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

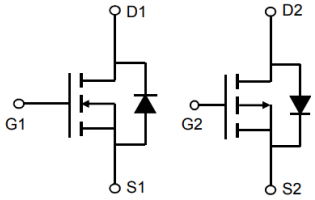
N-channel	P-channel
VDS(V)=30V	VDS(V)=-30V
ID=20A	ID=-12A
RDS(ON)<25mΩ (VGS=10V)	RDS(ON)<60mΩ (VGS=-10V)
RDS(ON)<40mΩ (VGS=4.5V)	RDS(ON)<85mΩ (VGS=-4.5V)

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.

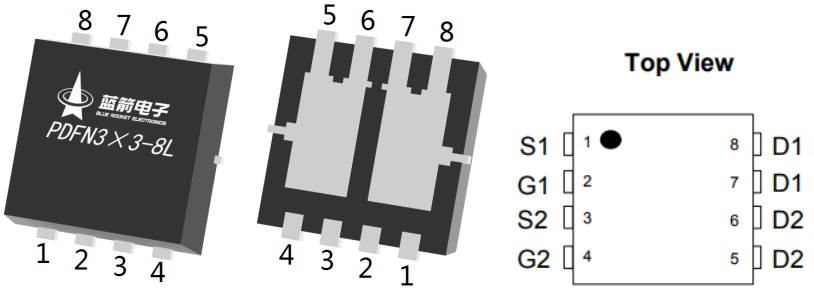
用途 / Applications

用于高功率 DC/DC 转换和功率开关。适用于作负载开关或脉宽调制应用，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. And suitable for use as a load switch or in PWM applications, Meet the stringent requirements of automotive 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℃)

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_A=25℃)	20	12	A
Power Dissipation	P_D (T_A=25℃)	11.2	10	W
Junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150		℃
Maximum Junction-to-Case	$R_{\theta JC}$(Steady-State)	11.2	12.5	℃/W
Maximum Junction-to-Ambient	$R_{\theta JA}$(Steady-State)	45		℃/W

N-沟道电性能参数/N-CHANNEL Electrical Characteristics(Ta=25℃)

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 V_{GS}=0V T_J=55℃			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}	V_{DS}=25V V_{GS}=0V f=1.0MHz		690		pF
Output Capacitance	C_{oss}			200		pF
Reverse Transfer Capacitance	C_{rss}			130		pF
Gate resistance	R_g	V_{DS}=0V V_{GS}=0V f=1.0MHz		2.7		Ω
Total Gate Charge(10V)	Q_g	V_{GS}=10V V_{DS}=15V I_D=6A		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 V_{GS}=10V R_L=2.5Ω 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

