

BRCS060N03YBQ

Rev.A Nov.-2022

DATA SHEET

描述 / Descriptions

PDFN 3×3A-8L 塑封封装 N 沟道 MOS 场效应管。

N-Channel Enhancement Mode Field Effect Transistor in a PDFN 3×3A-8L Plastic Package.

特征 / Features

$V_{DS} (V) = 30V$

$I_D = 40 A (V_{GS} = \pm 20V)$

$R_{DS(ON)} @ 10V \leq 6mR (Typ. 4.7mR)$

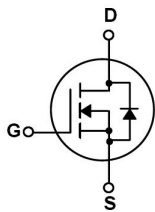
符合 AEC-Q101 标准高可靠性要求，无卤产品。Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

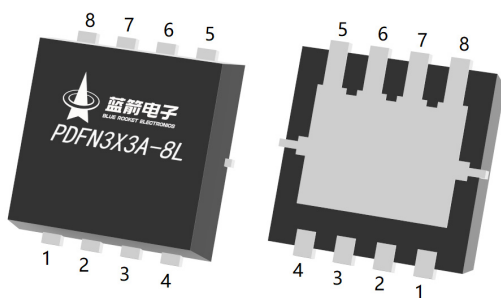
用于高功率 DC/DC 转换和功率开关，满足汽车应用的严格要求。

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



出脚	定义
Pin1	S
Pin2	S
Pin3	S
Pin4	G
Pin5	D
Pin6	D
Pin7	D
Pin8	D

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}	30	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	40	A
Drain Current - Pulsed	I_{DM}	130	A
Gate-Source Voltage	V_{GSS}	± 20	V
Single Pulsed Avalanche Energy	E_{AS}	211	mJ
Avalanche Current	I_{AS}	23	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	29	W
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Junction-to-Ambient	$t \leq 10$	40	$^\circ\text{C/W}$
Junction-to-Ambient	Steady-State		
Junction-to-Case	Steady-State	$R_{\theta JC}$	

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}	$V_{GS}=0V$	$I_D=250\mu A$	30	32		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$	$V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$	$V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$	$I_D=250\mu A$	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$	$I_D=20A$		4.7	6	m Ω
		$V_{GS}=4.5V$	$I_D=10A$		7.1	9	m Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$	$I_S=10A$		0.75	1.2	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $f=1.0MHz$	$V_{GS}=0V$		2090		pF
Output Capacitance	C_{oss}				790		
Reverse Transfer Capacitance	C_{rss}				634		
Gate resistance	R_g	$V_{GS}=0V$ $f=1MHz$	$V_{DS}=0V$		1.9		Ω
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V$ $I_D=18A$	$V_{DS}=15V$		33		nC
Total Gate Charge	$Q_{g(4.5V)}$				16		
Gate Source Charge	Q_{gs}				5.2		
Gate Drain Charge	Q_{gd}				6.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V$ $R_L=0.83\Omega$	$V_{DS}=15V$ $R_{GEN}=3\Omega$		6		ns
Turn-On Rise Time	t_r				4		
Turn-Off Delay Time	$t_{d(off)}$				33		
Turn-Off Fall Time	t_f				7.5		

