

BRCS150C016YN

Rev.A Jul.-2023

描述 / Descriptions

DFN2×2C-6L 塑封封装互补增强模式场效应管。

Complementary Enhancement MOSFET in a DFN2×2C-6L Plastic Package.

特征 / Features

N-channel

$V_{DS(V)}=16V$

$I_D=8.4A$

$R_{DS(ON)}@4.5V \leq 15m\Omega$ (Typ.13mR)

$R_{DS(ON)}@2.5V \leq 18m\Omega$ (Typ.16mR)

无卤产品。HF Product.

P-channel

$V_{DS(V)}=-16V$

$I_D=-6.3A$

$R_{DS(ON)}@-4.5V \leq 25m\Omega$ (Typ.21mR)

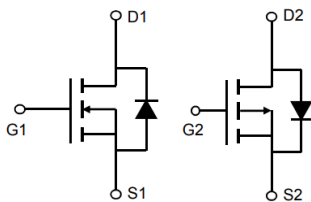
$R_{DS(ON)}@-2.5V \leq 35m\Omega$ (Typ.28mR))

用途 / Applications

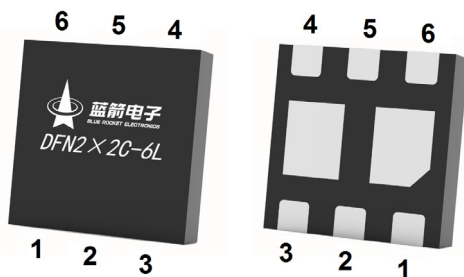
笔记本电脑的电源管理，便携式设备和电池供电系统。

Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



出脚	定义
PIN 1	S1
PIN 2	G1
PIN 3	D2
PIN 4	S2
PIN 5	G2
PIN 6	D1

印章代码 / Marking

见印章说明。

See Marking Instructions.

极限参数 / Absolute Maximum Ratings($T_a=25^{\circ}\text{C}$)

参数 Parameter	符号 Symbol	数值 Rating		单位 Unit
		N-channe	P-channell	
Drain-Source Voltage	V_{DSS}	± 16		V
Gate-Source Voltage	V_{GSS}	± 10		V
Continuous Drain Current	I_D	8.4	-6.3	A
Pulsed Drain Current	I_{DM}	33	-24.5	A
Avalanche Current(L=0.1mH)	I_{AS}	7	14	A
Avalanche energy(L=0.1mH)	E_{AS}	6.5	26	mJ
Power Dissipation	P_D	1.6	1.5	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		$^{\circ}\text{C}$
Maximum Junction-to-Ambient	$R_{\theta JA}(t \leq 10s)$	78	83	$^{\circ}\text{C}/\text{W}$
	$R_{\theta JA}(\text{Steady-State})$	135		

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}	$V_{GS}=0V$	$I_D=250\mu A$	16	21		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=16V$	$V_{GS}=0V$			1.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 10V$	$V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$	$I_D=250\mu A$	0.45	0.75	0.95	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V$	$I_D=3A$		13	15	m Ω
		$V_{GS}=2.5V$	$I_D=2A$		16	18	m Ω
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$	$I_S=1.0A$			1.2	V
Input Capacitance	C_{iss}	$V_{DS}=10V$ $f=1.0MHz$	$V_{GS}=0V$		765		pF
Output Capacitance	C_{oss}				650		pF
Reverse Transfer Capacitance	C_{rss}				520		pF
Gate resistance	R_g	$V_{DS}=0V$ $f=1.0MHz$	$V_{GS}=0V$		3.5		Ω
Total Gate Charge	Q_g	$V_{GS}=4.5V$ $I_D=8.4A$	$V_{DS}=8.0V$		17.9		nC
Gate-Source Charge	Q_{gs}				1.5		nC
Gate-Drain Charge	Q_{gd}				4.7		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=8.0V$ $R_L=1.2\Omega$	$V_{GS}=10V$ $R_{GEN}=3\Omega$		2.5		ns
Turn-On Rise Time	t_r				7.2		ns
Turn-Off Delay Time	$t_{d(off)}$				49		ns
Turn-Off Fall Time	t_f				10.8		ns