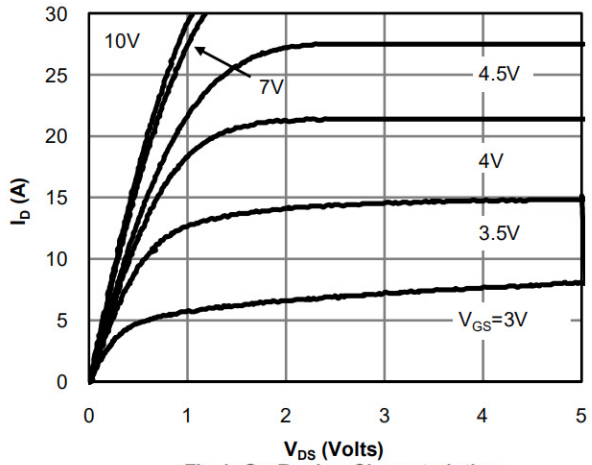


Fig 1: On-Region Characteristics

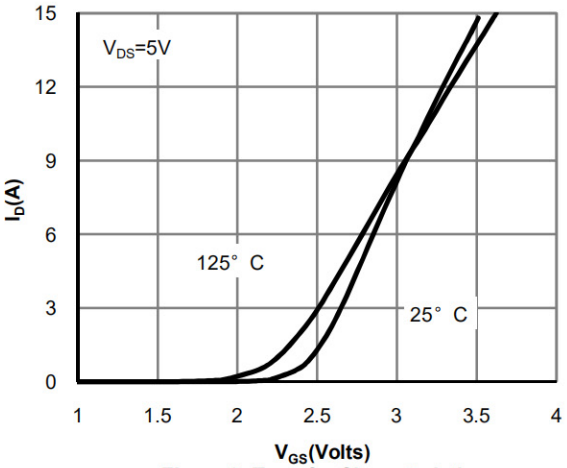


Figure 2: Transfer Characteristics

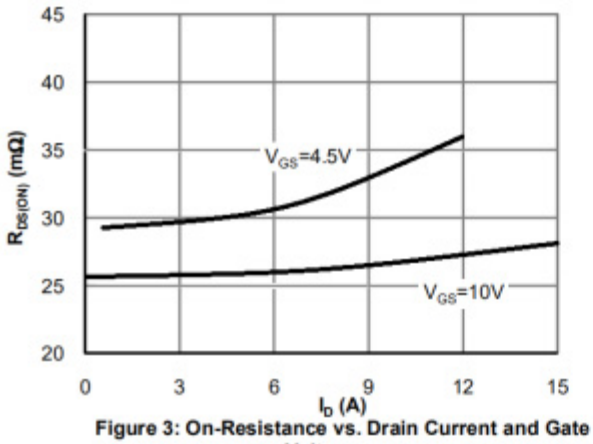


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

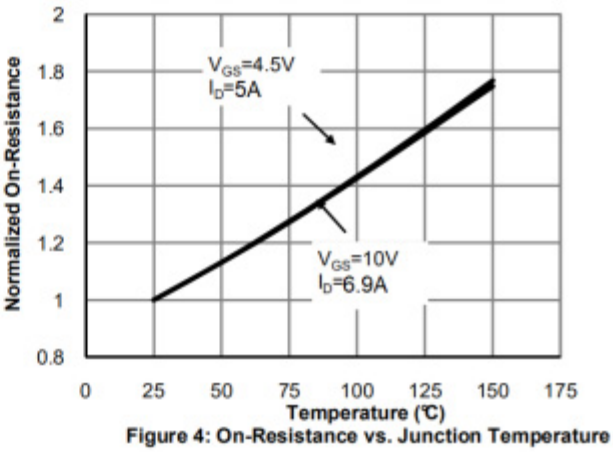


Figure 4: On-Resistance vs. Junction Temperature

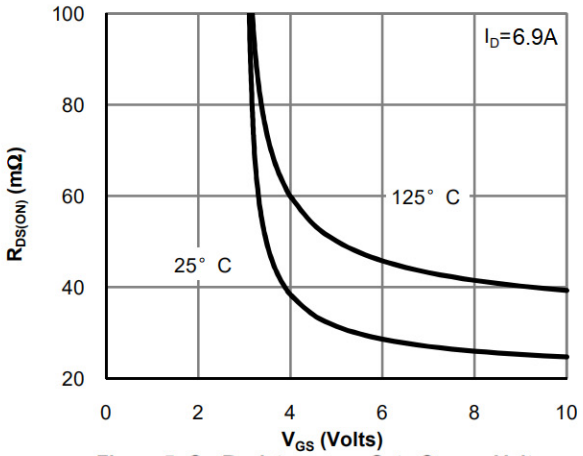


Figure 5: On-Resistance vs. Gate-Source Voltage

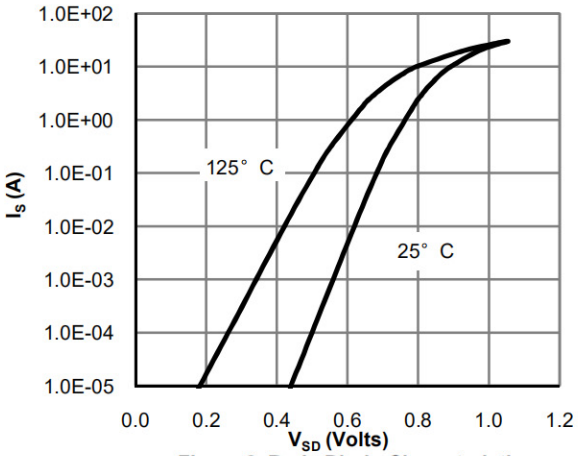


Figure 6: Body-Diode Characteristics

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

