

BRCS010N04SZCQ

Rev.A May.-2023

描述 / Descriptions

PDFN5×6 封装 N 沟道场效应管。

N-Channel MOSFET in a PDFN5×6 Plastic Package.

特征 / Features

低电阻可最大地降低导电损耗；低栅极电荷，可实现快速切换；低热阻；符合 AEC-Q101 标准高可靠性要求；无卤产品。

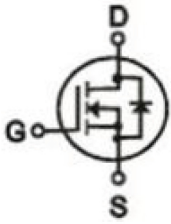
Low $R_{DS(ON)}$ to minimize conductive loss; low Gate Charge for fast switching; Low Thermal resistance; Qualified to AEC-Q101 Standards for High Reliability; HF Product.

用途 / Applications

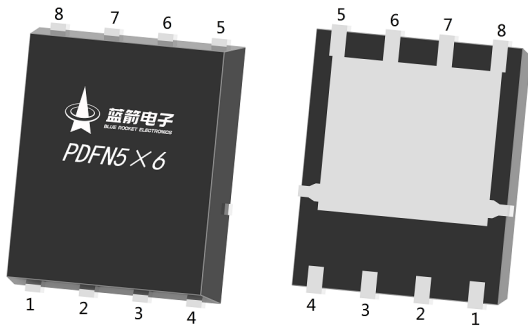
电池管理，满足汽车应用的严格要求。

Battery Management, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1、2、3: S PIN4: G PIN5、6、7、8: D

印章代码 / Marking

见印章说明。

See Marking Instructions.

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

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Drain-Source Voltage	V _{DS}	40	V
Drain Current - Continuous	I _D	215	A
Drain Current – Pulsed	I _{DM}	430	A
Gate-Source Voltage	V _{GS}	±20	V
Power Dissipation	P _D (T _c =25°C)	70	W
Single Pulse Avalanche Energy(L=0.5mH)	E _{AS}	542	mJ
Avalanche Current(L=0.5mH)	I _{AS}	44	A
Junction and Storage Temperature Range	T _j , T _{stg}	-55 to 150	°C
Thermal resistance, junction - case	R _{θJC}	1.79	°C/W
Thermal resistance, junction - ambient	R _{θJA}	50	°C/W

电性能参数 / Electrical Characteristics(T_a=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}	I _D =250uA, V _{GS} =0V	40	46		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			1.0	uA
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A		0.93	1.0	mΩ
		V _{GS} =4.5V, I _D =10A		1.28	2.0	
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1.0MHz		5800		pF
Output Capacitance	C _{oss}			1860		
Reverse Transfer Capacitance	C _{rss}			135		
Gate resistance	R _g	V _{GS} =0V V _{DS} =0V f=1MHz		1.0		Ω
Total Gate Charge	Q _g (10V)	V _{GS} =10V, V _{DS} =20V, I _D =20A		70		nC
Total Gate Charge	Q _g (4.5V)			30		
Gate Source Charge	Q _{gs}			14.5		
Gate Drain Charge	Q _{gd}			10.5		
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =20V, R _L =1Ω, R _{GEN} =3Ω		15		ns
Turn-On Rise Time	t _r			5.8		
Turn-Off Delay Time	t _{d(off)}			62		
Turn-Off Fall Time	t _f			10		

