

BRU24N50

Rev.A Aug.-2023

描述 / Descriptions

TO-3P 塑封封装 N 沟 MOS 场效应管。
N-Channel MOSFET in a TO-3P Plastic Package.

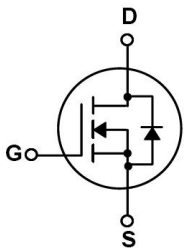
特征 / Features

$V_{DS}=500V$ $I_D=24A$
 $R_{DS(ON)}@10V \leq 0.25\Omega$ (Typ. 0.17Ω)
 $R_{DS(ON)}@6V \leq 0.3\Omega$ (Typ. $0.18m\Omega$)

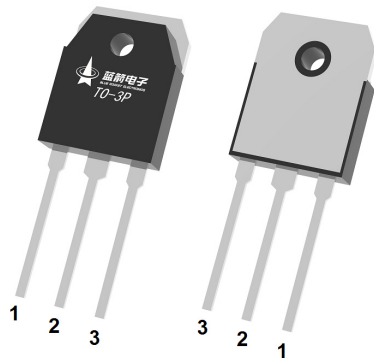
用途 / Applications

用于高电压、高速功率开关应用，如高效率开关模电源、功率因数校正。
Designed for high voltage, high speed power switching applications such as high efficiency switched mode power supplies, active power factor correction.

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.

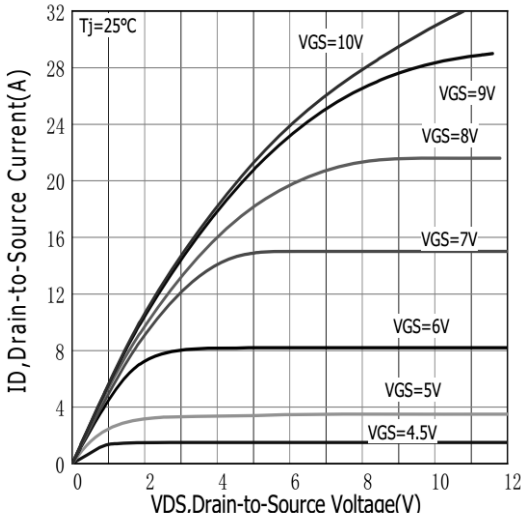
极限参数 / Absolute Maximum Ratings(Ta=25°C)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-to-Source Breakdown Voltage	V_{DSS}	500	V
Continuous Drain Current	$I_D(T_c=25^\circ\text{C})$	24	A
Drain Current Pulsed	I_{DM}	90	A
Gate-to-Source Voltage	V_{GS}	± 30	V
Avalanche Current	I_{AS}	21	A
Single Pulse Avalanche Energy	E_{AS}	1960	mJ
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	270	W
Junction Temperature Range	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.46	$^\circ\text{C/W}$

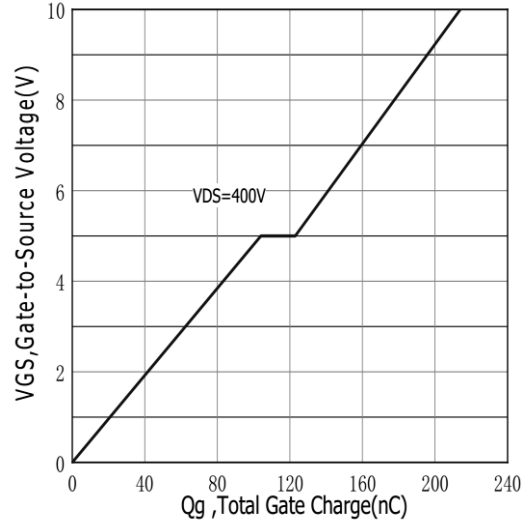
电性能参数 / Electrical Characteristics(Ta=25°C)

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-to-Source Breakdown Voltage	V_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	500	550		V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=500V$ $V_{GS}=0V$			1.0	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0		4.0	V
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=12A$		0.17	0.25	Ω
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=6V$ $I_D=6A$		0.18	0.3	Ω
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_{SD}=24A$			1.4	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		4364		pF
Output Capacitance	C_{oss}			311		
Reverse Transfer Capacitance	C_{rss}			138		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=250V$ $I_D=24A$ $R_G=10\Omega$		28.8		ns
Rise Time	t_r			5.6		
Turn-Off Delay Time	$t_{d(off)}$			106.4		
Fall Time	t_f			9.6		
Total Gate Charge	Q_g	$V_{DS}=400V$ $I_D=24A$ $V_{GS}=10V$		214		nC
Gate-Source Charge	Q_{gs}			104		
Gate-Drain Charge	Q_{gd}			19		

