

BRC5630FA

Rev.A Sep.-2023

/ Descriptions

TO-220F N MOS
N-CHANNEL MOSFET in a TO-220F Plastic Package.

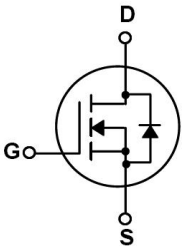
/ Features

$V_{DS}=200V$ $I_D=9A$
 $R_{DS(on)}@10V$ 0.4 (Type.0.35)
HF Product.

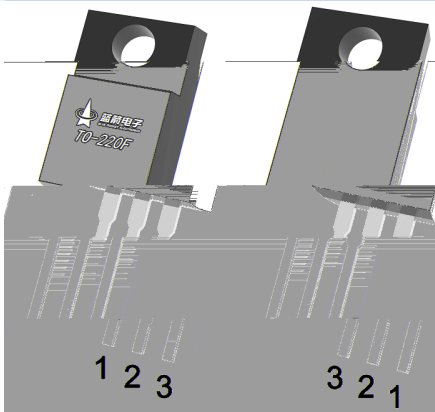
/ Applications

LED
Networking,Load Switch,LED applications.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	200	V
Drain Current	$I_D(T_C=25^\circ C)$	9	A
Drain Current - Pulsed	I_{DM}	36	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy(L=10mH)	E_{AS}	166	mJ
Avalanche Current(L=10mH)	I_{AS}	5	A
Power Dissipation	$P_D(T_C=25^\circ C)$	30	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Maximum Junction-to-Ambient	R_{JA}	100	/W
Maximum Junction-to-Case	R_{JC}	4.17	

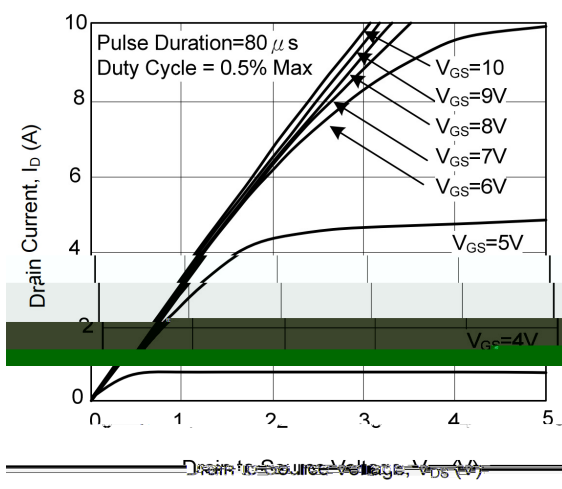
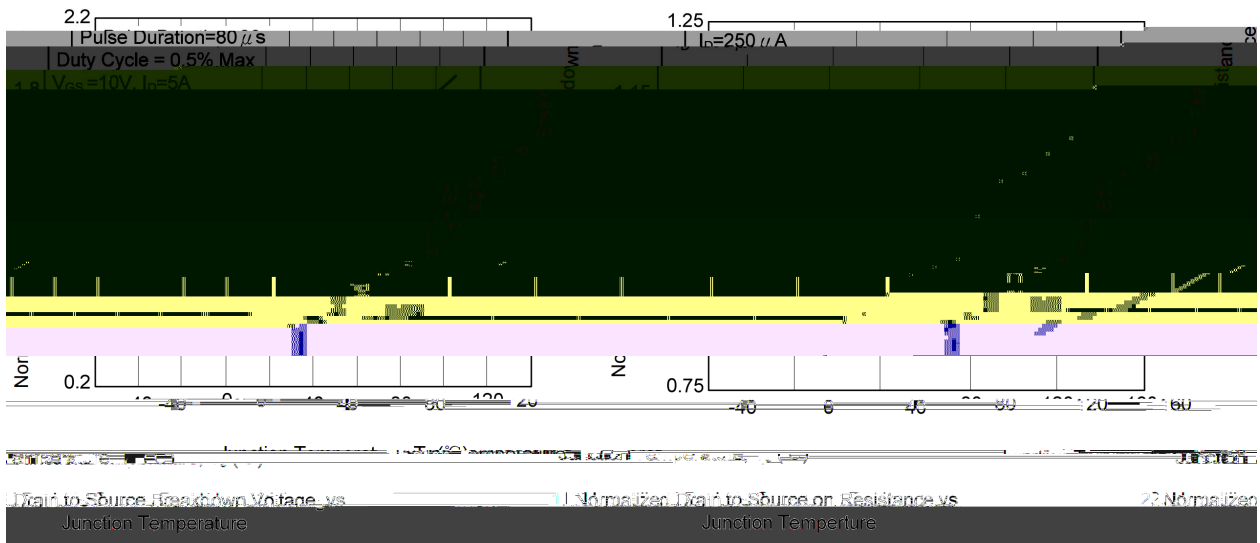
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	200			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V$ $V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2	3	4	V
Total gate charge	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=4.5A$		0.35	0.4	
Gate resistance	R_g	$V_{GS}=0V$ $f=1MHz$ $V_{DS}=0V,$		1.7		
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		630		pF
Output Capacitance	C_{oss}			270		
Reverse Transfer Capacitance	C_{rss}			50		
Total Gate Charge	Q_g	$V_{GS}=10V,$ $V_{DS}=160V,$ $I_G=1.5mA,$ $I_D=9A$		21	30	nC
Gate Source Charge	Q_{gs}			11.2	20	
Gate Drain Charge	Q_{gd}			9.5	15	