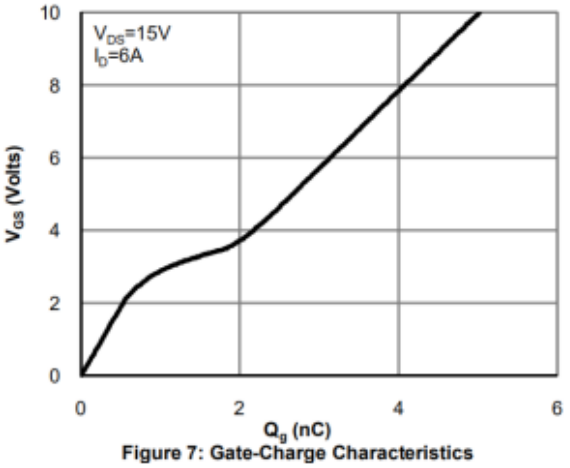


Figure 7: Gate-Charge Characteristics

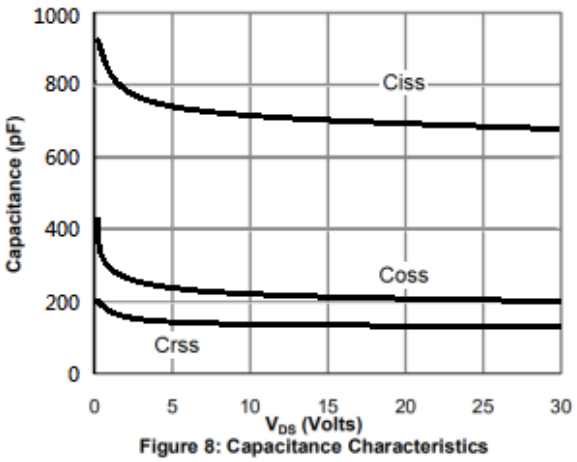


Figure 8: Capacitance Characteristics

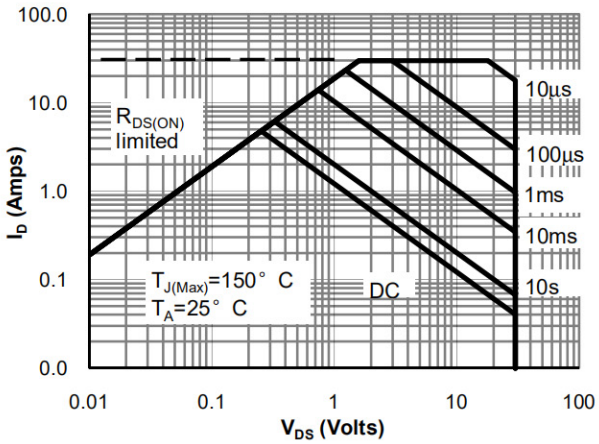


Figure 9: Maximum Forward Biased Safe Operating Area

P-沟道电性能参数/P-CHANNEL Electrical Characteristics(Ta=25℃)

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℃			-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	$t_{d(on)}$	V_{DS}=-15 V V_{GS}=-10V R_L=2.3Ω R_{GEN}=3Ω		8		ns
Turn-On Rise Time	t_r			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