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

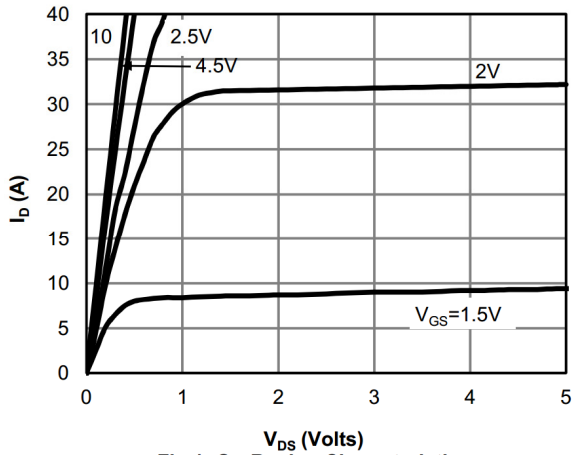


Fig 1: On-Region Characteristics

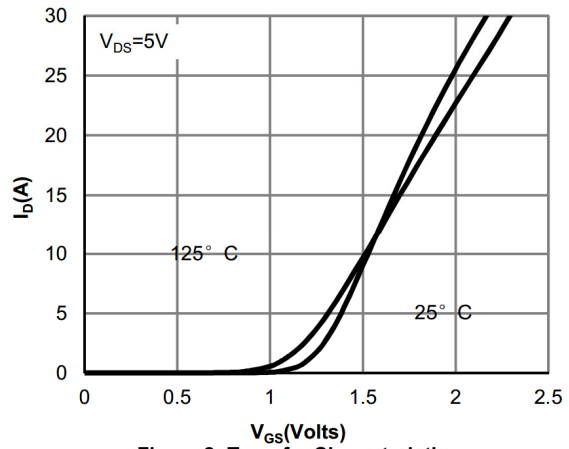


Figure 2: Transfer Characteristics

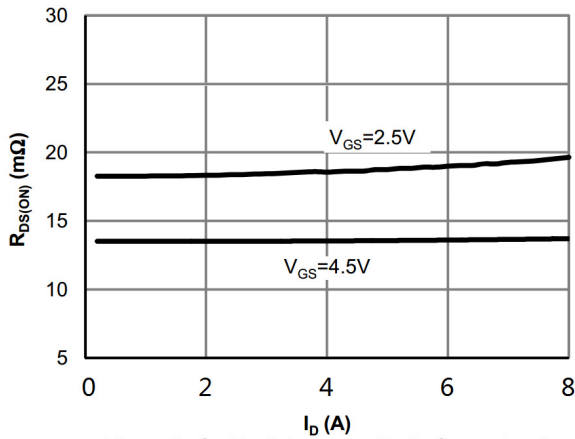


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

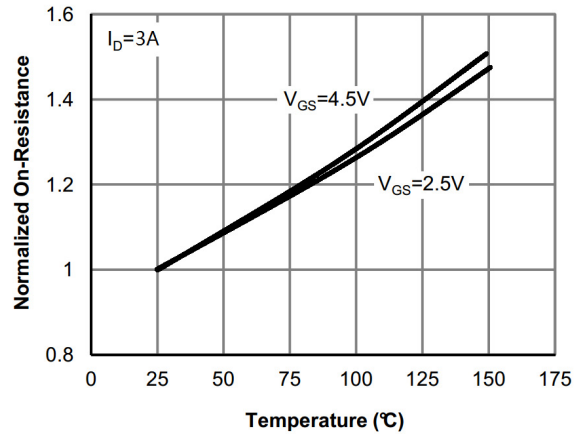


Figure 4: On-Resistance vs. Junction Temperature

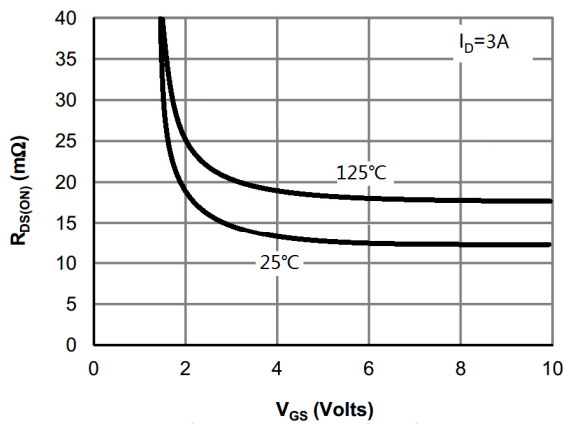


Figure 5: On-Resistance vs. Gate-Source Voltage

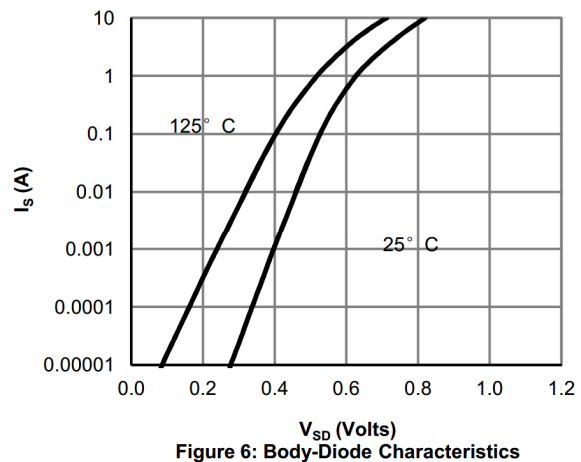


Figure 6: Body-Diode Characteristics

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

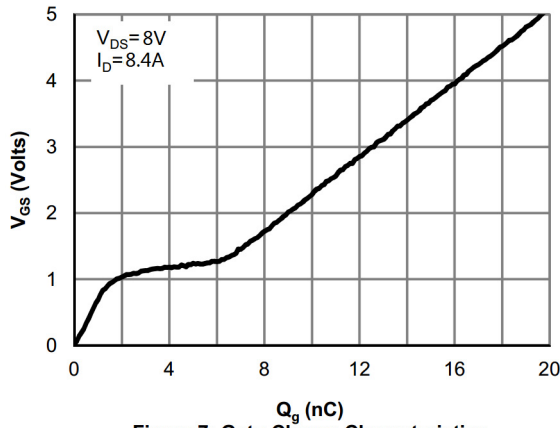


