

# BRFL16N70

Rev.A Jan.-2024

## 描述 / Descriptions

TO-220FL 塑封封装 N 沟道 MOS 场效应管。  
N-CHANNEL MOSFET in a TO-220FL Plastic Package.

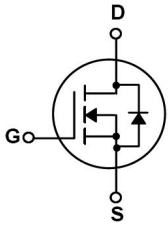
## 特征 / Features

$V_{DS}=700V$   $I_D=16A$   
 $R_{DS(ON)}@10V \leq 0.65\Omega$  (Type.0.55 $\Omega$ )

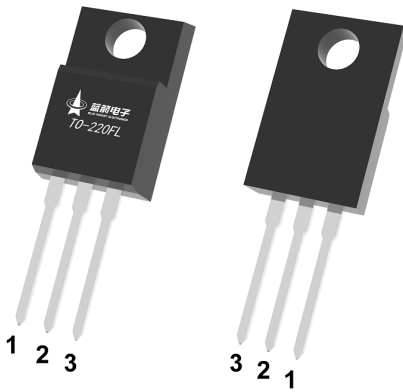
## 用途 / Applications

用于高频开关电源，电子镇流器，UPS 电源。  
High efficiency switch mode power supplies, Electronic lamp ballasts based on half bridge, UPS .

## 内部等效电路 / Equivalent Circuit



## 引脚排列 / Pinning



PIN1 : G

PIN 2 : D

PIN 3 : S

## 印章代码 / Marking

见印章说明。  
See Marking Instructions.

**极限参数 / Absolute Maximum Ratings(Ta=25°C)**

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	$V_{DSS}$	700	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	16	A
Drain Current - Pulsed	$I_{DM}$	64	A
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Single Pulsed Avalanche Energy	$E_{AS}$	390	mJ
Avalanche Current	$I_{AR}$	8.5	A
Power Dissipation	$P_D$	43	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.9	$^\circ\text{C/W}$

**电性能参数 / Electrical Characteristics(Ta=25°C)**

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	700			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=700V$ $V_{GS}=0V$			1.0	$\mu A$
Gate-Body Leakage Current Forward	$I_{GSS}$	$V_{GS}=\pm 30V$ $V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0	3.4	4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=8A$		0.56	0.65	$\Omega$
Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=16A$			1.5	V
Input Capacitance	$C_{iss}$	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		2830		pF
Output Capacitance	$C_{oss}$			98		pF
Reverse Transfer Capacitance	$C_{rss}$			2.5		pF
Total Gate Charge	$Q_g$	$V_{DS}=560V$ $I_D=16A$ $V_{GS}=10V$		48		nC
Gate-Source Charge	$Q_{gs}$			14.5		ns
Gate-Drain Charge	$Q_{gd}$			16.8		ns

## 电性能参数 / Electrical Characteristics(Ta=25°C)

参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=350V$ $I_D=16A$ $V_{GS}=10V$ $R_G=10\Omega$		32		ns
Turn-On Rise Time	$t_r$			50		
Turn-Off Delay Time	$t_{d(off)}$			55		
Turn-Off Fall Time	$t_f$			43.2		
Maximum Continuous Drain-Source Diode Forward Current	$I_S$				16	A
Maximum Pulsed Drain-Source Diode Forward Current	$I_{SM}$				64	A
Reverse Recovery Time	$t_{rr}$	$V_{GS} = 0V$ $I_S = 16A$ $dI_F/dt = 100 A/\mu s$		700		ns
Reverse Recovery Charge	$Q_{rr}$			7.5		$\mu C$

