

BRCS100N20SHRA

Rev.B Apr.-2026

描述 / Descriptions

TO-220 塑封封装 N 沟道场效应管。

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

特征 / Features

$V_{DS} (V) = 200V$ $I_D = 108A (V_{GS} = \pm 20V)$

$R_{DS(ON)} @ 10V \leq 10m\Omega (Typ. 8.8m\Omega)$

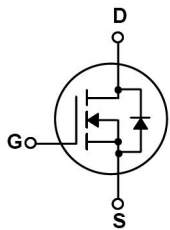
无卤产品。HF Product.

用途 / Applications

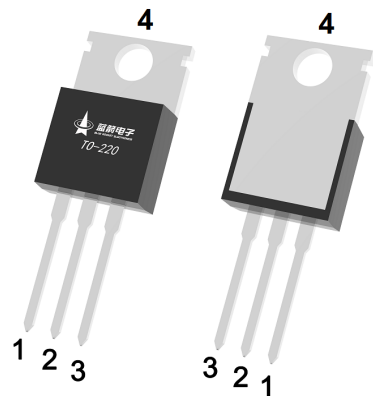
电机驱动器，DC - DC 转换器。

Motor drivers, DC - DC Converter.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN 1 : G

PIN 2, 4 : 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_{DS}	200	V
Drain Current	$I_D(T_C=25^{\circ}\text{C})$	108	A
	$I_D(T_C=100^{\circ}\text{C})$	74	A
Pulsed Drain Current*	I_{DM}	420	A
Gate-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy(L=0.5mH)	E_{AS}	1332	mJ
Total Power Dissipation	$P_D(T_C=25^{\circ}\text{C})$	299	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 175	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient**	$R_{\theta JA}$	62	$^{\circ}\text{C/W}$
Thermal Resistance-Junction to Case	$R_{\theta JC}$	0.5	

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_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	200			V
Drain Leakage Current	I_{DSS}	$V_{DS}=200V$ $V_{GS}=0V$			1	μA
Gate Leakage Current	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
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=30A$		8.8	10	m Ω
Forward On Voltage	V_{SD}	$V_{GS}=0V$ $I_S=50A$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS} = 50 A, V_{GS} = 0 V$ $dI_{SD}/dt = 100 A/\mu s$		129		ns
Reverse Recovery Charge	Q_{rr}			752		nC
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$		3		Ω
Input Capacitance	C_{iss}	$V_{DS}=100V$ $V_{GS}=0V$ $f=1MHz$		5357		pF
Output Capacitance	C_{oss}			457		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge	Q_g	$V_{DS}=100V$ $V_{GS}=10V$ $I_D=50A$		70		nC
Gate-Source Charge	Q_{gs}			25		
Gate-Drain Charge	Q_{gd}			16		

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	$t_{d(on)}$	$V_{GEN}=10V$ $V_{DS}=100V$ $R_G=2.7\Omega$ $I_D=50A$		16		ns
Turn-On Rise Time	t_r			82		
Turn-Off Delay Time	$t_{d(off)}$			55		
Turn-Off Fall Time	t_f			84		