电参数曲线图 / Electrical Characteristic Curve

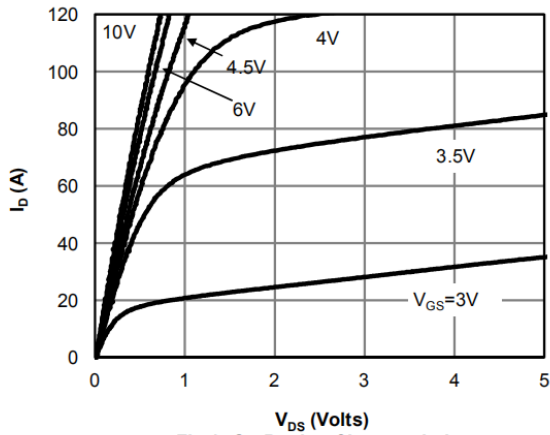


Fig 1: On-Region Characteristics

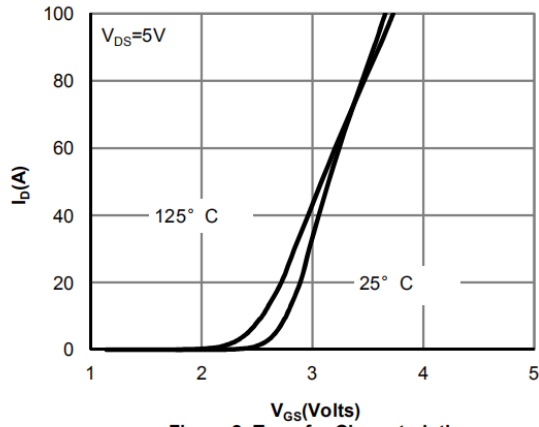


Figure 2: Transfer Characteristics

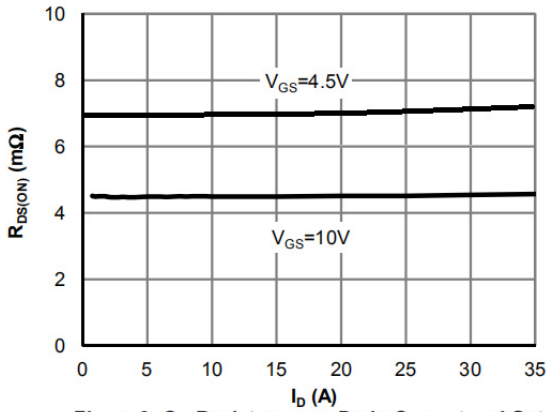


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

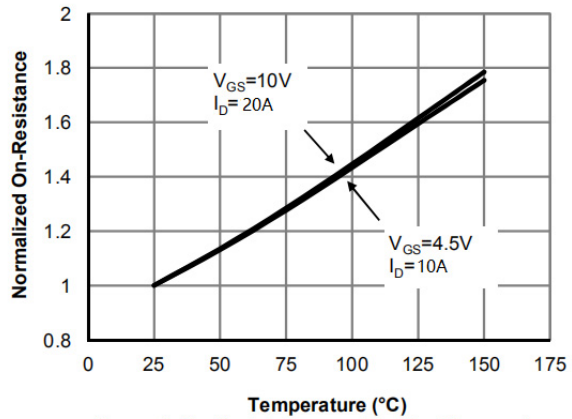


Figure 4: On-Resistance vs. Junction Temperature

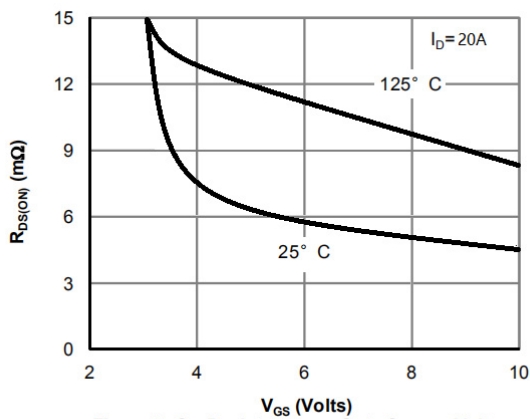


Figure 5: On-Resistance vs. Gate-Source Voltage

