

BRD70R1K2

Rev.A Jul.-2016

描述 / Descriptions

TO-252 塑封封装超结 N 沟道功率 MOS 场效应管。

Super Junction N-Channel Power MOSFET in a TO-252 Plastic Package.

特征 / Features

超低 $R_{DS(ON)}=1.2\Omega@V_{GS}=10V$, 超低栅电荷 $Q_g=8.9nC$ typ,开关速度快。

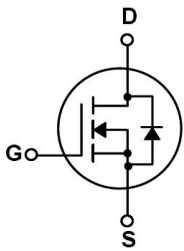
Ultra Low $R_{DS(ON)}=1.2\Omega@V_{GS}=10V$, Ultra Low Gate Charge, $Q_g=8.9nC$ typ, Fast switching capability。

用途 / Applications

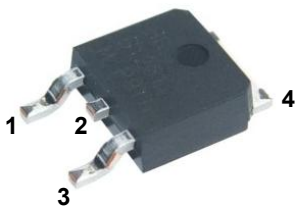
用于 TV 电源 , 高性能适配器 , LED 灯电源。

TV Power, High Performance Charger/Adapter, LED Lighting Power.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1 : G

PIN 2 : D

PIN 3 : S

PIN 4 : D

放大及印章代码 / h_{FE} Classifications & 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}	730	V	
Gate-Source Voltage	V_{GSS}	±30	V	
Continuous Drain Current	I_D	$T_C=25^\circ\text{C}$	4.2	A
		$T_C=125^\circ\text{C}$	1.9	A
Pulsed Drain Current (Note 2)	I_{DM}	11.3	A	
Avalanche Energy, Single Pulse (Note 3)	E_{AS}	125	mJ	
Avalanche Energy, Repetitive (Note 2)	E_{AR}	0.2	mJ	
Avalanche Current, Repetitive (Note 2)	I_{AR}	2.0	A	
Continuous Diode Forward Current	I_S	4.2	A	
Diode Pulse Current	$I_{S,PULSE}$	11.3	A	
Operating Junction Temperature	T_J	150	°C	
Storage Temperature	T_{STG}	-65 to 150	°C	
Lead Temperature (Soldering, 10 sec)	T_{LEAD}	300	°C	

Note:

1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. $I_{AS} = 2\text{A}$, $V_{DD} = 60\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

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}	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	700			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=700\text{V}$ $V_{GS}=0\text{V}$			1	uA
Gate-Body Leakage Current	Forward	I_{GSSF} $V_{GS}=30\text{V}$ $V_{DS}=0\text{V}$			100	nA
	Reverse	I_{GSSR} $V_{GS}=-30\text{V}$ $V_{DS}=0\text{V}$			-100	
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	2.5	3.4	4.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$ $I_D=1.5\text{A}$		1.0	1.2	Ω
Gate Resistance	R_G	f=1MHz Open Drain		4.25		Ω
Input Capacitance	C_{ISS}	$V_{DS}=25\text{V}$ $V_{GS}=0\text{V}$ f=1MHz		298		pF
Output Capacitance	C_{OSS}			316		
Reverse Transfer Capacitance	C_{RSS}			2.0		

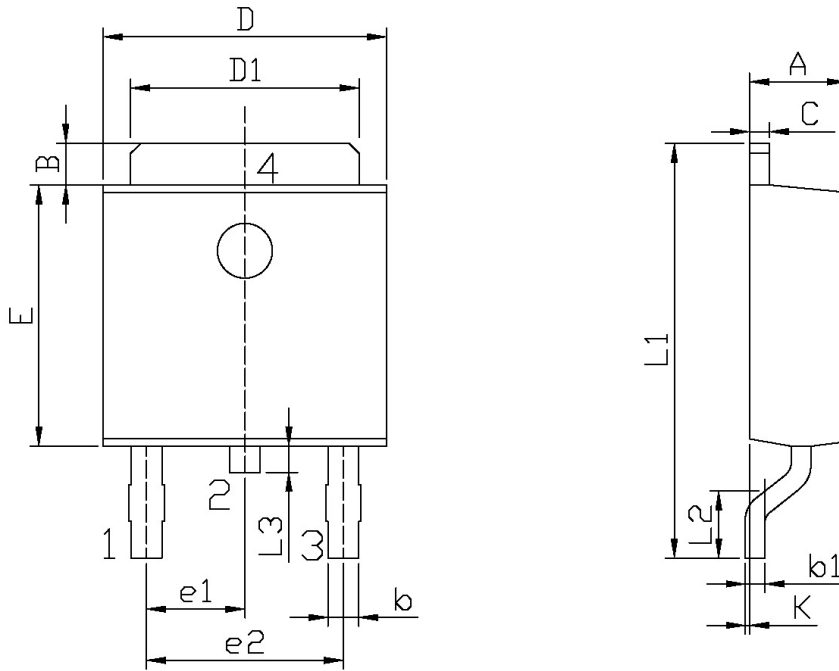
电性能参数 / Electrical Characteristics(Ta=25°C)