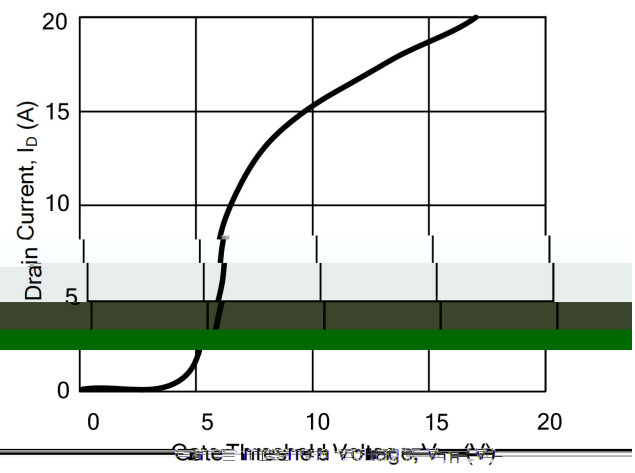
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=90V$ $R_L=9.6\ \Omega$ $R_{GEN}=9.1\ \Omega$		15	32	ns
Turn-On Rise Time	t_r			33	53	
Turn-Off Delay Time	$t_{d(off)}$			40	55	
Turn-Off Fall Time	t_f			30	45	
Maximum Continuous Drain-Source Diode Forward Current	I_S				9	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				36	A
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = 0\ V,$ $I_S = 9.0A$			1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V,$ $I_S = 9.0A,$ $dI_F/dt = 100\ A/\mu s$		455		nS
Reverse Recovery Charge	Q_{rr}				3.5	

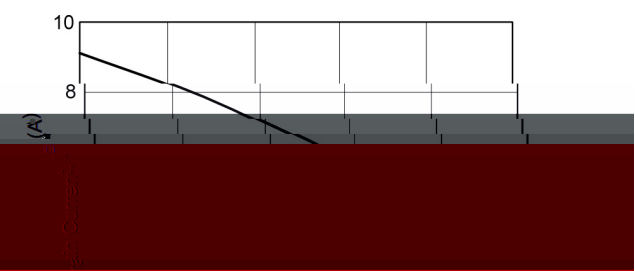
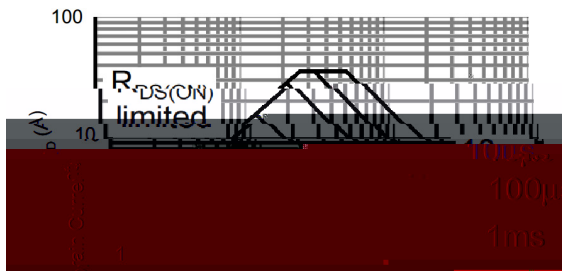
/ Electrical Characteristic Curve