电参数曲线图 / Electrical Characteristic Curve

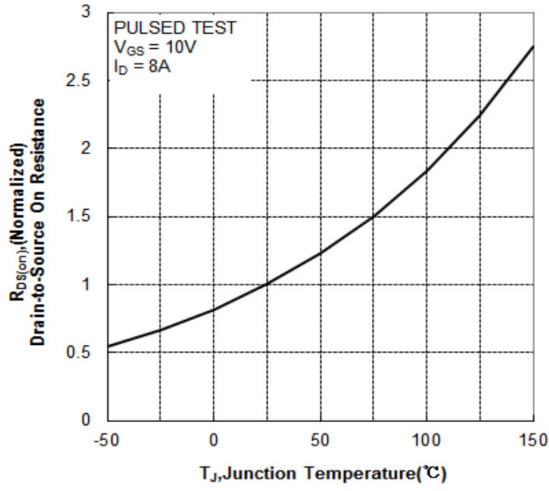


Figure 1 Typical Drain to Source on Resistance vs Junction Temperature

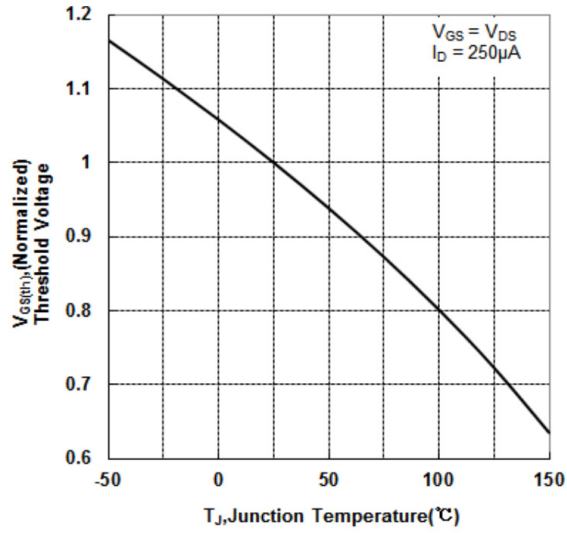


Figure 2 Typical Threshold Voltage vs Junction Temperature

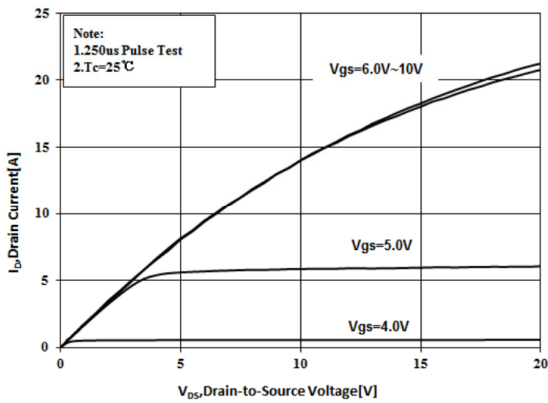