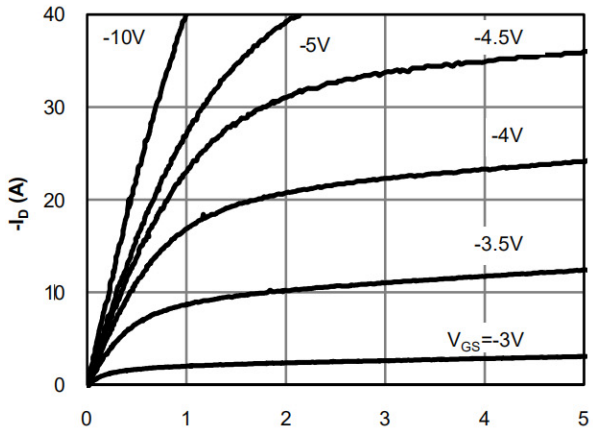


Fig 1: On-Region Characteristics

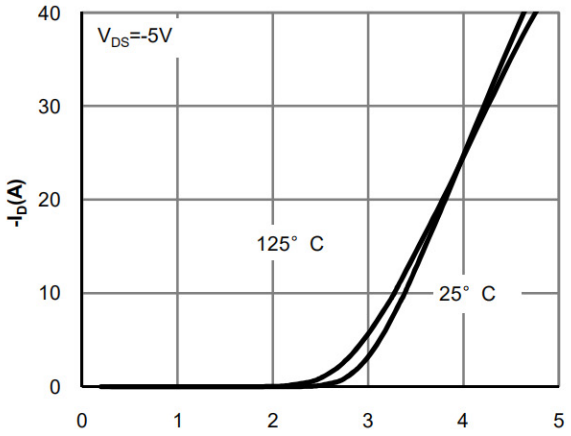


Figure 2: Transfer Characteristics

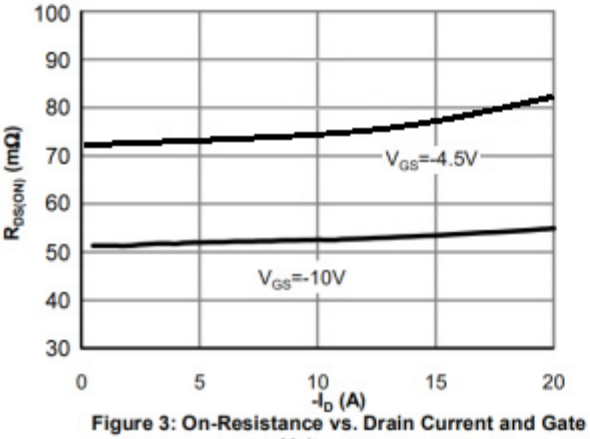


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

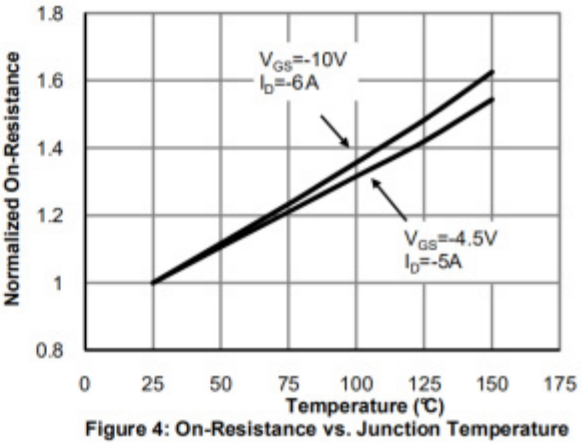


Figure 4: On-Resistance vs. Junction Temperature

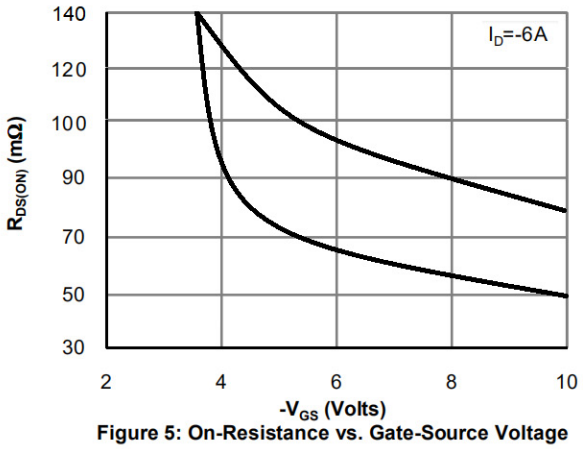