电参数曲线图 / Electrical Characteristic Curve

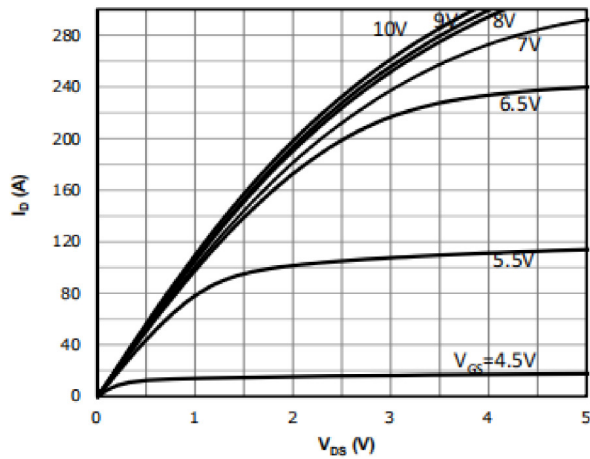


Fig 1 : Output Characteristics

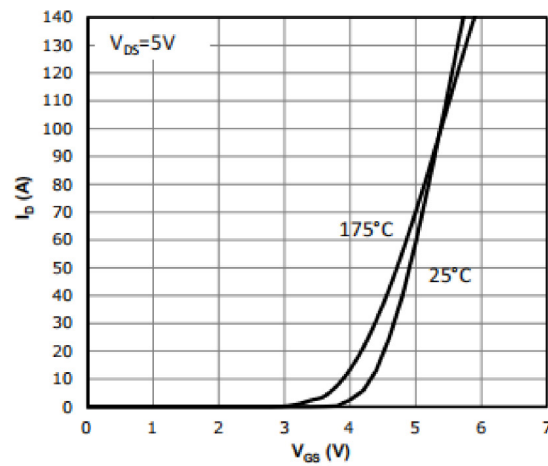


Fig 2 : Transfer Characteristics

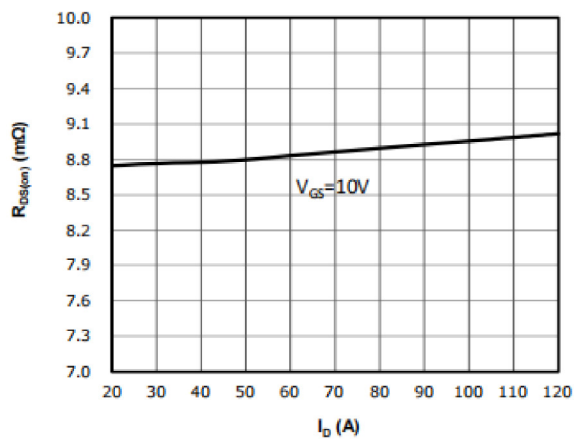


Fig 3 : Rds(on) vs Drain Current and Gate Voltage

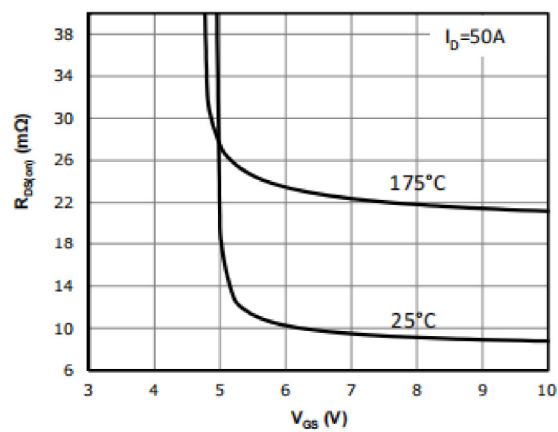


Fig 4 : Rds(on) vs Gate Voltage