Figure 7: Gate-Charge Characteristics

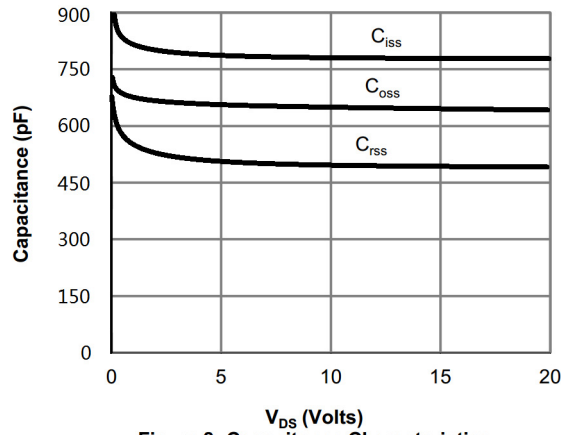


Figure 8: Capacitance Characteristics

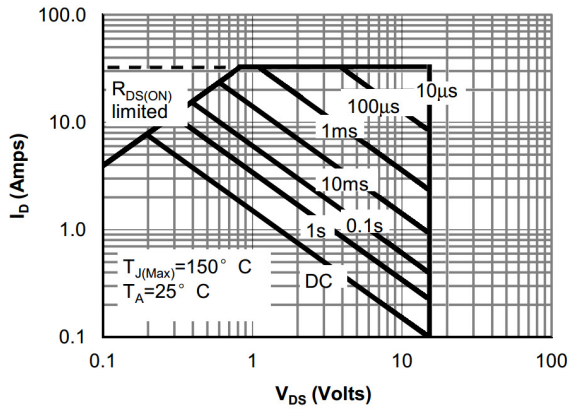


Figure 9: Maximum Forward Biased Safe Operating Area

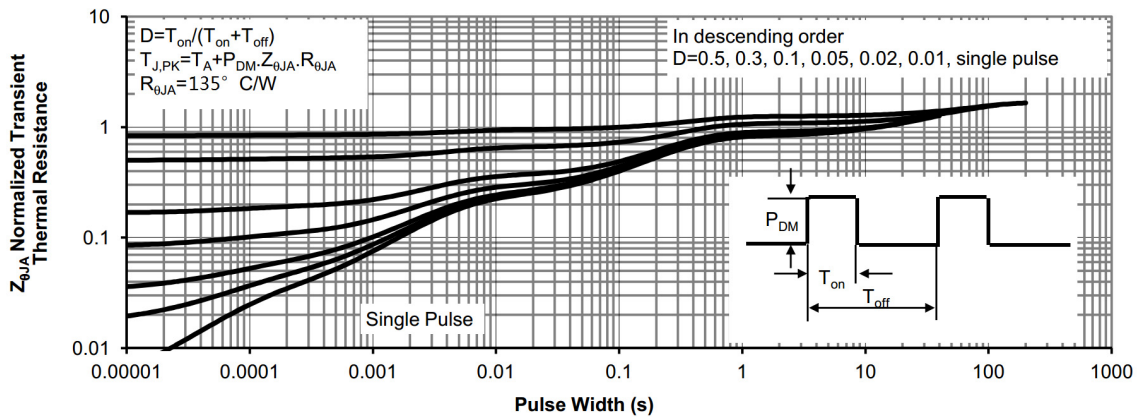


Figure 10: Normalized Maximum Transient Thermal Impedance

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	-16	-20.5		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-16V V _{GS} =0V			-1.0	μA
Gate-Body leakage current	I _{GSS}	V _{GS} =±10V V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250μA	-0.45	-0.65	-0.95	V
Static Drain-Source On-Resistance	R _{DSON}	V _{GS} =-4.5V I _D =-3A		21	25	mΩ
		V _{GS} =-2.5V I _D =-2A		28	35	mΩ
Diode Forward Voltage	V _{SD}	V _{GS} =0V I _S =-1.0A			-1.2	V
Input Capacitance	C _{iss}	V _{DS} =-10V V _{GS} =0V f=1.0MHz		1100		pF
Output Capacitance	C _{oss}			600		pF
Reverse Transfer Capacitance	C _{rss}			330		pF
Gate resistance	R _g	V _{DS} =0V V _{GS} =0V f=1.0MHz		7.5		Ω
Total Gate Charge	Q _g	V _{GS} =-4.5V V _{DS} =-8V I _D =-6.3A		13		nC
Gate-Source Charge	Q _{gs}			2		nC
Gate-Drain Charge	Q _{gd}			3.4		nC
Turn-On Delay Time	t _{d(on)}	V _{DS} =-8V V _{GS} =-4.5V R _L =1.25Ω R _{GEN} =3Ω		7		ns
Turn-On Rise Time	t _r			28		ns
Turn-Off Delay Time	t _{d(off)}			95		ns
Turn-Off Fall Time	t _f			46		ns