电参数曲线图 / Electrical Characteristic Curve

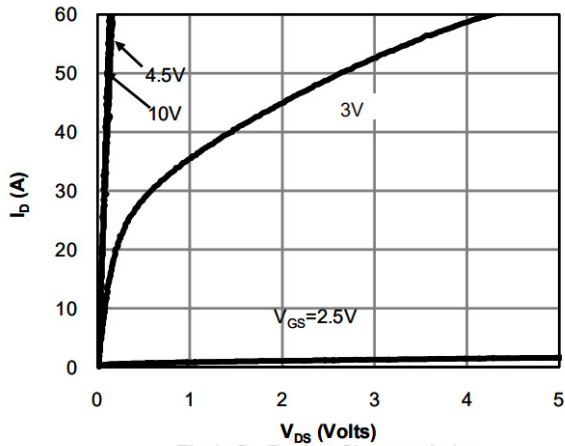


Fig 1: On-Region Characteristics

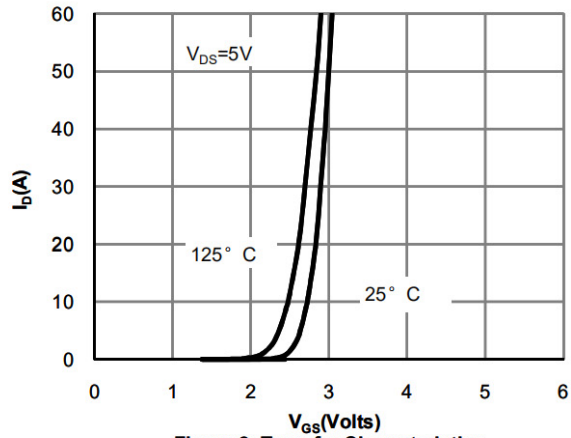


Figure 2: Transfer Characteristics

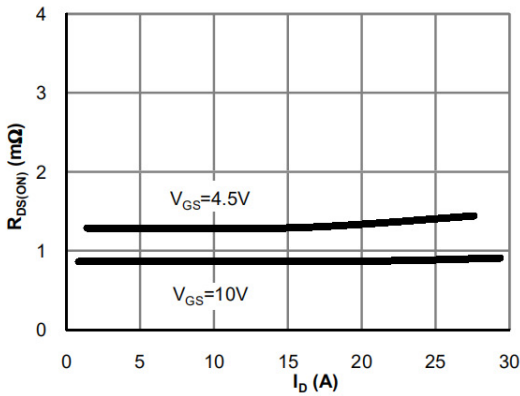


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

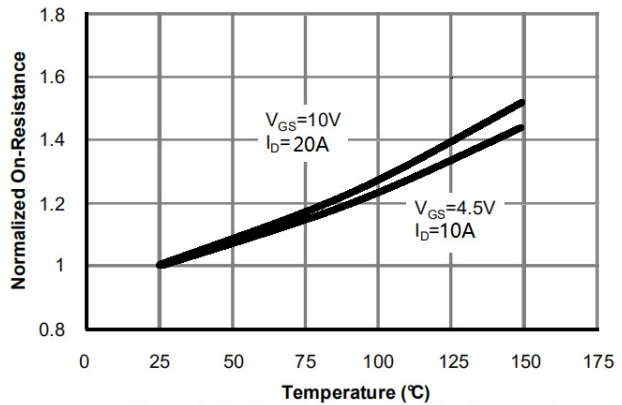