Figure 3 Typical Output Characteristics

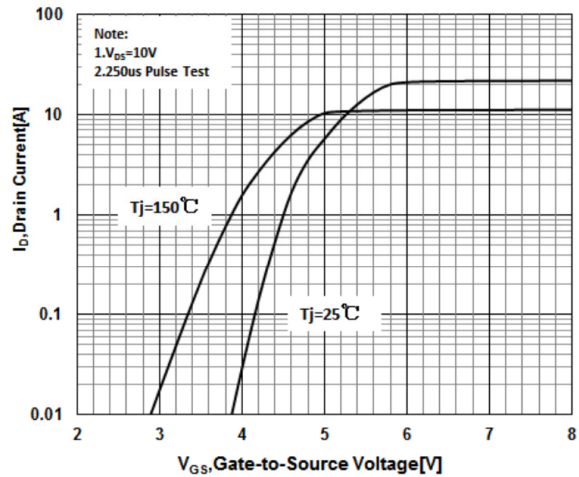


Figure 4 Typical Transfer Characteristics

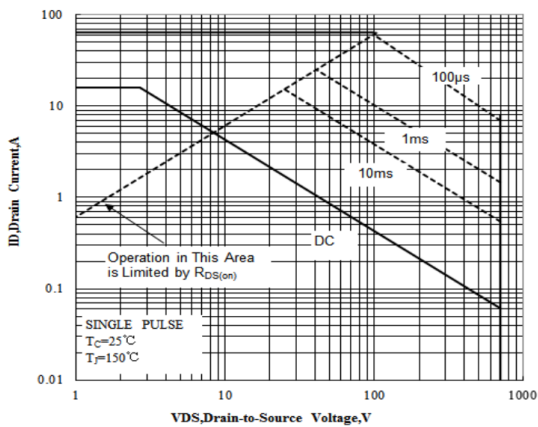


Figure 5 Maximum Forward Bias Safe Operating Area

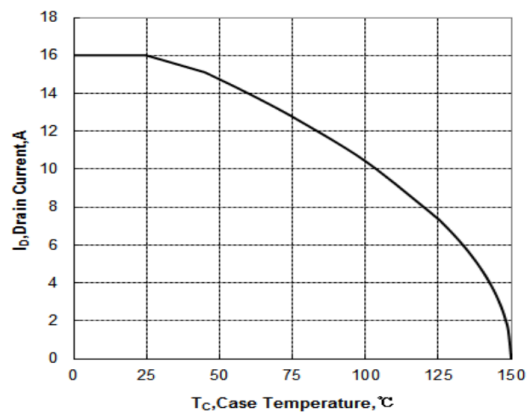
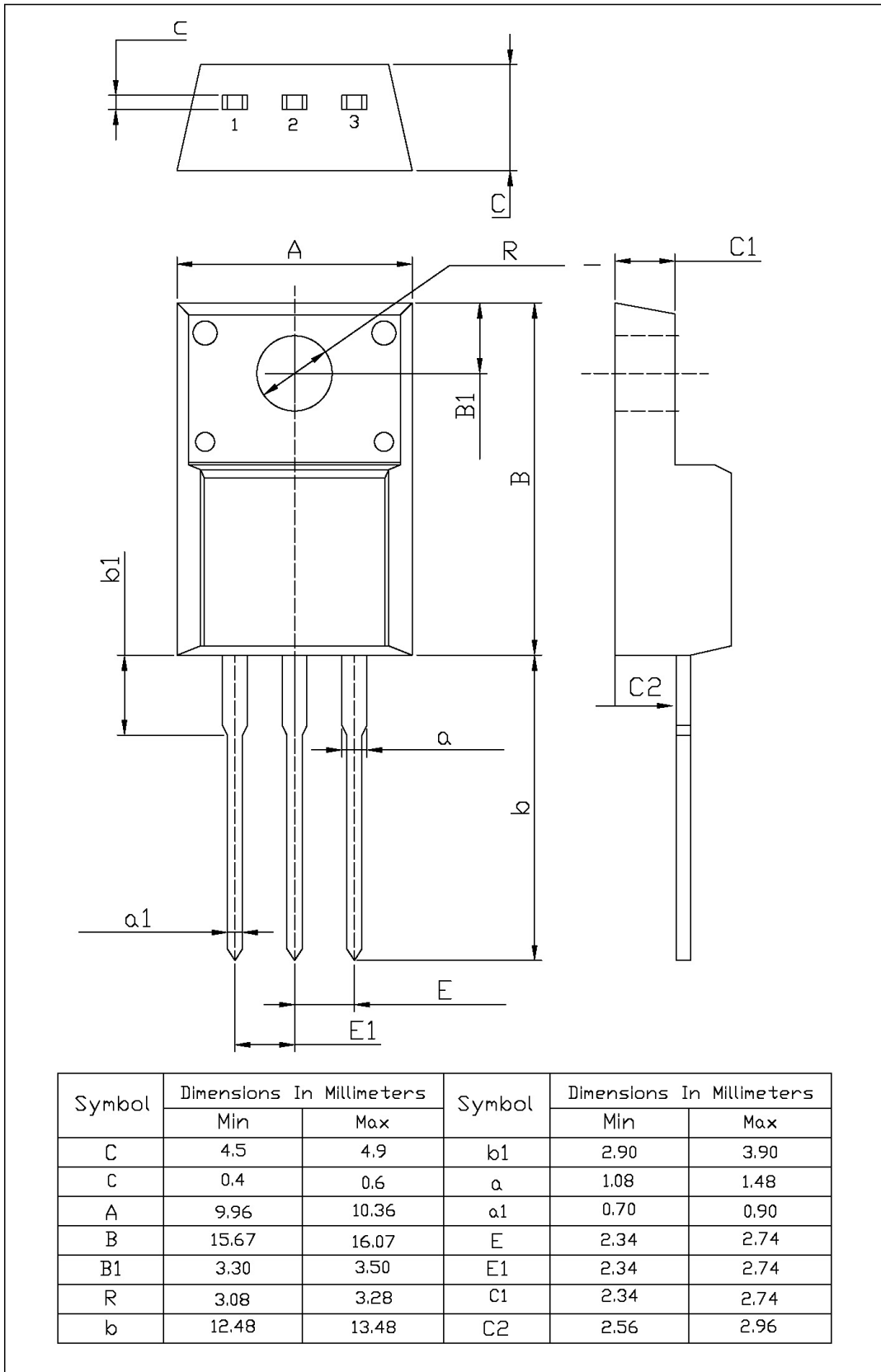


