

BRCS250C03YA

Rev.C Jun.-2024

DATA SHEET

描述 / Descriptions

PDFN3×3-8L 塑封封装互补增强模式 MOS 场效应管。

Complementary Enhancement MOSFET in a PDFN3×3-8L Plastic Package.

特征 / Features

N-channel

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

$I_D=20A$

$R_{DS(ON)}<25m\Omega(V_{GS}=10V)$

$R_{DS(ON)}<40m\Omega(V_{GS}=4.5V)$

无卤产品。HF Product.

P-channel

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

$I_D=-12A$

$R_{DS(ON)}<60m\Omega(V_{GS}=-10V)$

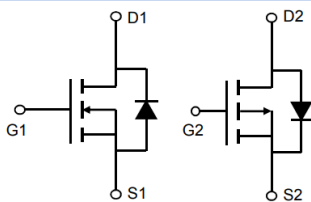
$R_{DS(ON)}<85m\Omega(V_{GS}=-4.5V)$

用途 / Applications

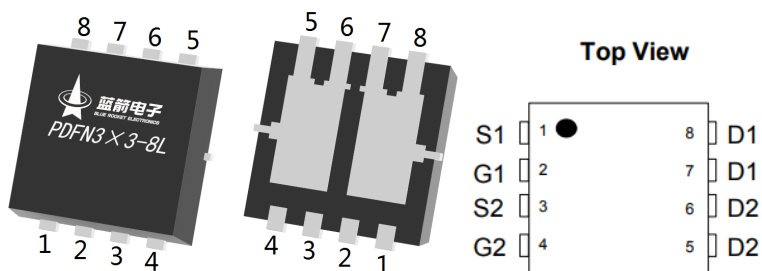
用于高功率 DC/DC 转换和功率开关。适用于作负载开关或脉宽调制应用。

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies. And suitable for use as a load switch or in PWM applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



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
		N-channe	P-channell	
Drain-Source Voltage	V_{DSS}	±30		V
Gate-Source Voltage	V_{GSS}	±20		V
Continuous Drain Current	$I_D(T_C=25^\circ\text{C})$	20	-12	A
Continuous Drain Current	$I_D(T_A=25^\circ\text{C})$	7.7	-4.3	A
Power Dissipation	$P_D(T_C=25^\circ\text{C})$	11.2	10	W
Power Dissipation	$P_D(T_A=25^\circ\text{C})$	2.7	1.8	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		°C
Maximum Junction-to-Ambient	$R_{\theta JA}(\text{Steady-State})$	45		°C/W
Maximum Junction-to-Case	$R_{\theta JC}(\text{Steady-State})$	11.2	12.5	°C/W

N-沟道电性能参数/N-CHANNEL 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 =250μA	30	35		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V	V _{GS} =0V			1.0	μA
		V _{DS} =30V T _J =55°C	V _{GS} =0V			5.0	μA
Gate-Body leakage current	I _{GSS}	V _{GS} =±20V	V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS}	I _D =250μA	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V	I _D =6.9A		20	25	mΩ
		V _{GS} =4.5V	I _D =5.0A		28	40	mΩ
Diode Forward Voltage	V _{SD}	V _{GS} =0V	I _S =1.0A		0.78	1.2	V
Input Capacitance	C _{iss}				690		pF
Output Capacitance	C _{oss}	V _{DS} =25V f=1.0MHz	V _{GS} =0V		200		pF
Reverse Transfer Capacitance	C _{rss}				130		pF
Gate resistance	R _g	V _{DS} =0V f=1.0MHz	V _{GS} =0V		2.7		Ω
Total Gate Charge(10V)	Q _g	V _{GS} =10V I _D =6A V _{DS} =15V			5.2		nC
Total Gate Charge(4.5V)					2.5		nC
Gate-Source Charge	Q _{gs}				0.8		nC
Gate-Drain Charge	Q _{gd}				1.3		nC
Turn-On Delay Time	t _{d(on)}	V _{DS} =15 V R _L =2.5Ω V _{GS} =10V R _{GEN} =3Ω			4.5		ns
Turn-On Rise Time	t _r				2.5		ns
Turn-Off Delay Time	t _{d(off)}				14.5		ns
Turn-Off Fall Time	t _f				3.5		ns