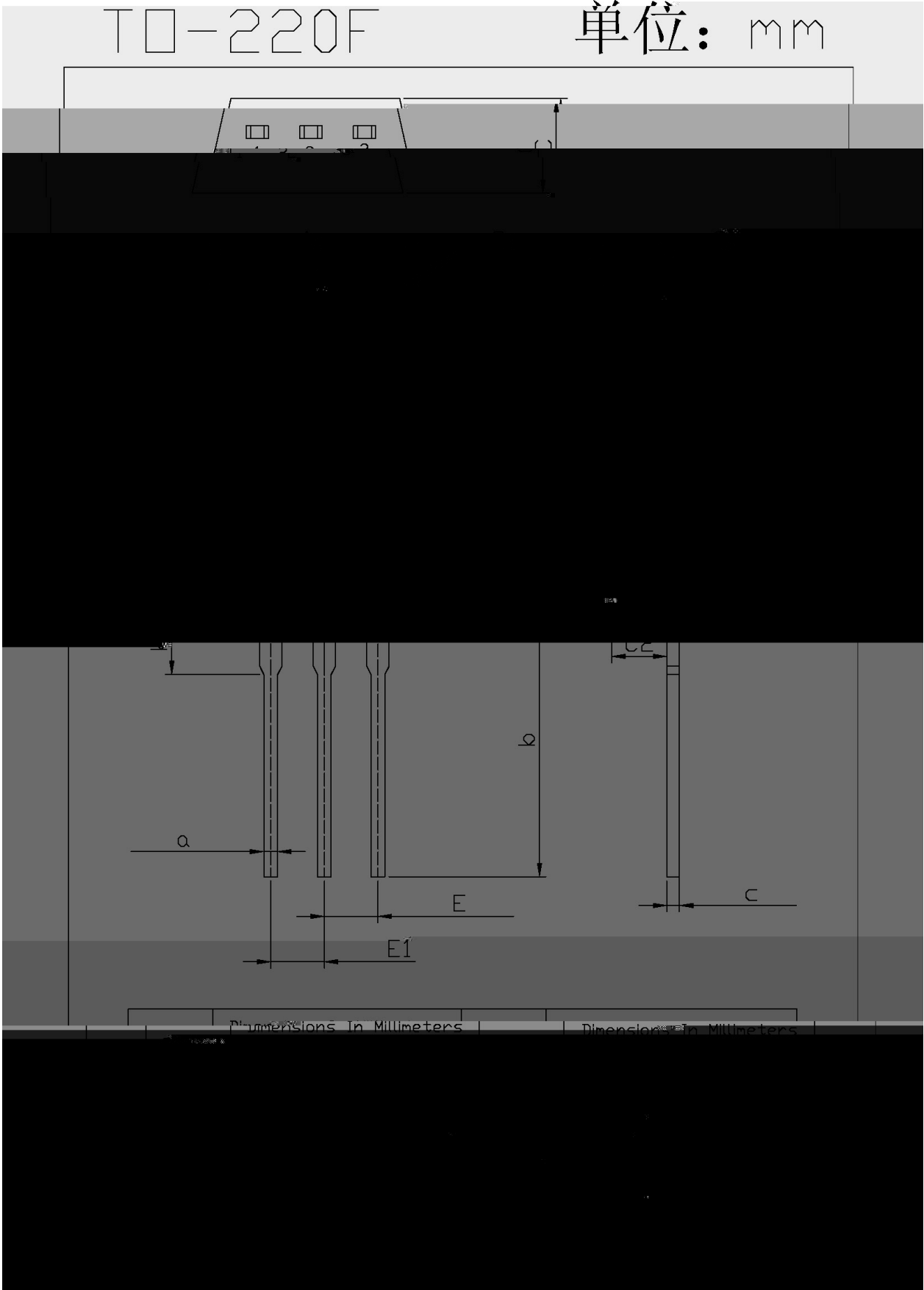
3. Saturation Characteristics



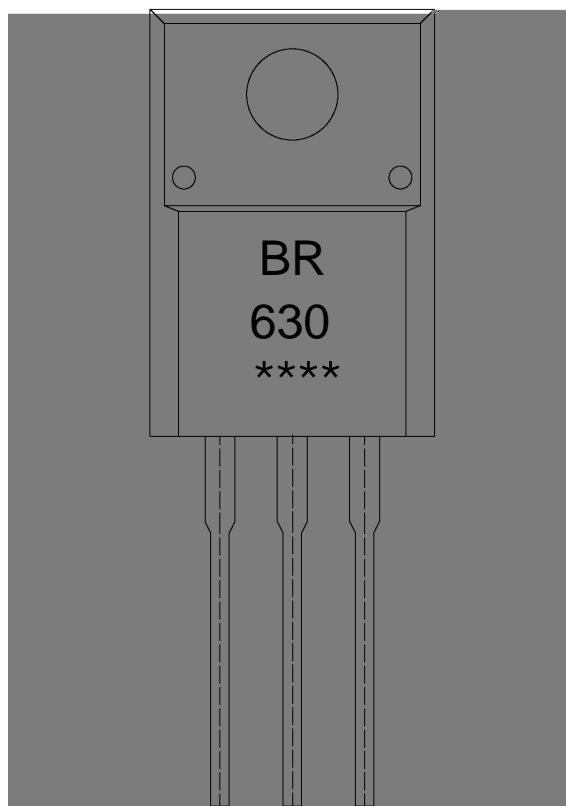
4. Drain Current vs. Gate Threshold Voltage



/ Package Dimensions



/ Marking Instructions



BR

630

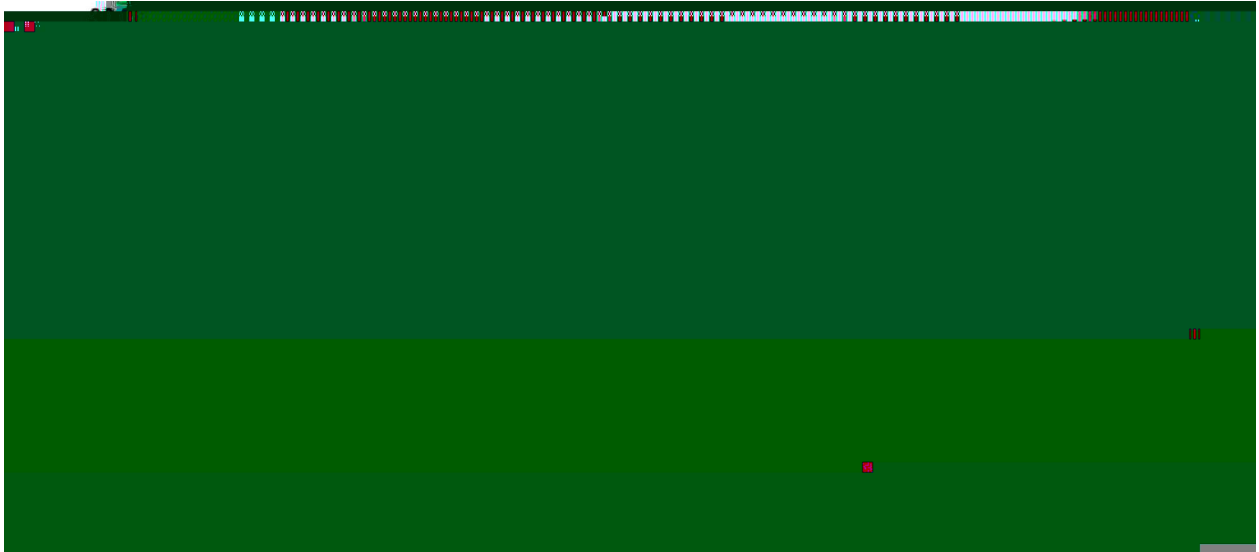
Note:

BR: Company Code

630: Product Type

****: Lot No. Code, code change with Lot No

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-------|-----|-----------|--------|---|
| 1 | 25 | 150 | 60 | 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 255±5 | | 5±0.5sec; | | 2.Peak Temp.:255±5 , Duration:5±0.5sec. |
| 3 | | 2 | 10 | /sec. | 3. Cooling Speed: 2~10 /sec. |

/ Resistance to Soldering Heat Test Conditions

270±5 10±1 sec. Temp.:270±5 Time:10±1 sec

/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm ³)		
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube /	Tubes/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Tube	Inner Box	Outer Box
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices