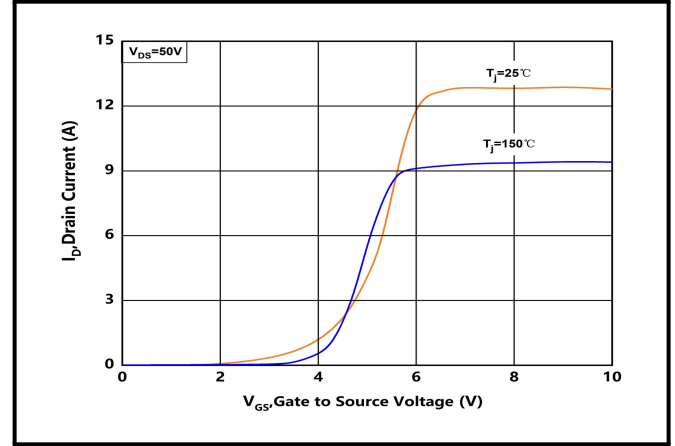


Figure 3: $R_{DS(on)}$ vs. I_D

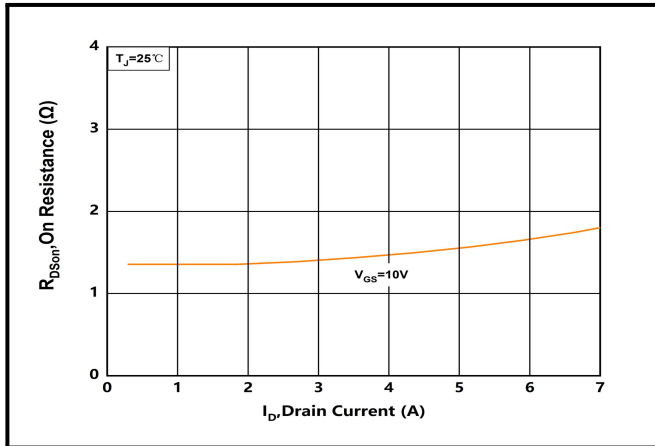


Figure 4: $R_{DS(on)}$ vs. Junction Temperature

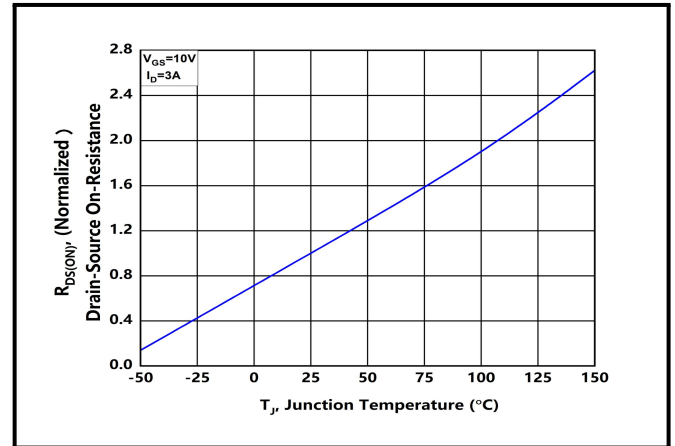


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

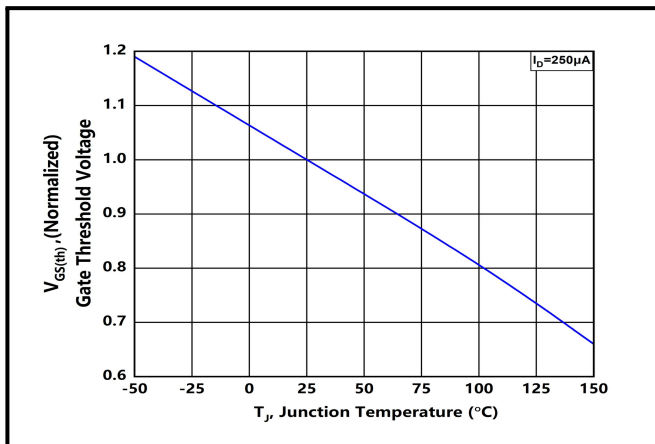
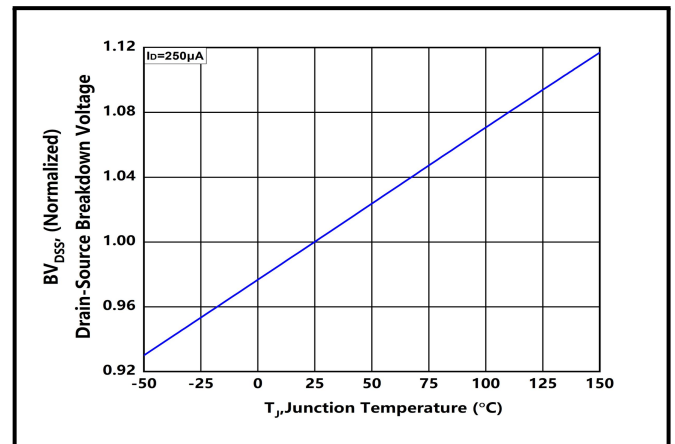