N-沟道电参数曲线图 / N-CHANNEL Electrical Characteristic Curve

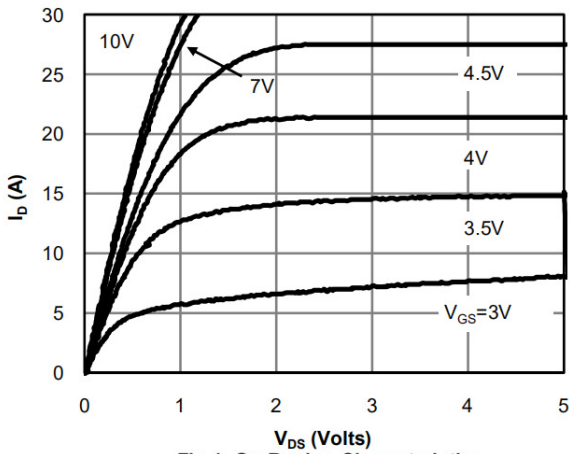


Fig 1: On-Region Characteristics

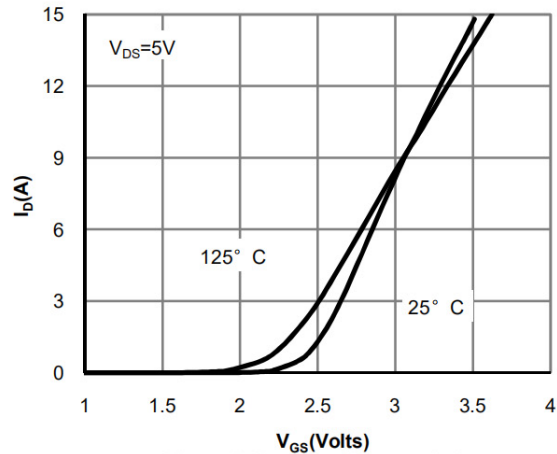


Figure 2: Transfer Characteristics

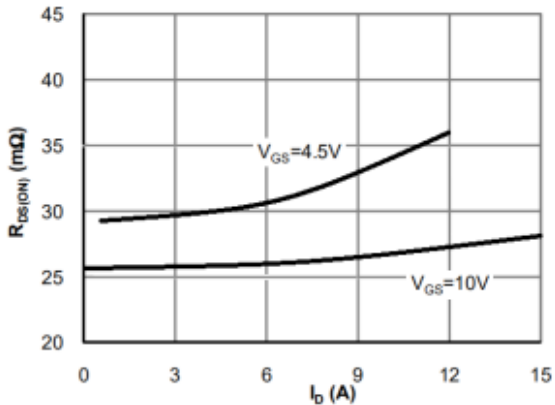


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