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

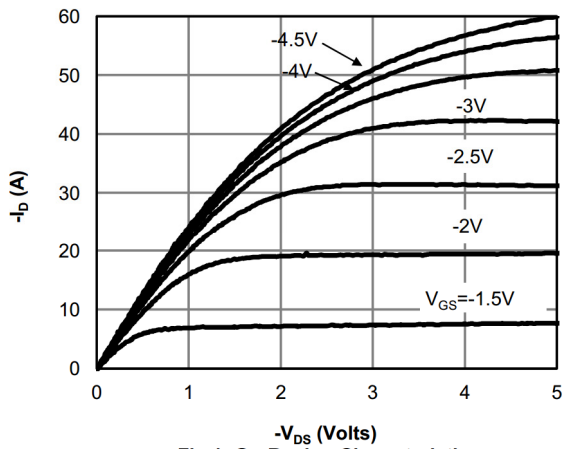


Fig 1: On-Region Characteristics

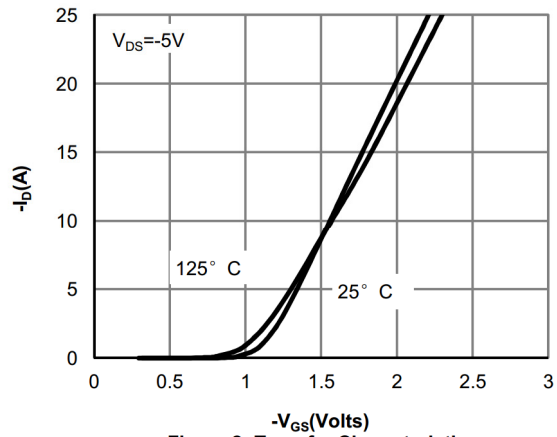


Figure 2: Transfer Characteristics

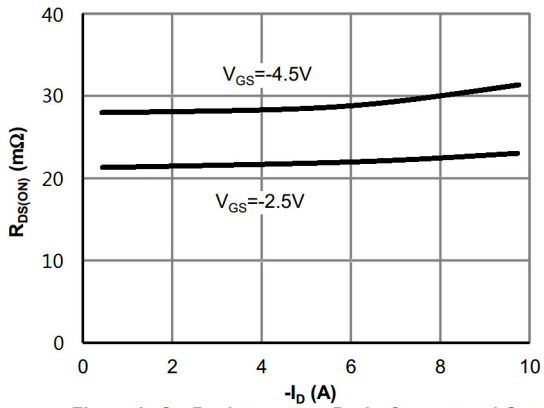


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

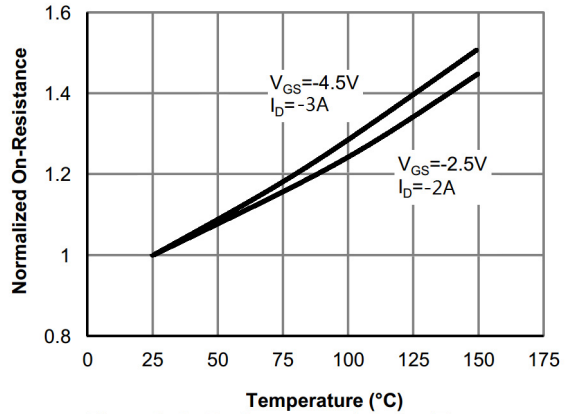