Figure 5: On-Resistance vs. Gate-Source Voltage

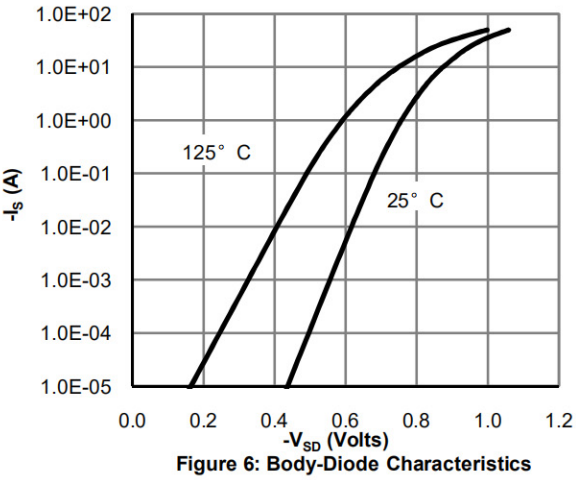


Figure 6: Body-Diode Characteristics

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

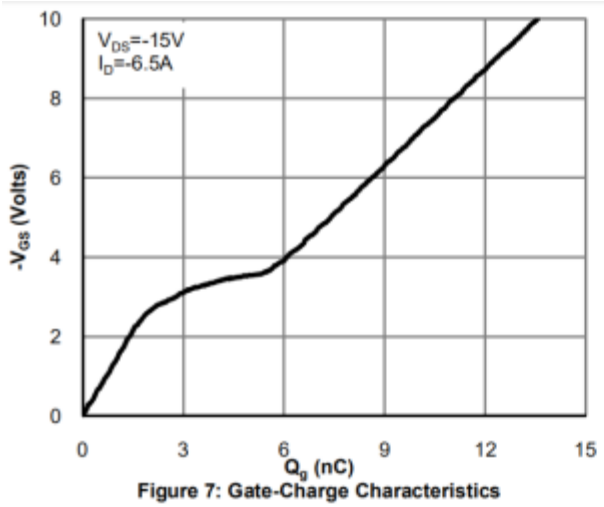


Figure 7: Gate-Charge Characteristics

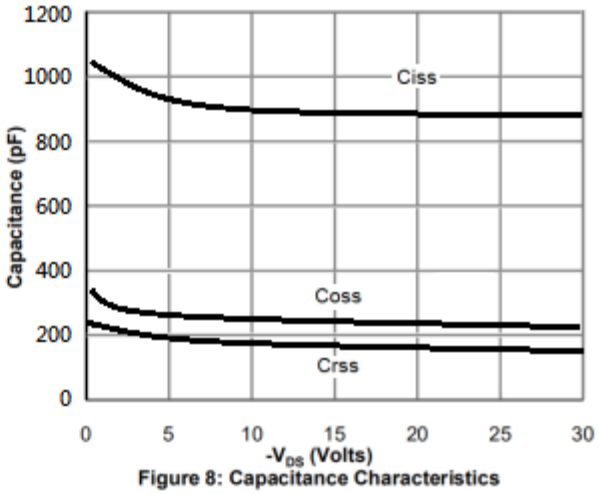


Figure 8: Capacitance Characteristics

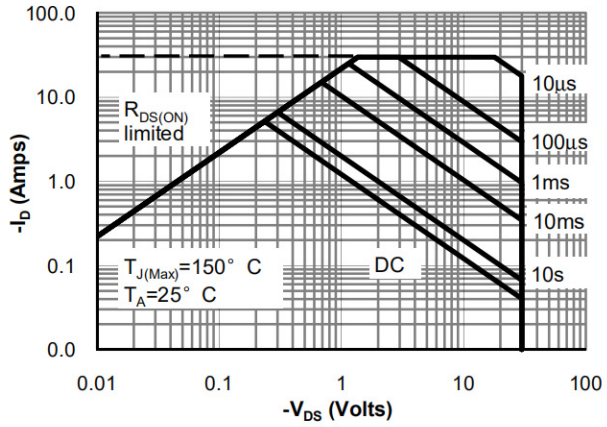
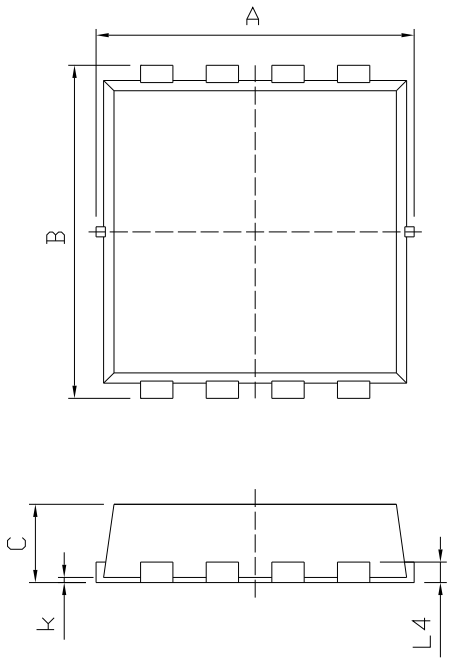