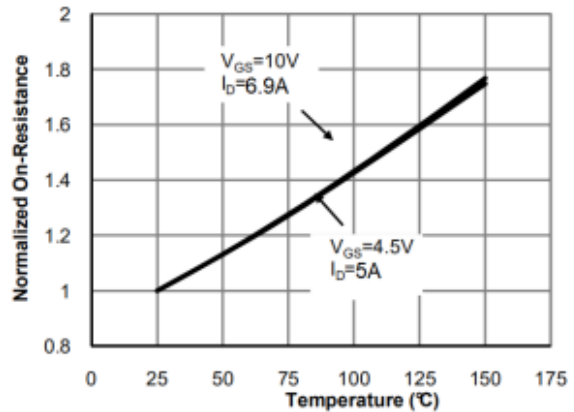


Figure 4: On-Resistance vs. Junction Temperature

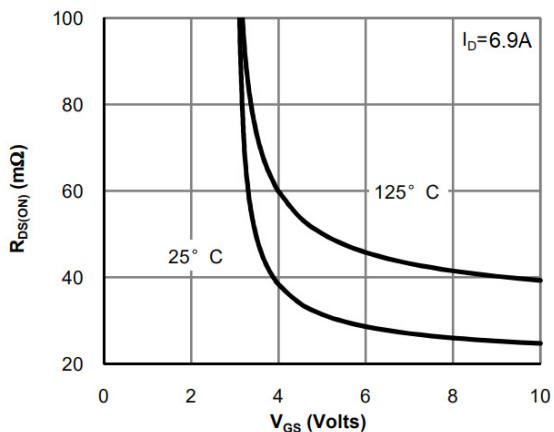


Figure 5: On-Resistance vs. Gate-Source Voltage

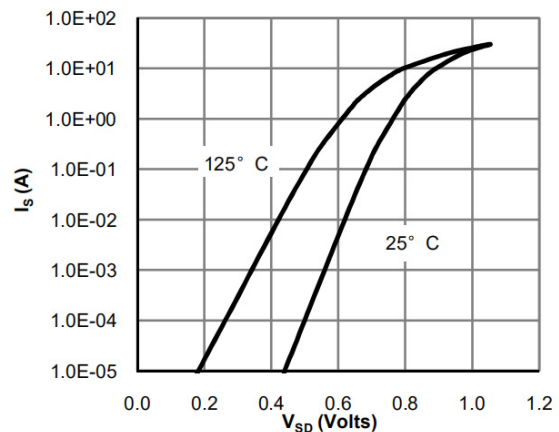
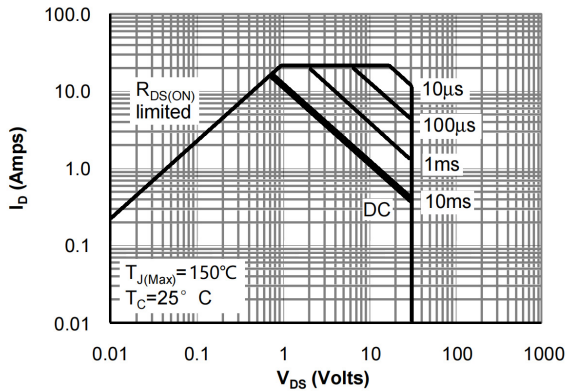
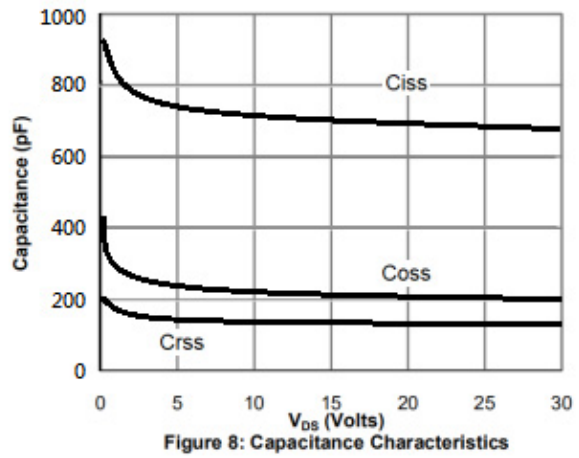
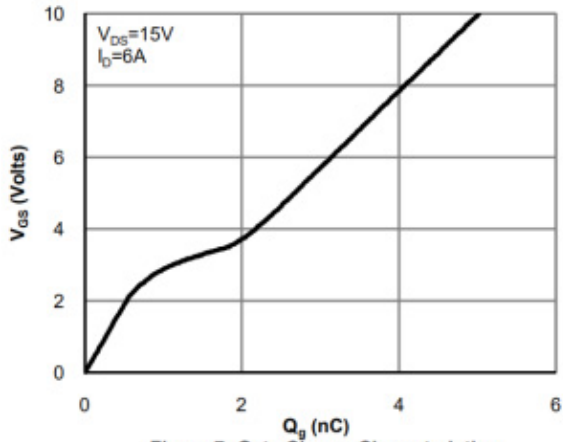