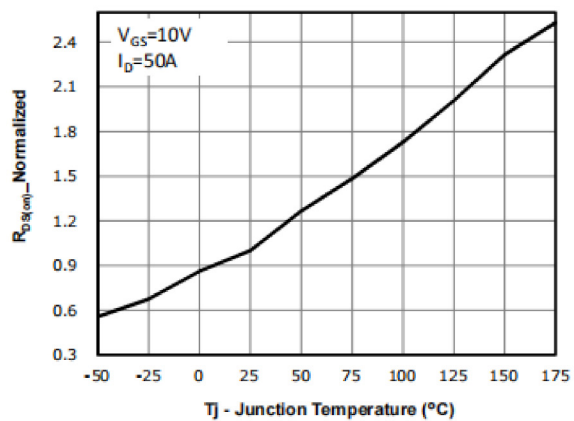


Fig 5: Rds(on) vs Temperature

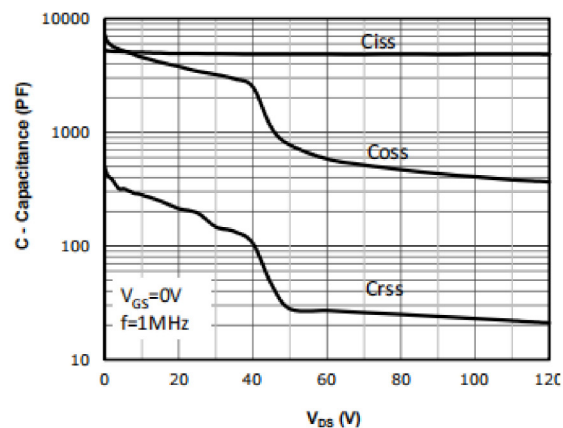
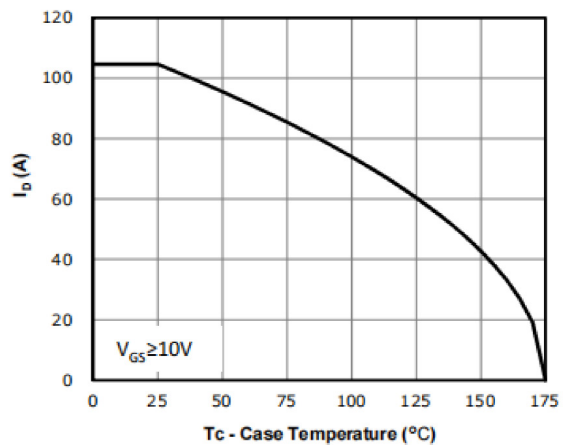
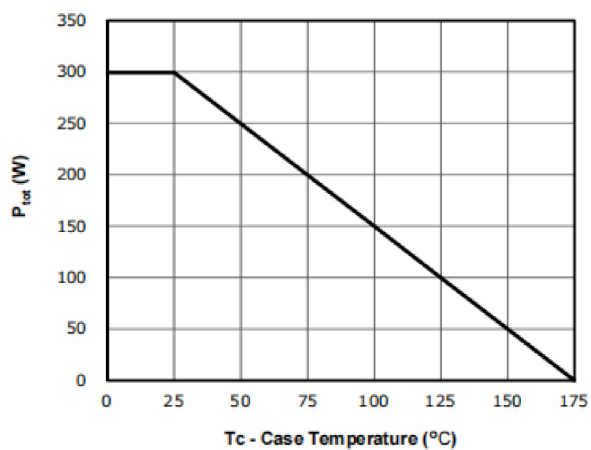
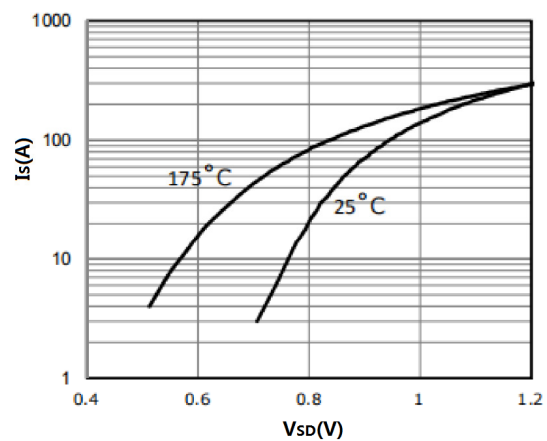
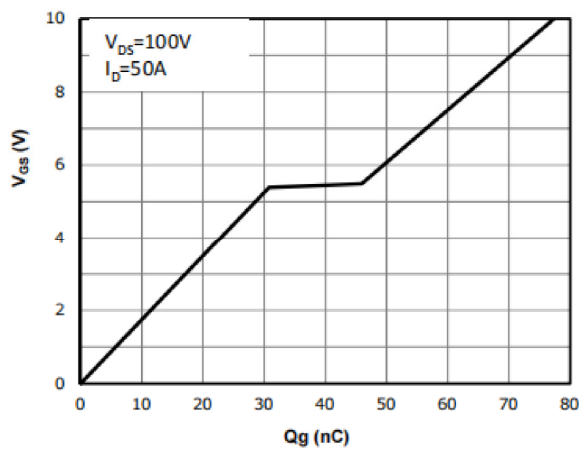
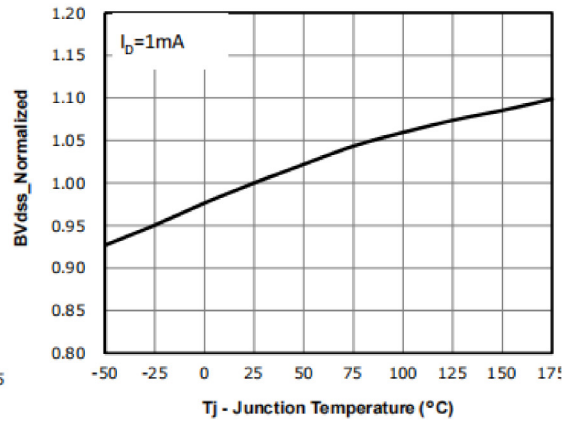
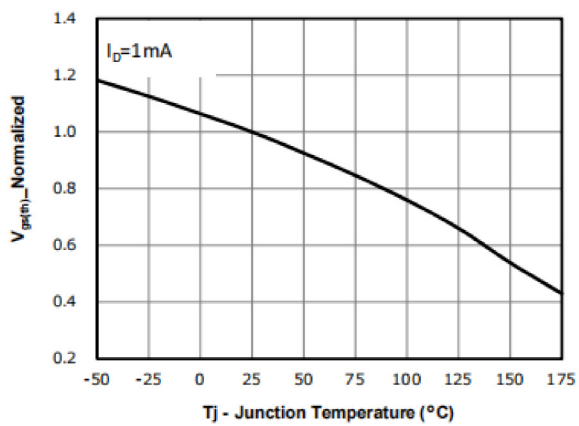