Figure 4: On-Resistance vs. Junction Temperature

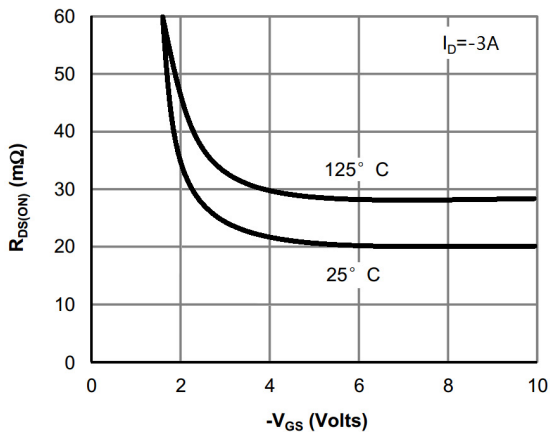


Figure 5: On-Resistance vs. Gate-Source Voltage

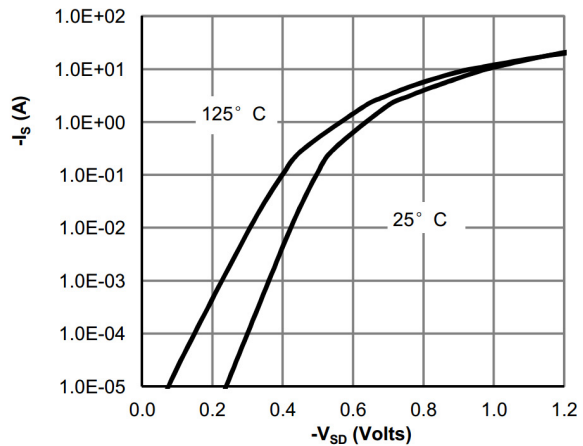


Figure 6: Body-Diode Characteristics

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

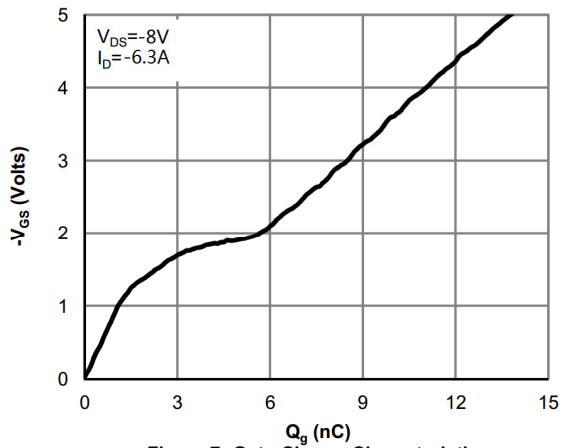


Figure 7: Gate-Charge Characteristics

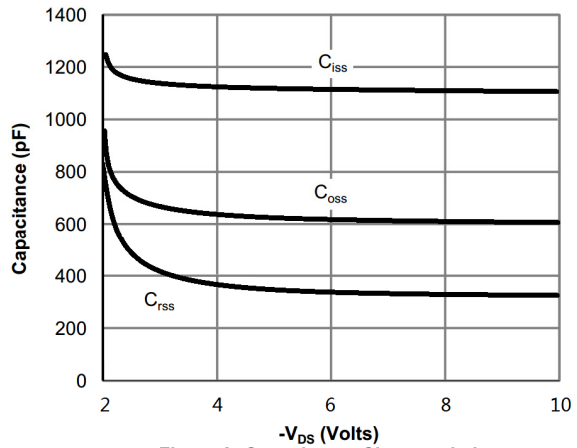