Figure 6: Body-Diode Characteristics

N-沟道电参数曲线图 / N-CHANNEL Electrical Characteristic Curve



P-沟道电性能参数/P-CHANNEL 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 =-250μA	-30	-34		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V V _{GS} =0V			-1.0	μA
		V _{DS} =-30V V _{GS} =0V T _J =55°C			-5.0	μA
Gate-Body leakage current	I _{GSS}	V _{GS} =±20V V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250μA	-1.0	-1.85	-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V I _D =-6.0A		52	60	mΩ
		V _{GS} =-4.5V I _D =-5.0A		73	85	mΩ
Diode Forward Voltage	V _{SD}	V _{GS} =0V I _S =-1.0A		-0.81	-1.2	V
Input Capacitance	C _{iss}	V _{DS} =-25V V _{GS} =0V f=1.0MHz		900		pF
Output Capacitance	C _{oss}			235		pF
Reverse Transfer Capacitance	C _{rss}			195		pF
Gate resistance	R _g	V _{DS} =0V V _{GS} =0V f=1.0MHz		26		Ω
Total Gate Charge(10V)	Q _g	V _{GS} =-10V V _{DS} =-15V I _D =-6.5A		13.6		nC
Total Gate Charge(4.5V)				6.7		nC
Gate-Source Charge	Q _{gs}			2.5		nC
Gate-Drain Charge	Q _{gd}			3.2		nC
Turn-On Delay Time	t _{d(on)}				8	
Turn-On Rise Time	t _r	V _{DS} =-15V V _{GS} =-10V R _L =2.3Ω R _{GEN} =3Ω		6		ns
Turn-Off Delay Time	t _{d(off)}			17		ns
Turn-Off Fall Time	t _f			5		ns