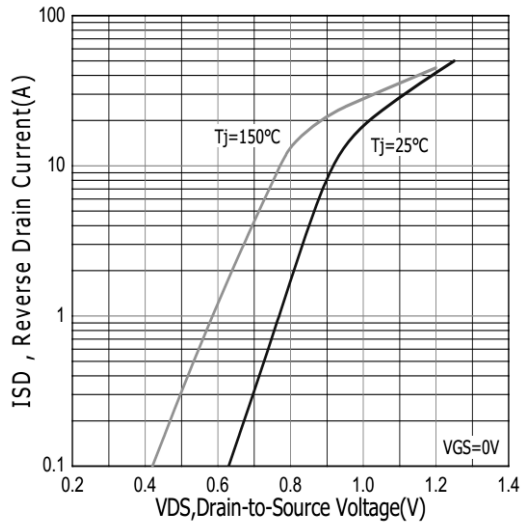
电参数曲线图 / Electrical Characteristic Curve



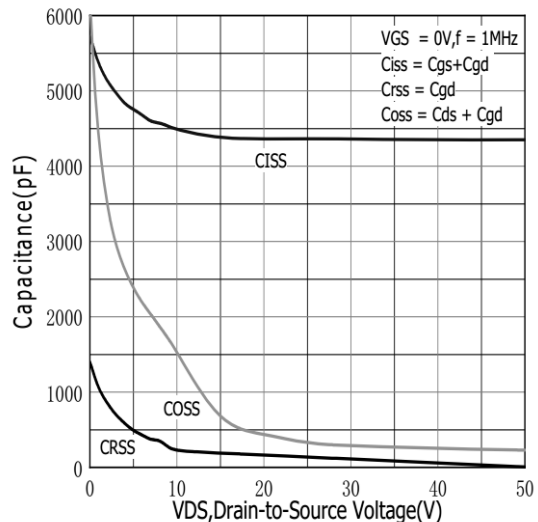
1. Typical Output Characteristics



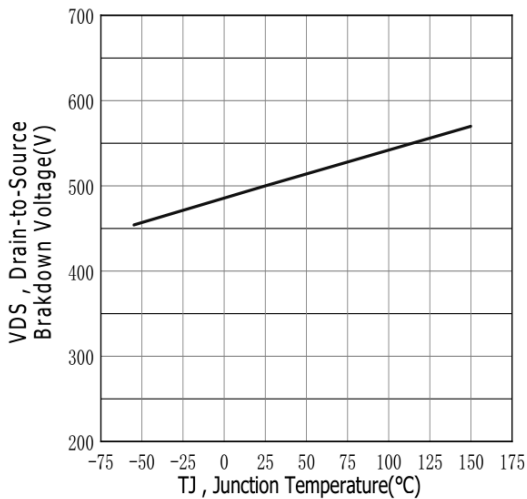
2. Typical Gate Charge vs Gate to Source Voltage



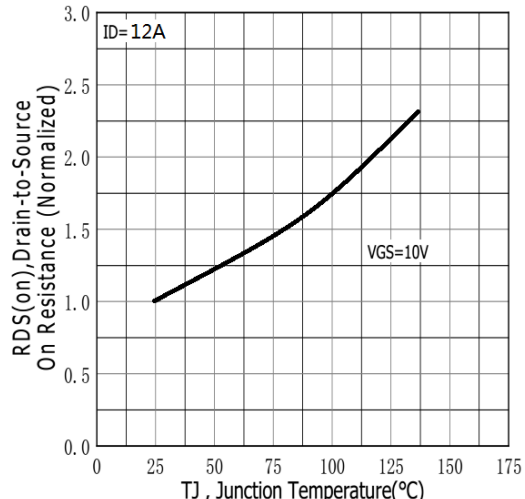
3. Typical Body Diode Transfer Characteristics