Figure 8: Capacitance Characteristics

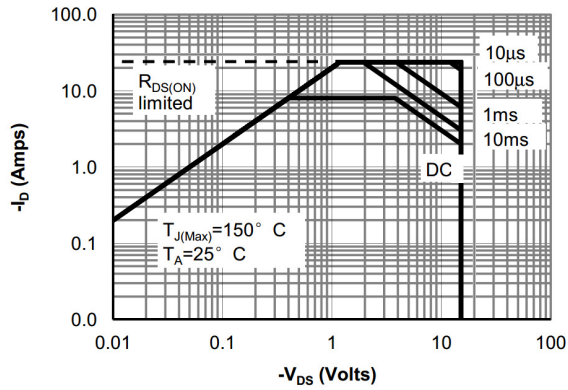


Figure 9: Maximum Forward Biased Safe Operating Area

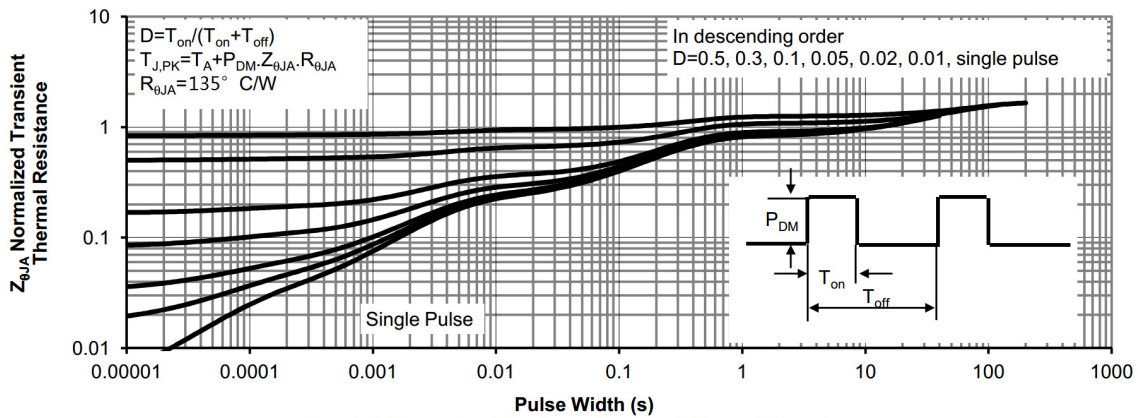


Figure 10: Normalized Maximum Transient Thermal Impedance

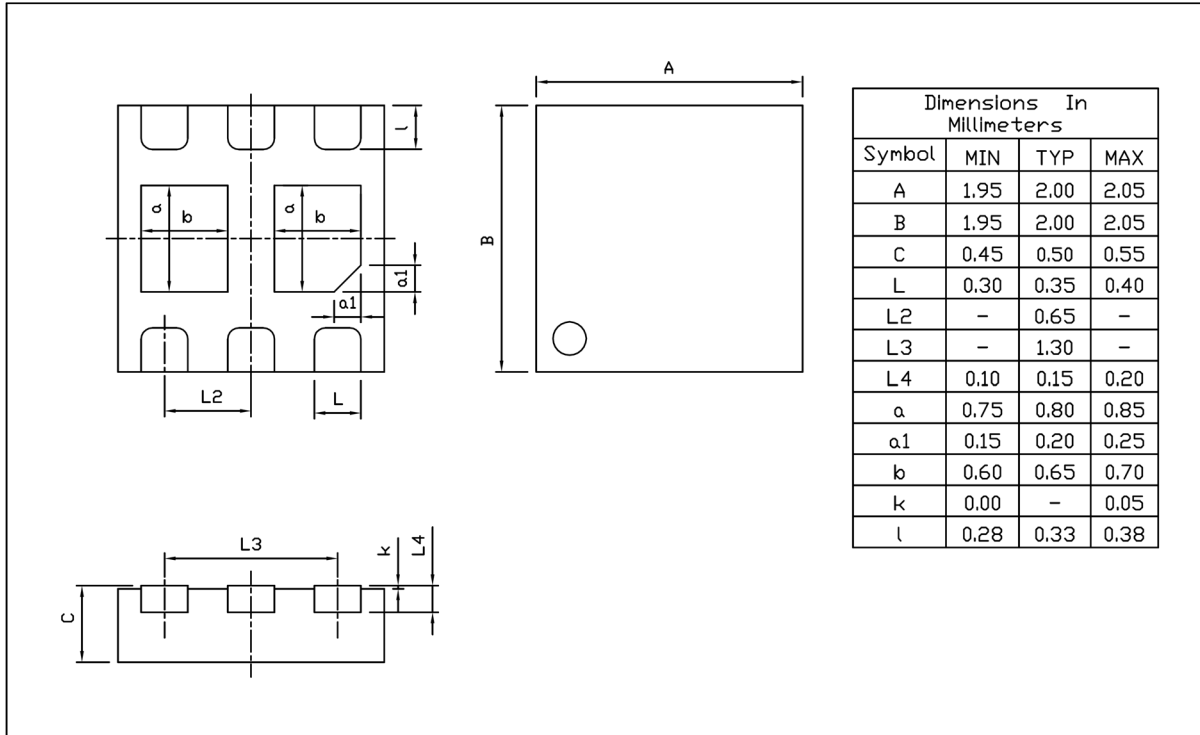
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外形尺寸图 / Package Dimensions