Figure 9: Maximum Forward Biased Safe Operating Area

外形尺寸图 / Package Dimensions

PDFN3X3-8L

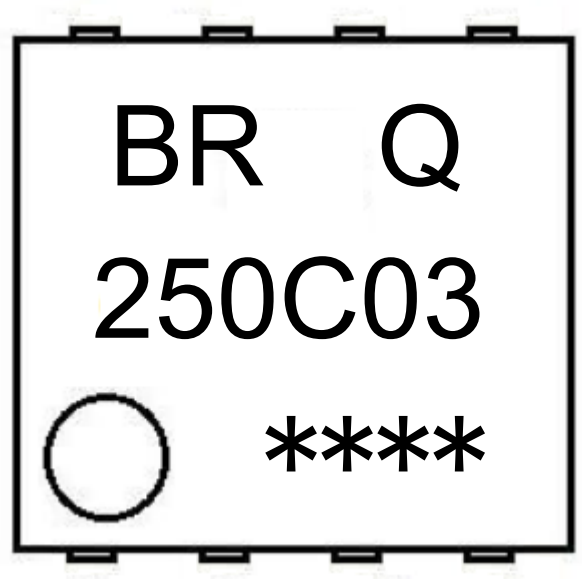
Unit:mm



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	3.20	3.30	3.40
A1	3.10	3.15	3.20
B	3.20	3.30	3.40
B1	2.95	3.00	3.05
C	0.75	0.80	0.85
L	0.25	0.30	0.35
L1	-	-	0.75
L2	0.55	0.65	0.75
L4	0.14	0.15	0.20
a	0.935	1.035	1.135
b	1.635	1.735	1.835
k	0.00	-	0.05
l	0.30	0.40	0.50

Rev.00 202011

印章说明 / Marking Instructions



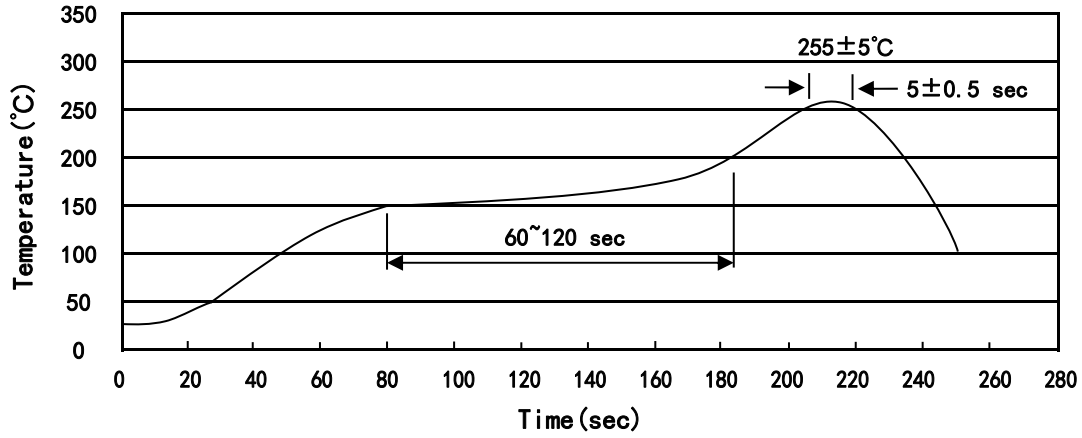
说明：

BR：	为公司代码
Q：	为汽车无卤产品标识
250C03：	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
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：	Note:
1、预热温度 150～200℃，时间 60～120sec;	1.Preheating:150~200℃, Time:60~120sec.
2、峰值温度 255±5℃，时间持续为 5±0.5sec;	2.Peak Temp.:255±5℃, Duration:5±0.5sec.
3、焊接制程冷却速度为 2～10℃/sec.	3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5℃	时间：10±1 sec.	Temp.:260±5℃	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：mm³)		
	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
PDFN 3×3-8L	5,000	2	10,000	6	60,000	13″ ×12	360×360×50	380×335×366

使用说明 / Notices