4. Typical Capacitance vs Drain to Source Voltage

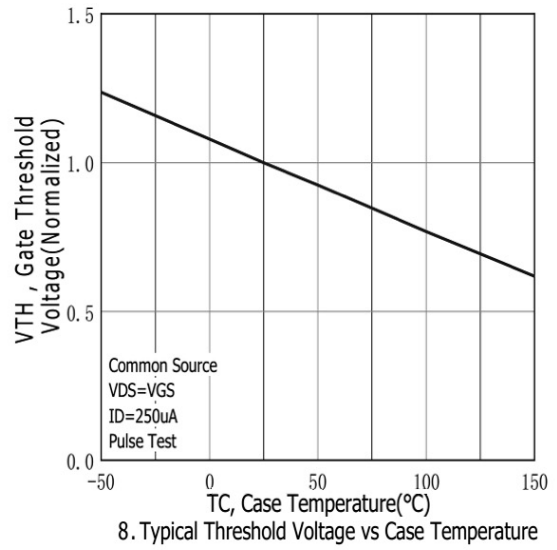
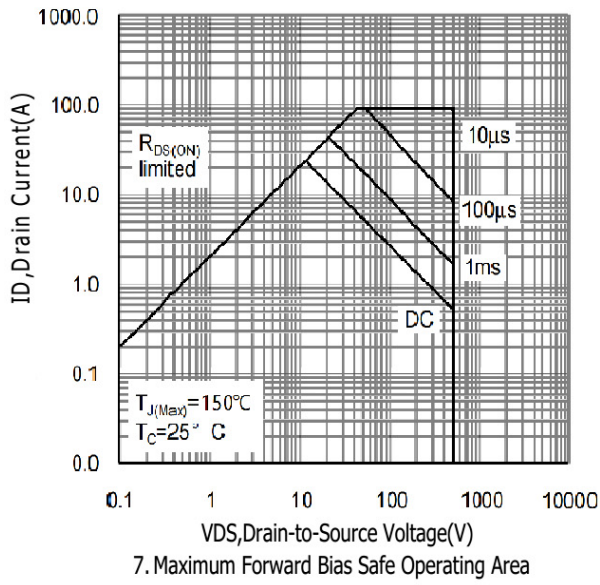


5. Typical Breakdown Voltage vs Junction Temperature



6. Typical Drian to Source on Resistance vs Junction Temperature

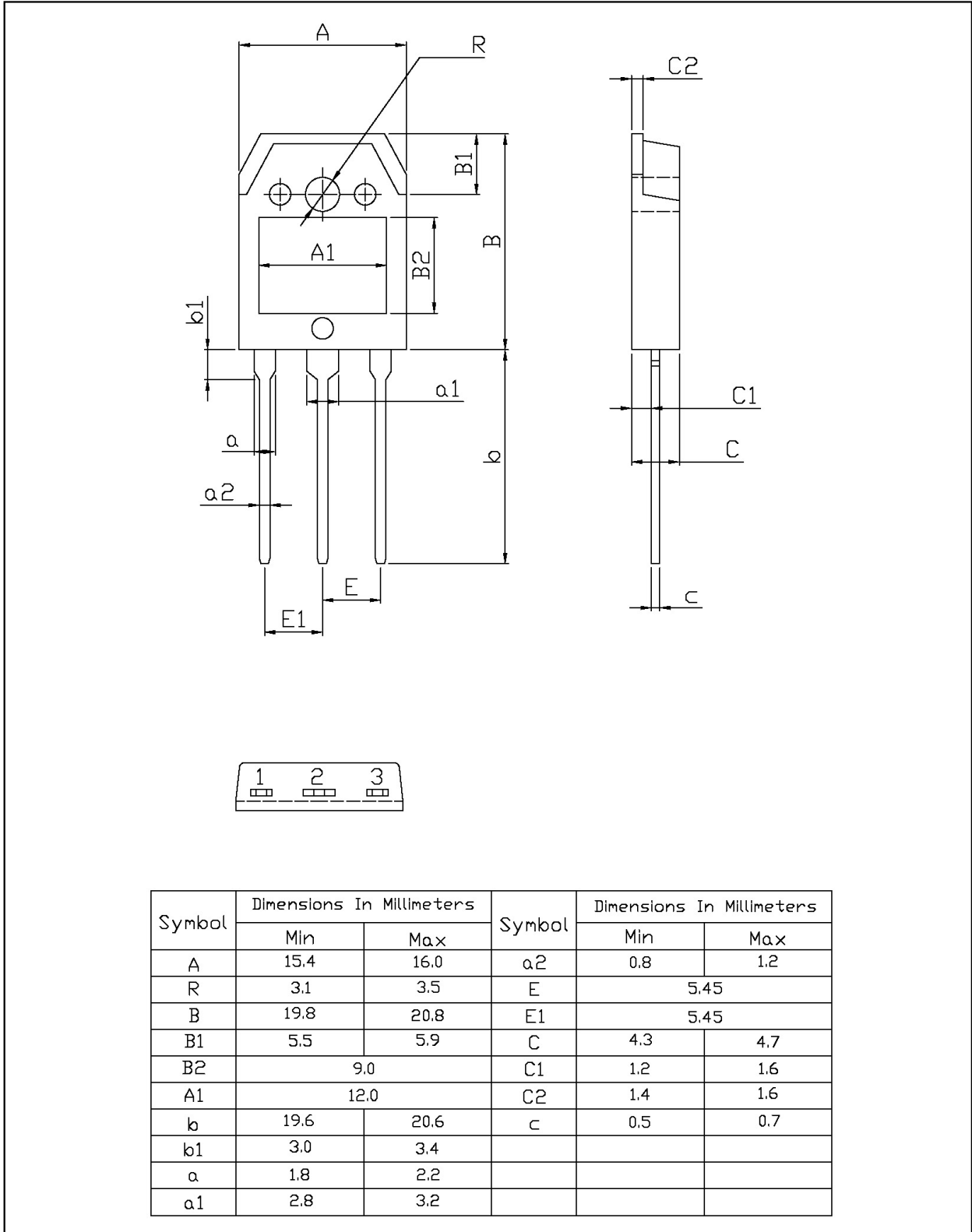
电参数曲线图 / Electrical Characteristic Curve