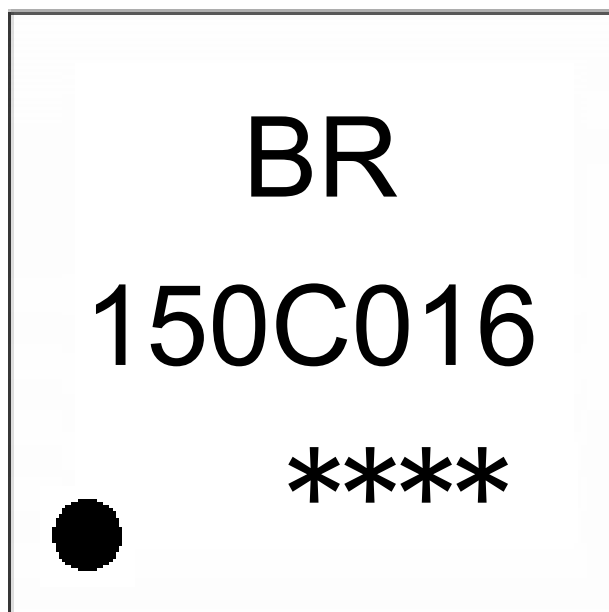
DFN2 ×2C-6L-0.5

Unit:mm



Rev.00 202204

印章说明 / Marking Instructions



说明：

BR： 为公司代码

150C016： 为型号代码

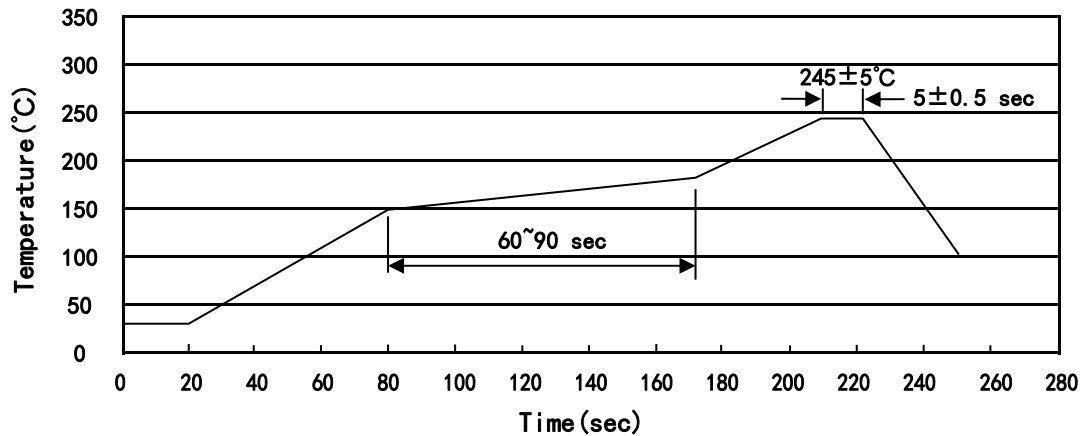
****： 为生产批号代码，随生产批号变化

Note:

BR: Company Code

150C016: 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 150~180°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
DFN 2×2C-6L	4,000	10	40,000	4	160,000	7" ×8	210×205×205	445×435×230

使用说明 / Notices