Fig 6: Capacitance Characteristics

电参数曲线图 / Electrical Characteristic Curve



电参数曲线图 / Electrical Characteristic Curve

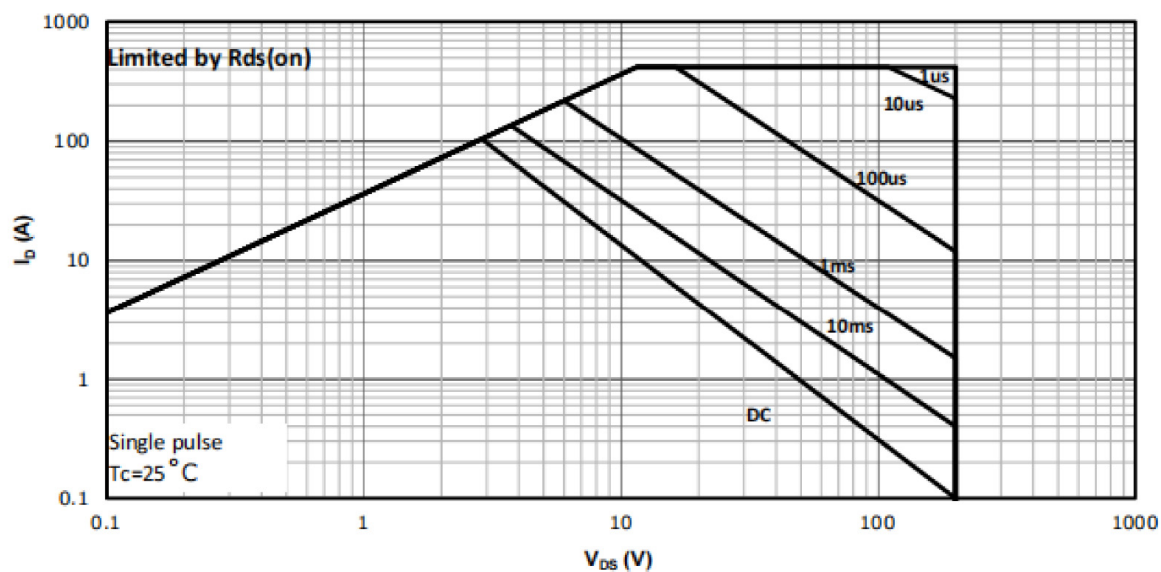


Fig 13: Safe Operating Area

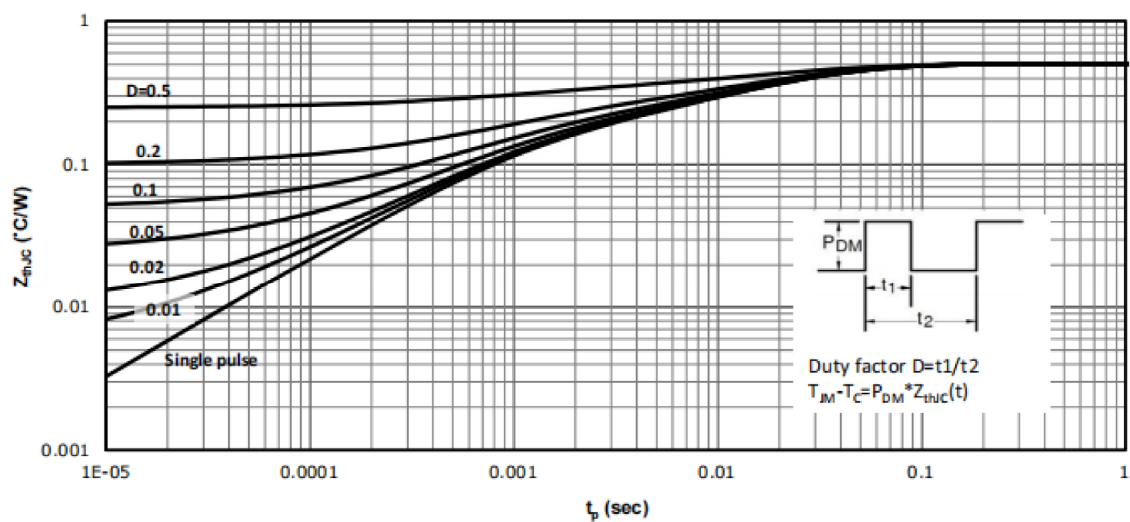
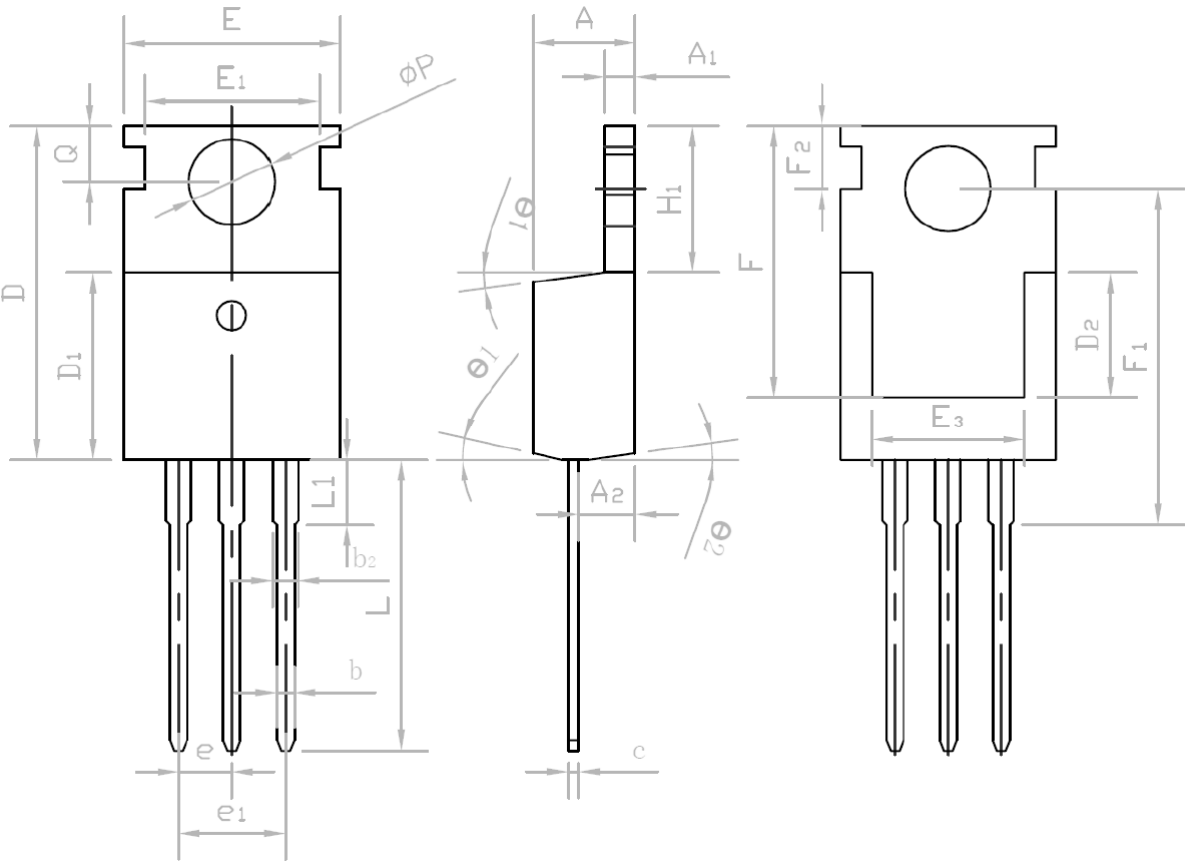