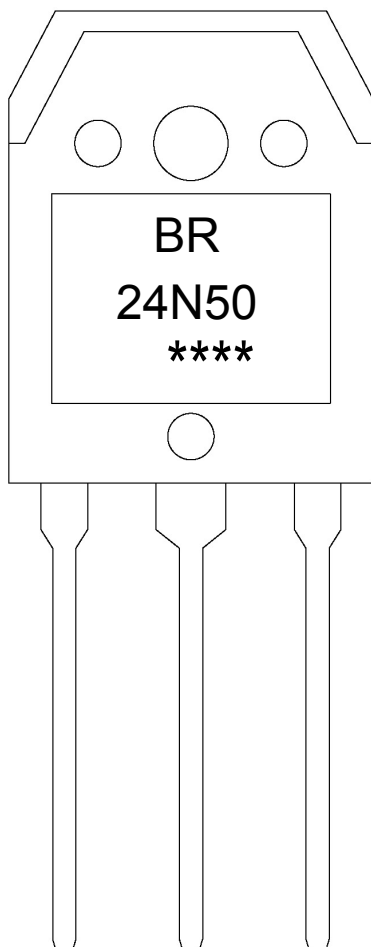
外形尺寸图 / Package Dimensions

T0-3P

单位: mm



印章说明 / Marking Instructions



说明：

BR: 为公司代码

24N50： 为型号代码

****： 为生产批号代码，随生产批号变化

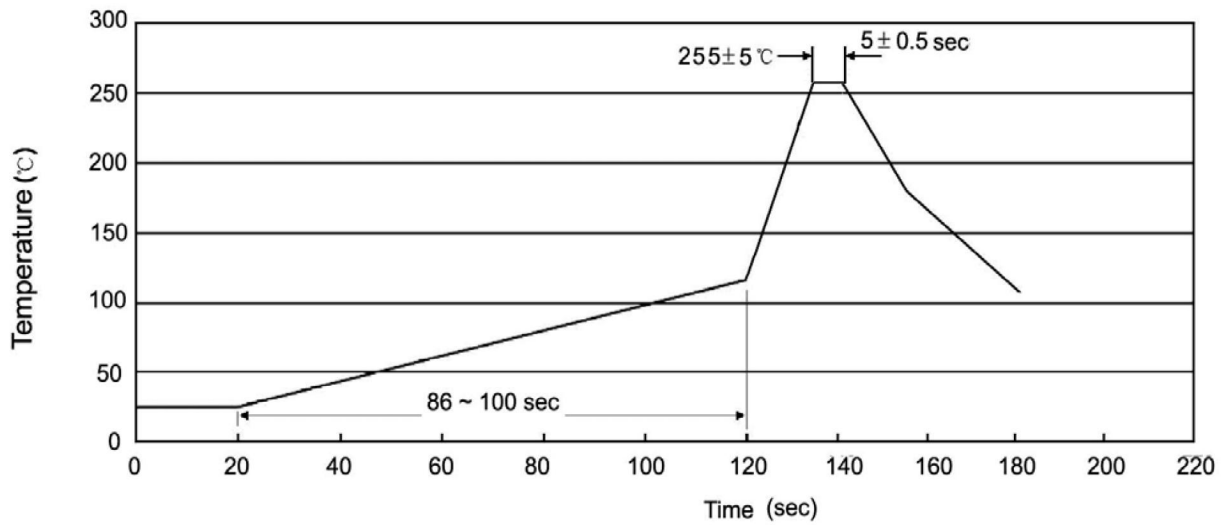
Note:

BR: Company Code

24N50: Product Type

****: 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 ³)		
	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-3P	30	15	450	5	2,250	497.5×46×8	555×164×50	575×290×180

使用说明 / Notices