Figure 4: On-Resistance vs. Junction Temperature

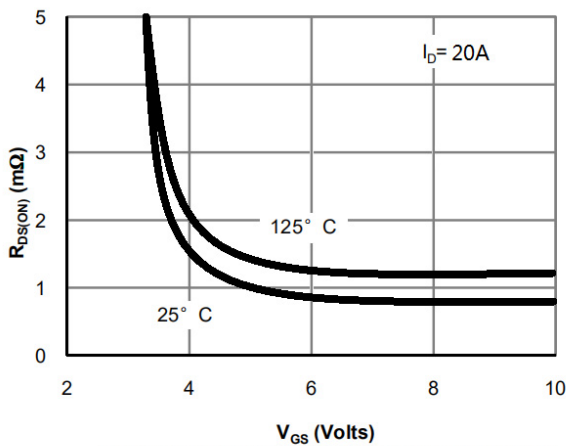


Figure 5: On-Resistance vs. Gate-Source Voltage

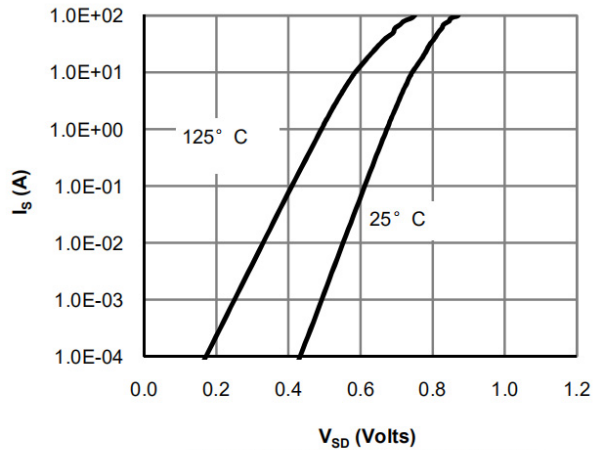


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

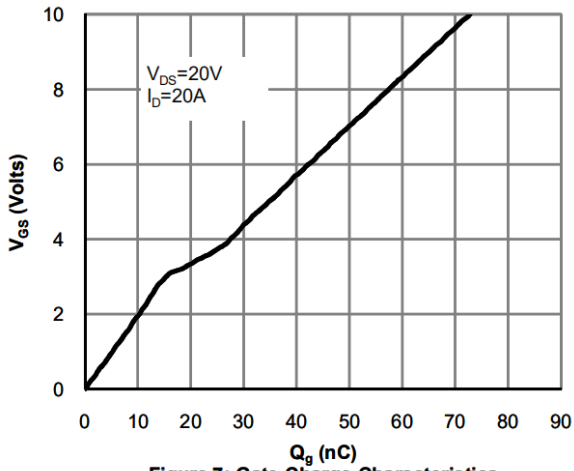


Figure 7: Gate-Charge Characteristics

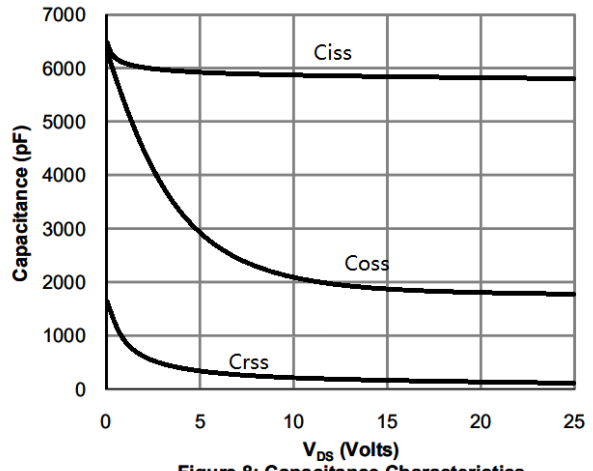