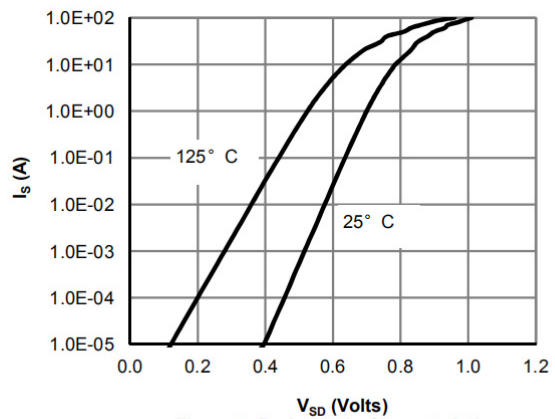


Figure 6: Body-Diode Characteristics

电参数曲线图 / Electrical Characteristic Curve

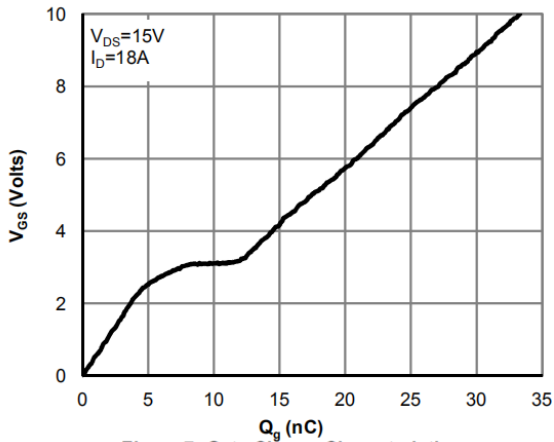


Figure 7: Gate-Charge Characteristics

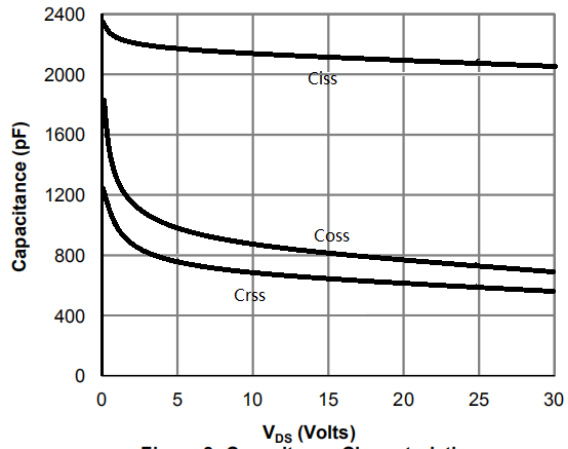


Figure 8: Capacitance Characteristics

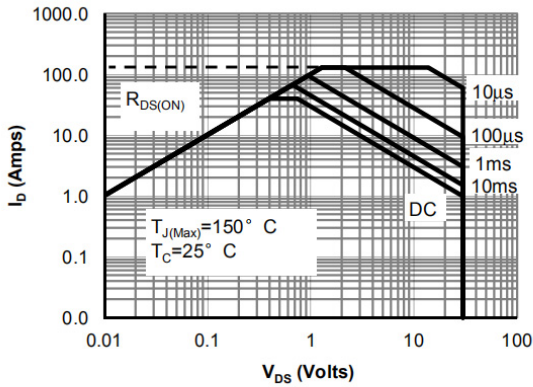


Figure 9: Maximum Forward Biased Safe Operating Area

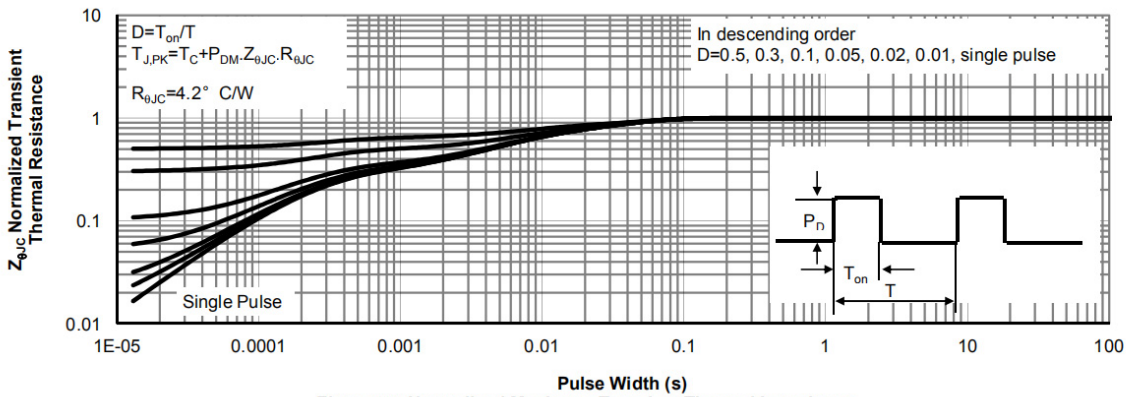
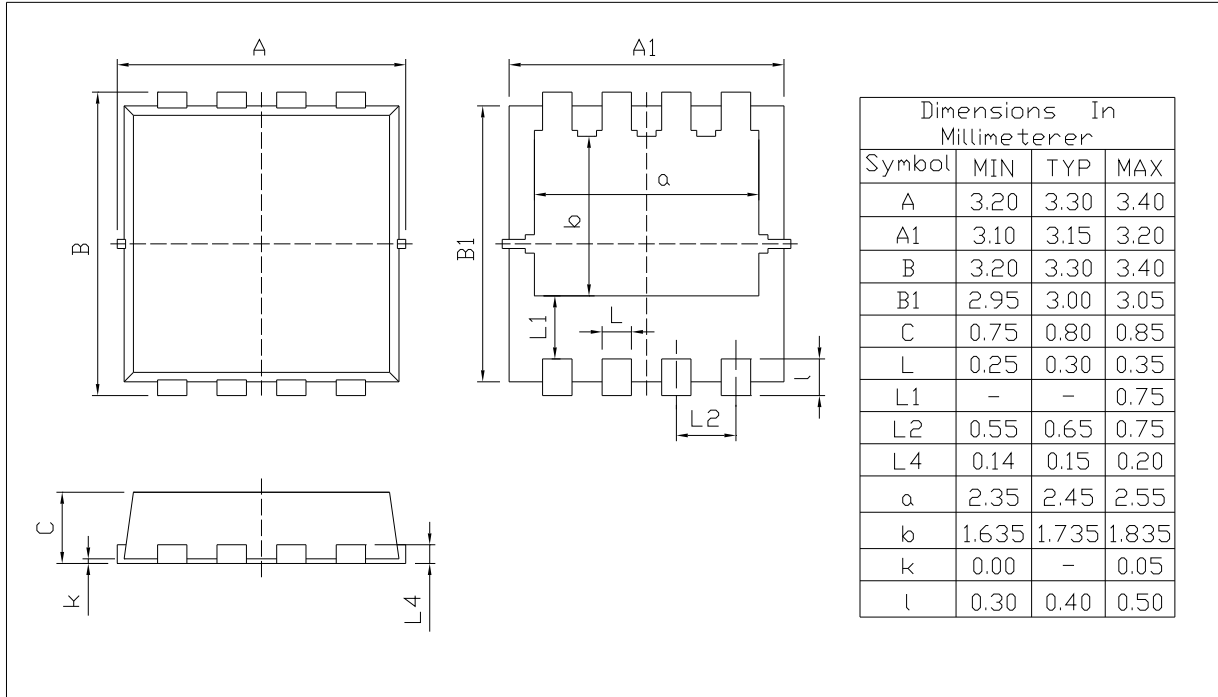