Figure 6 Maximum Continuous Drain Current vs Case Temperature

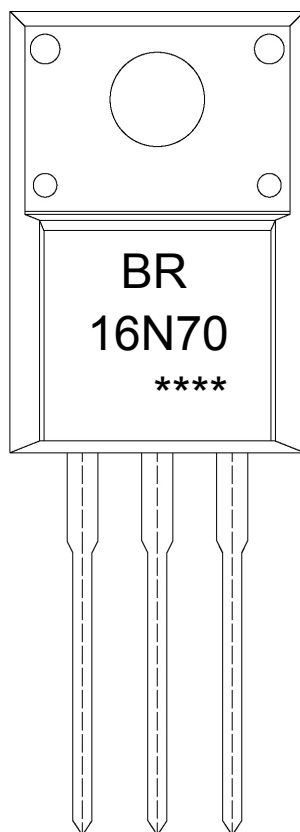
外形尺寸图 / Package Dimensions

TO-220FL

单位: mm



印章说明 / Marking Instructions



说明：

BR： 为公司代码

16N70： 为型号代码

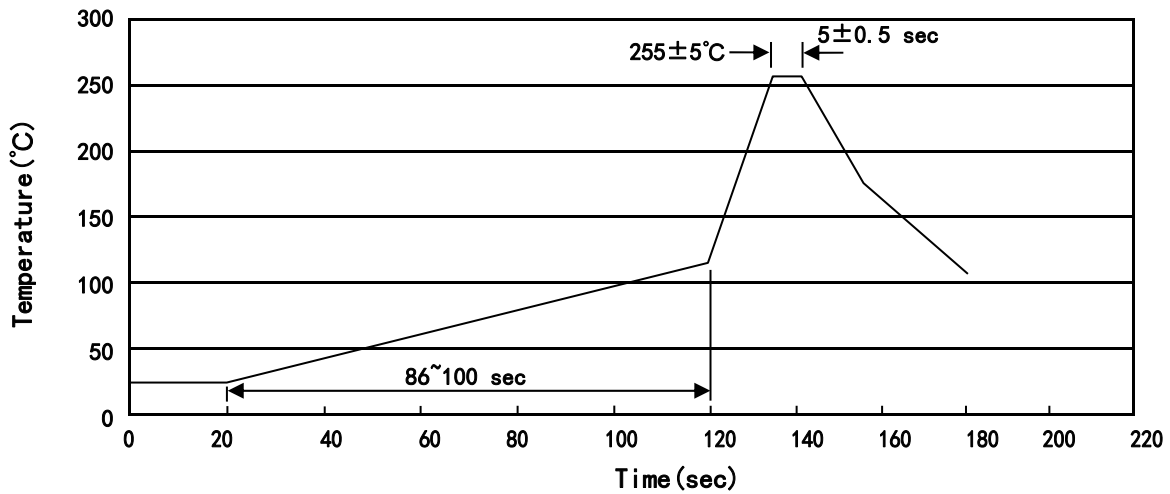
\*\*\*\*： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

16N70: Product Type Code

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

**波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)**


说明：

- 1、预热温度 25~150°C，时间 60~90sec;
- 2、峰值温度 255±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

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

**耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions**

温度：270±5°C

时间：10±1 sec.

Temp.:270±5°C

Time:10±1 sec

**包装规格 / Packaging SPEC.**

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm <sup>3</sup> )		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-220FL	50	20	1,000	5	5,000	532×33×7.0	555×164×50	575×290×180

**使用说明 / Notices**