P-沟道电参数曲线图 / P-CHANNEL Electrical Characteristic Curve

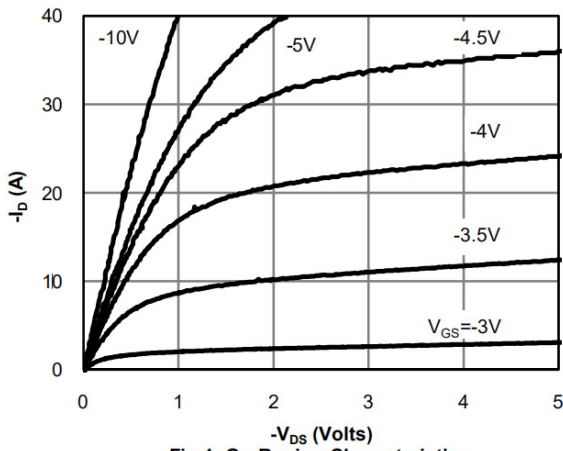


Fig 1: On-Region Characteristics

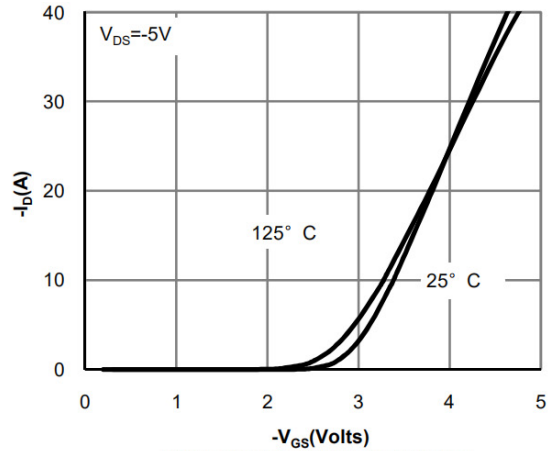


Figure 2: Transfer Characteristics

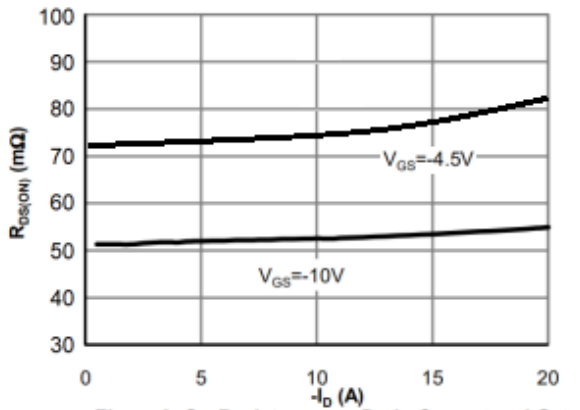


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

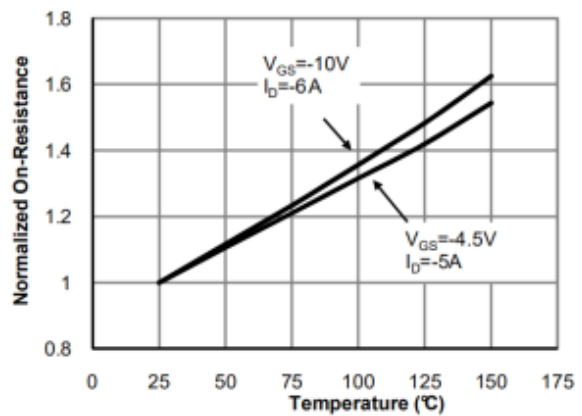


Figure 4: On-Resistance vs. Junction Temperature