Figure 10: Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

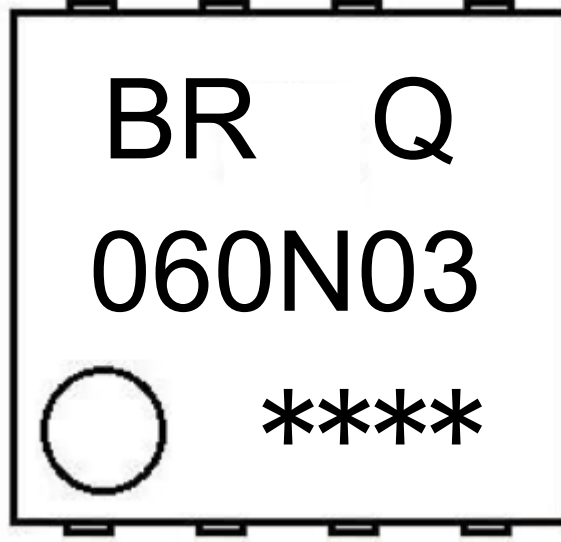
PDFN3X3A-8L

Unit:mm



Rev.00 202011

印章说明 / Marking Instructions



说明：

BR： 为公司代码

Q： 为汽车无卤产品标识

060N03： 为型号代码

****： 为生产批号代码，随生产批号变化

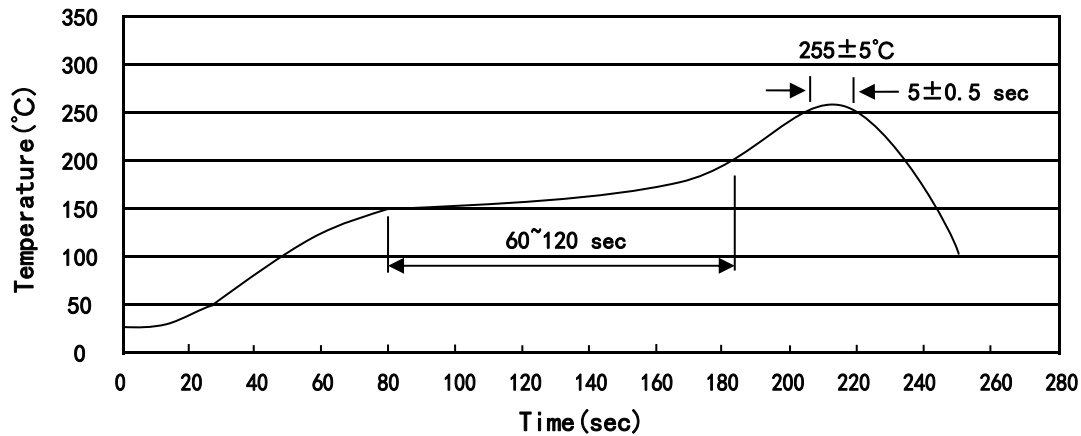
Note:

BR: Company Code

Q: Automobile halogen-free product Code

060N03: Product Type Code

****: 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
PDFN3×3A-8L	5,000	2	10,000	6	60,000	13" ×12	360×360×50	380×335×366

使用说明 / Notices