Fig 14: Max Transient Thermal Impedance

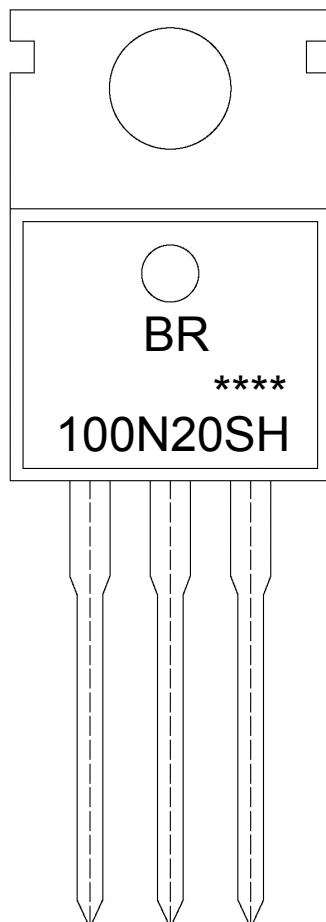
外形尺寸图 / Package Dimensions



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	4.27	4.57	4.87
A1	1.15	1.30	1.45
A2	2.10	2.40	2.70
b	0.70	0.80	1.00
b2	1.17	1.27	1.50
c	0.40	0.50	0.65
D	15.10	15.60	16.10
D1	8.80	9.10	9.40
D2	5.70	6.70	7.00
E	9.70	10.00	10.30
E1	-	8.70	-
E2	9.63	10.00	10.35
E3	7.00	8.00	8.40
e	2.54 BSC		
e1	5.08 BSC		
H1	6.00	6.50	6.85
L	12.75	13.50	13.90
L1	-	3.10	3.40
ΦP	3.45	3.60	3.75
Q	2.60	2.80	3.00
θ1	4°	7°	10°
θ2	0°	3°	6°
F	13.30	13.50	13.70
F1	15.50	15.90	16.30
F2	2.80	3.00	3.20



印章说明 / Marking Instructions



说明：

BR： 为公司代码

****： 为生产批号代码，随生产批号变化

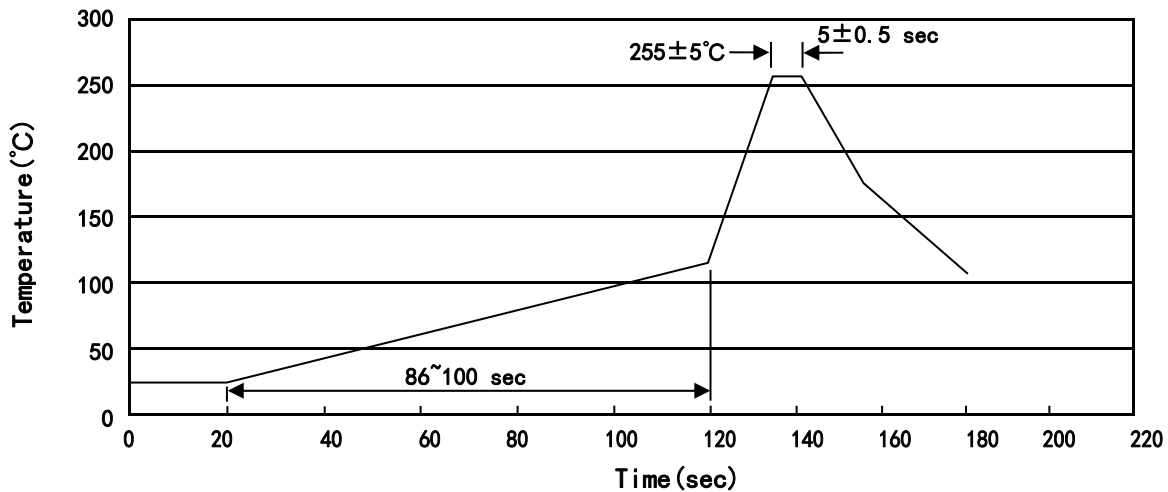
100N20SH： 为型号代码

Note:

BR: Company Code

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

100N20SH: Product Type Code

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.

散件包装 / BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

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-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

使用说明 / Notices

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