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	$t_{d(on)}$	$V_{DD}=400V$ $I_D=2.0A$ $R_G=10\Omega$ $V_{GS}=10V$		8		ns
Rise Time	t_r			12		
Turn-off Delay Time	$t_{d(off)}$			10		
Fall Time	t_f			18		
Gate to Source Charge	Q_{gs}	$V_{DD}=480V$ $I_D=2.0A$ $V_{GS}=0$ to 10V		2.32		nC
Gate to Drain Charge	Q_{gd}			4.7		
Gate Charge Total	Q_g			8.9		
Gate Plateau Voltage	$V_{plateau}$			5.8		
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_{SD}=2A$		0.81	1.1	V
Reverse Recovery Time	t_{rr}	$V_R=100V$ $I_F=2.0A$ $dI_F/dt=98.4A/us$		155. 8		ns
Reverse Recovery Charge	Q_{rr}			0.89		uC
Peak Reverse Recovery Current	I_{rrm}			11.3		A

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电参数曲线图 / Electrical Characteristic Curve

外形尺寸图 / Package Dimensions

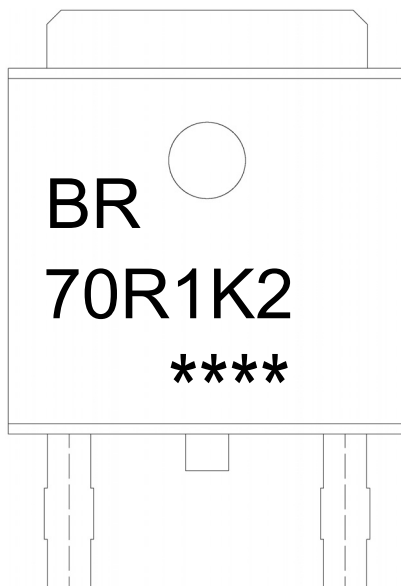


单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252

印章说明 / Marking Instructions



说明：

BR： 为公司代码

70R1K2： 为型号代码

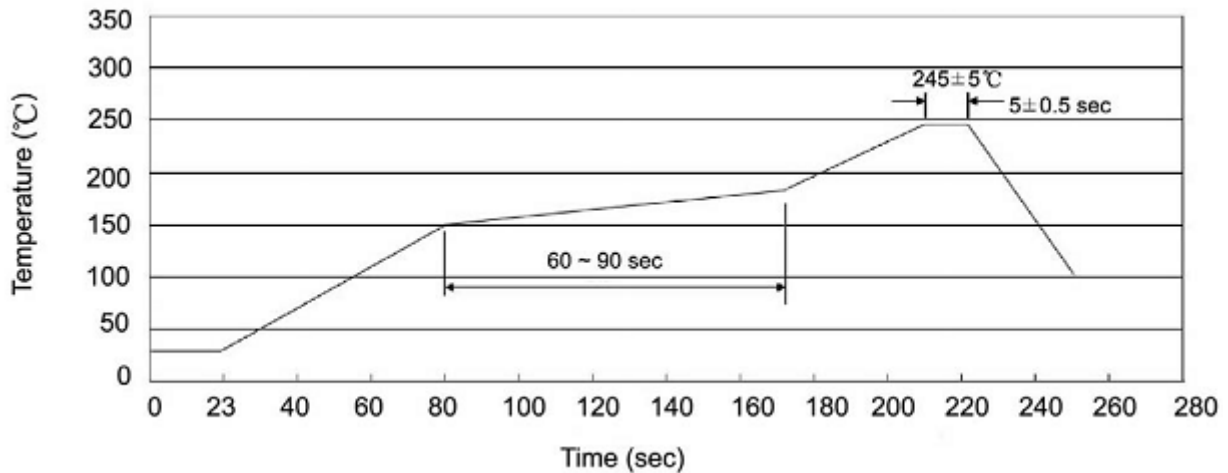
****： 为生产批号代码，随生产批号变化。

Note:

BR: Company Code

70R1K2: Product Type.

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

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)


说明：

- 1、预热温度 25~150°C，时间 60~90sec;
- 2、峰值温度 245±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.:245±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：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
TO-252	2,500	2	5,000	5	25,000	13" ×16	360×360×50	385×257×392

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-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

使用说明 / Notices