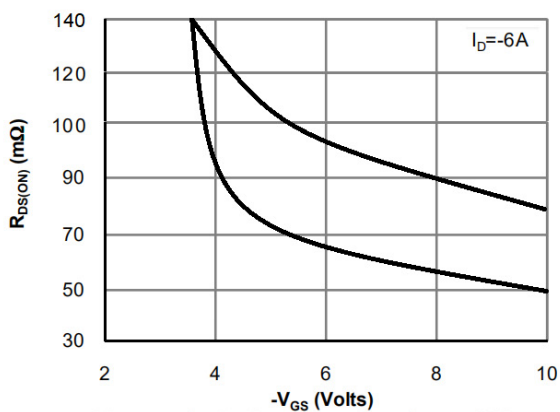


Figure 5: On-Resistance vs. Gate-Source Voltage

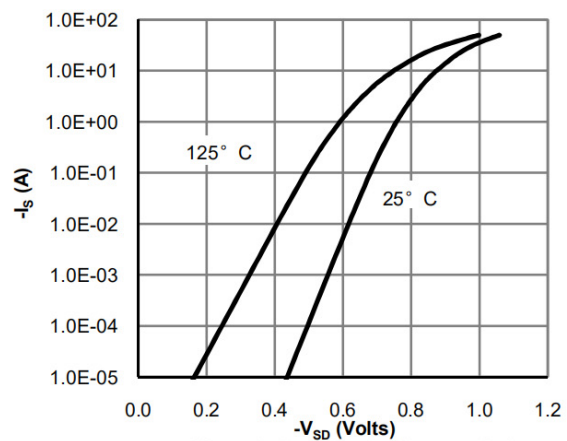
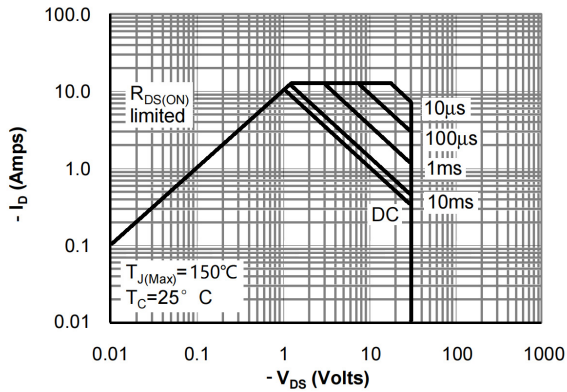
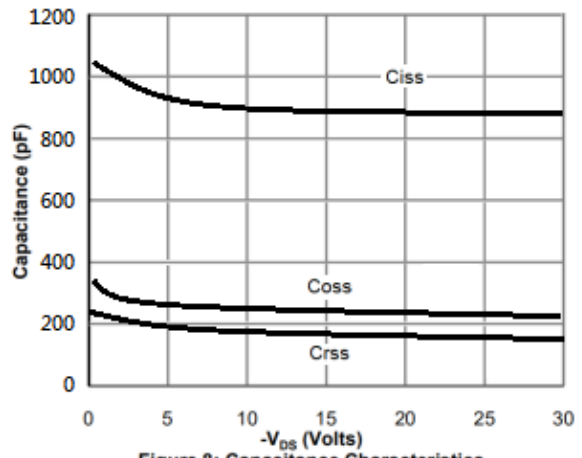
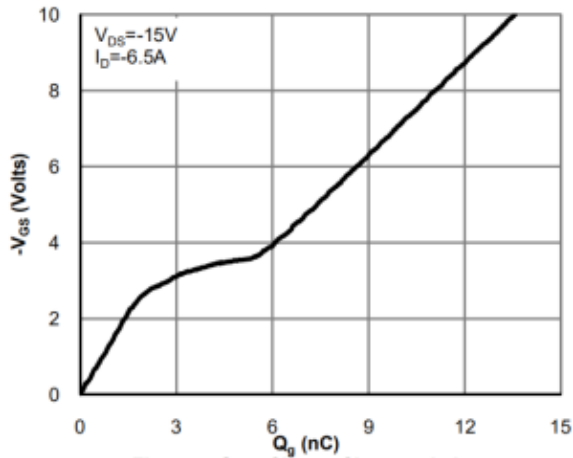


Figure 6: Body-Diode Characteristics

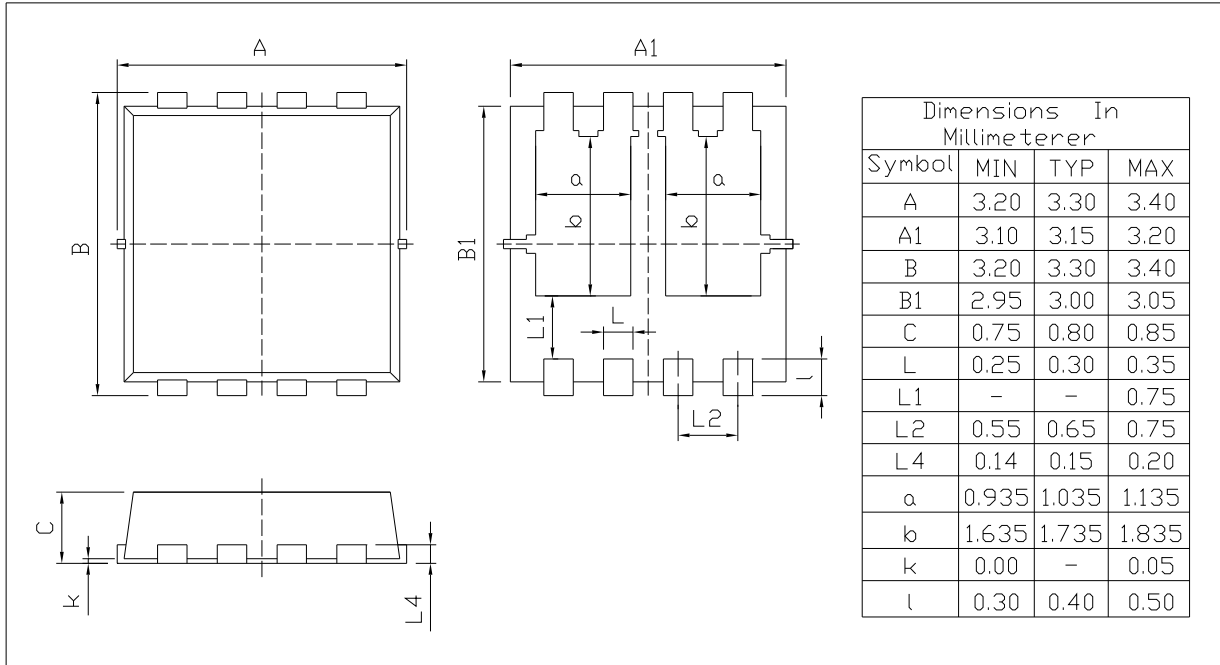
P-沟道电参数曲线图 / P-CHANNEL Electrical Characteristic Curve