Figure 8: Capacitance Characteristics

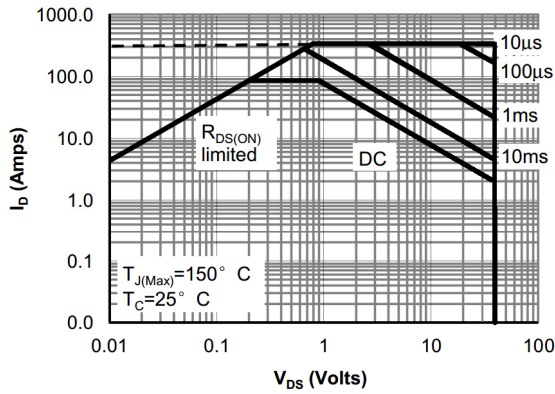


Figure 9: Maximum Forward Biased Safe Operating Area

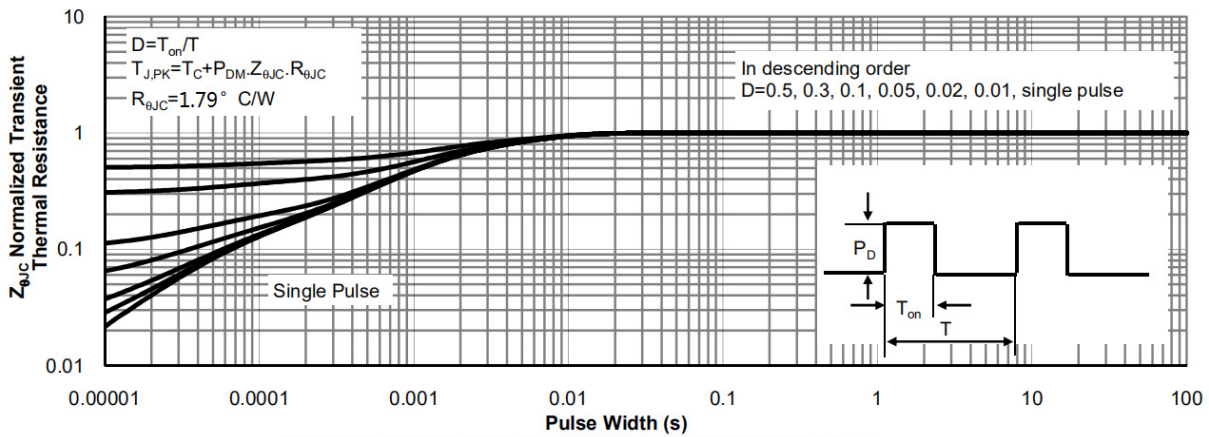


Figure 10: Normalized Maximum Transient Thermal Impedance

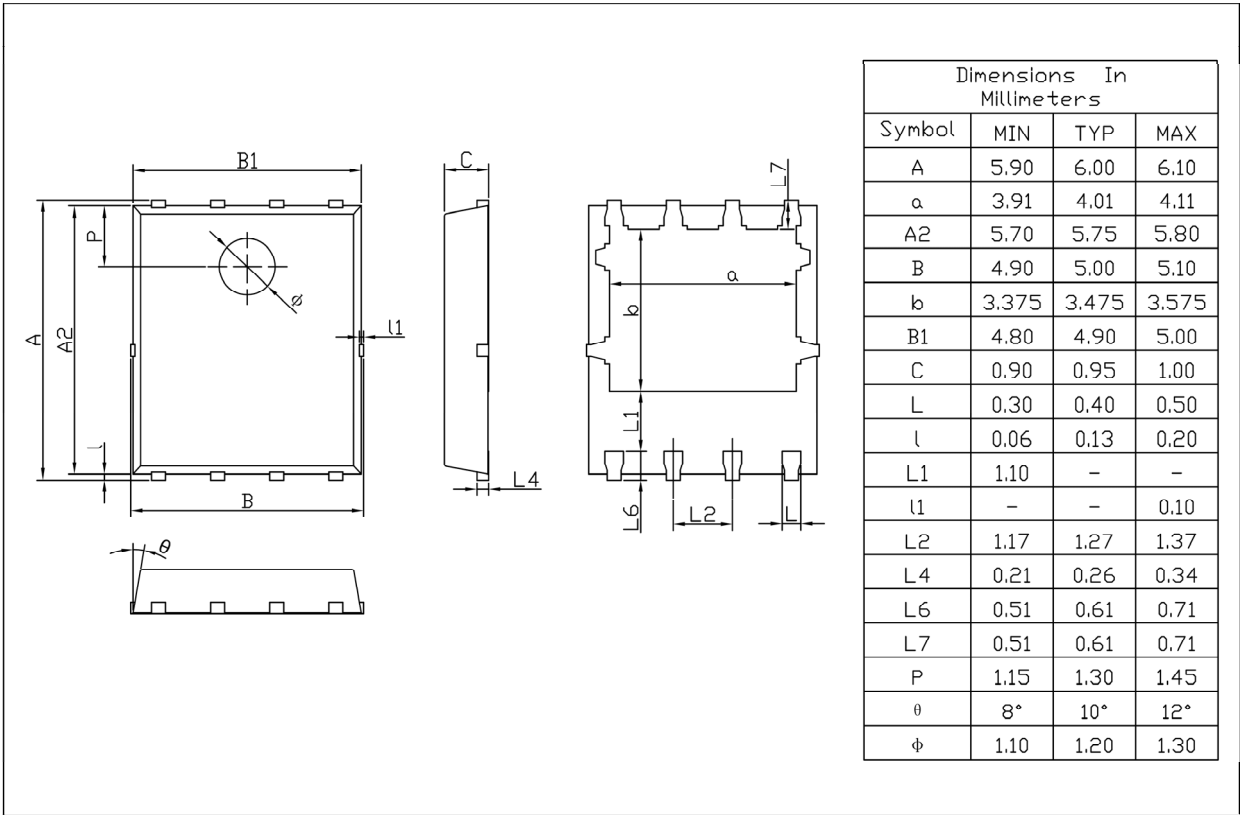
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外形尺寸图 / Package Dimensions