Figure 6: BV_{DSS} vs. Junction Temperature



Typical Performance Characteristics($T_J = 25^\circ\text{C}$, unless otherwise noted)

Figure 7: Capacitance Characteristic

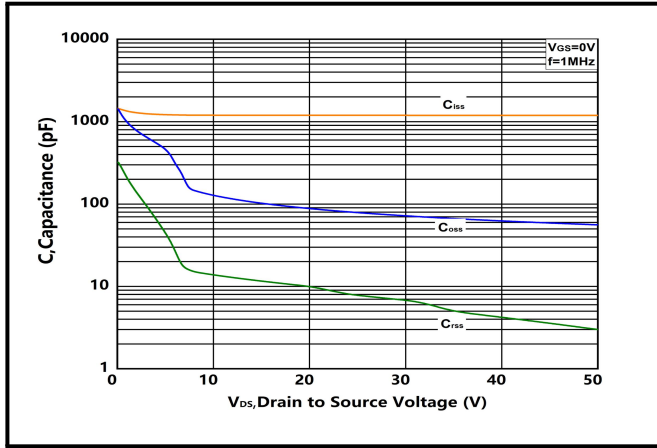


Figure 8: Typical Gate Charge vs. V_{GS}

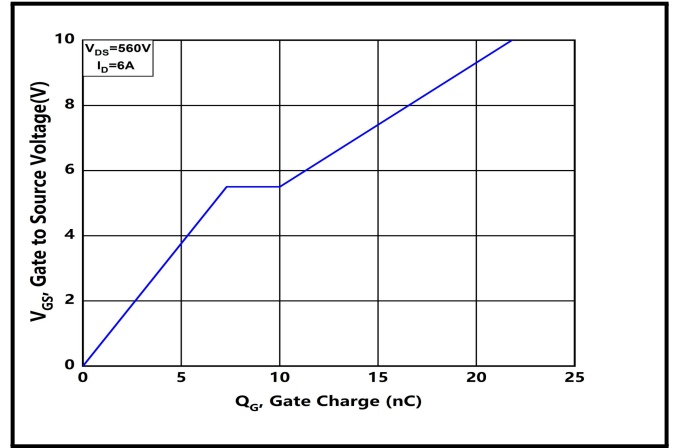


Figure 9: Body Diode Characteristic

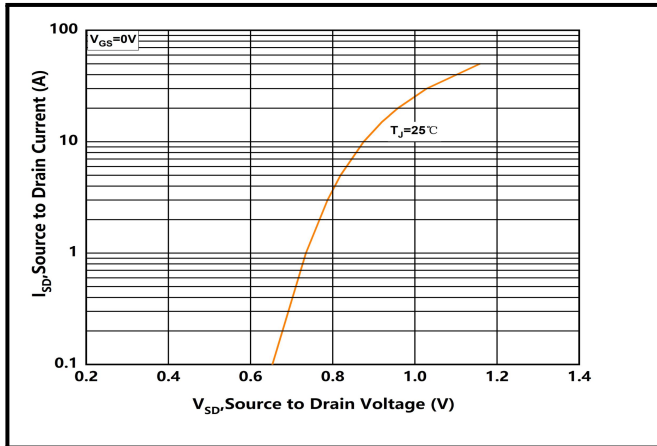


Figure 10: P_D Derating vs. Case Temperature

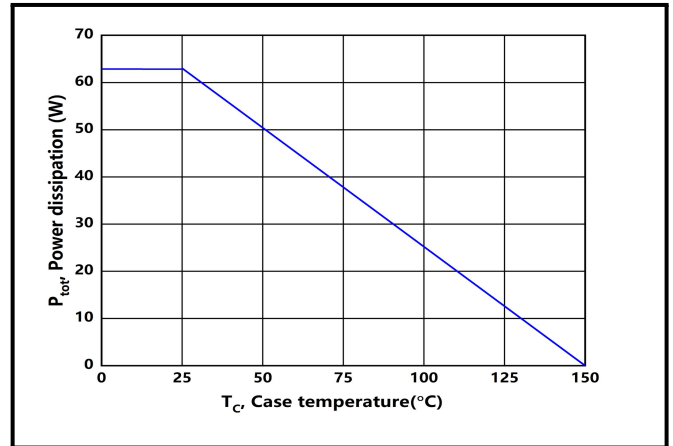


Figure 11: Safe Operating Area

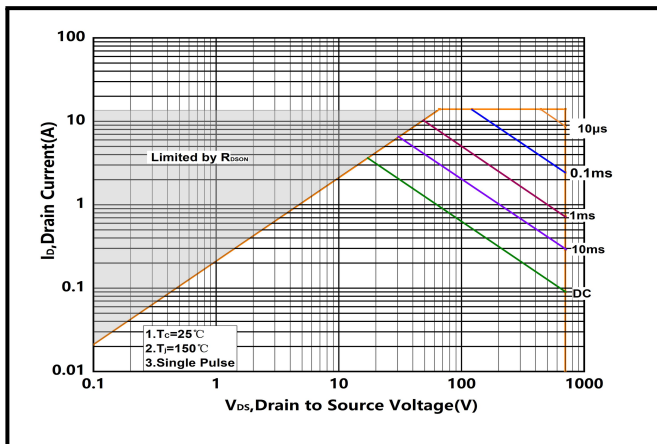