外形尺寸图 / Package Dimensions

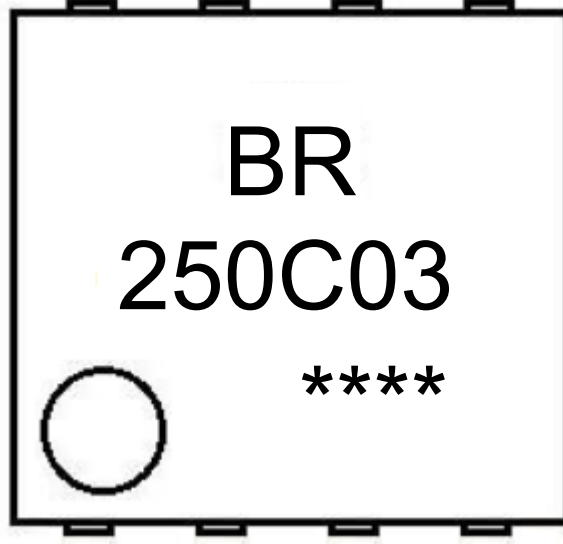
PDFN3X3-8L

Unit:mm



Rev.00 202011

印章说明 / Marking Instructions



说明：

BR： 为公司代码

250C03： 为型号代码

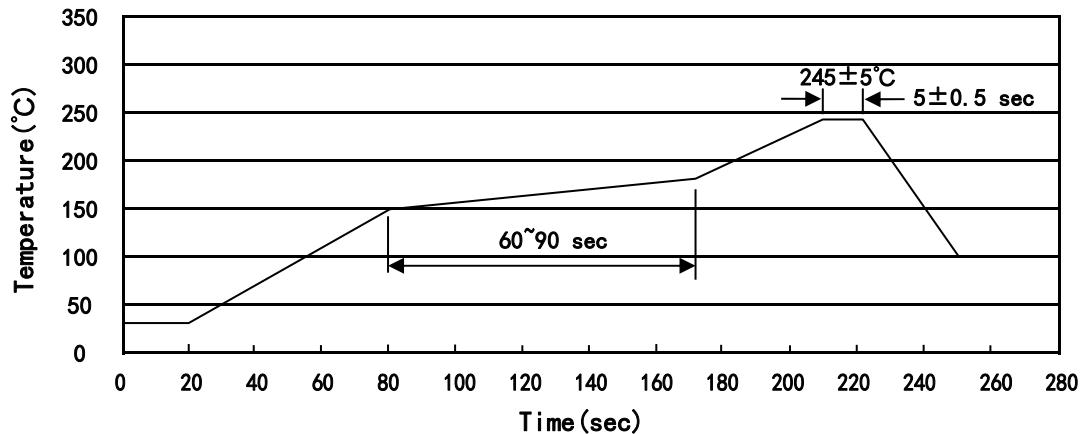
****： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

250C03: 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 150~180°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:150~180°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
PDFN3×3-8L	5,000	2	10,000	6	60,000	13" ×12	360×360×50	380×335×366

使用说明 / Notices