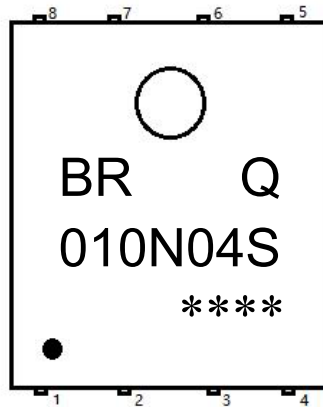
PDFN5 × 6

Unit:mm



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印章说明 / Marking Instructions

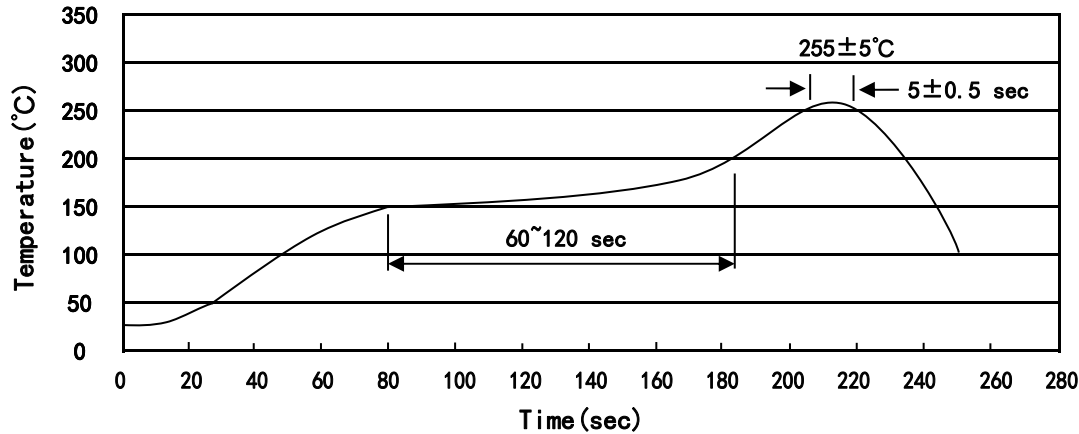


说明：

- BR： 为公司代码
- Q： 为汽车无卤产品标识
- 010N04S： 为为产品型号
- ****： 为生产批号代码，随生产批号变化

Note：

- BR： Company Code
- Q: Automobile halogen-free product Code
- 010N04S： 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 150~200°C，时间 60~120sec;
- 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:150~200°C, Time:60~120sec.
- 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：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
PDFN5×6	5000	2	10000	6	60000	13"×12	360×360×50	380×335×366

使用说明 / Notices