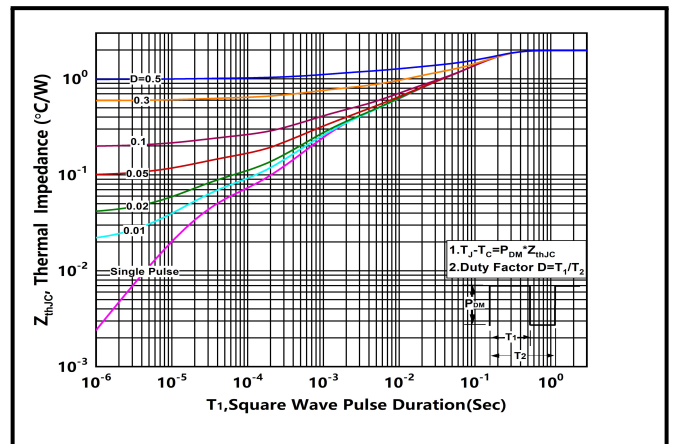


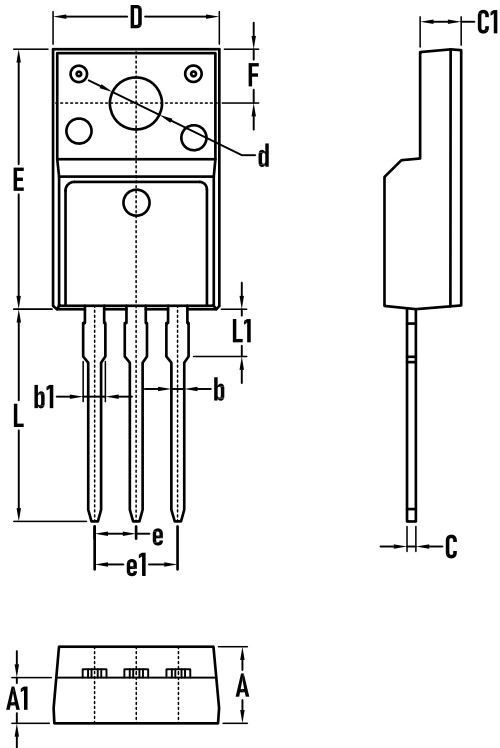
Figure 12: Thermal Impedance (Junction-Case)



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Packaging Tape - TO-220F



Symbol	Millimeters		
	MIN.	TYP.	MAX.
A	4.30	4.60	4.80
A1	2.70	2.80	2.90
b	0.70	0.80	0.90
b1	1.20	1.30	1.40
C	0.40	0.50	0.60
C1	2.40	2.60	2.80
D	9.90	10.00	10.20
E	15.20	15.60	16.00
e	2.44	2.54	2.64
e1	4.88	5.08	5.26
F	3.00	3.30	3.60
L	12.70	13.20	13.70
L1	2.70	2.90	3.10
d	3.10	3.20	3.30

