

版本	修订日期	有修订的页码	修订涉及的内容	拟制	审核
D	2018-7		更新回流焊曲线图	蔡中玉	
E	2018-10-16		更新封装尺寸图	蔡中玉	刘晓荣
F	2019-3-13	2	在特征栏增加无卤信息	蓝月葵	刘晓荣
G	2020-1-8	2、3、6	$V_{GS(th)}$ 由原来的 改为 ; V_{GSQ} 由原来的 ± 20 改 为 $\pm 12V$; I_{GSS} 的条件由原来的 $V_{GS}=\pm 20V$ 改为 $V_{GS}=\pm 12V$;	黄超	庞隆基
A	2020-10-10	All	基于 BRCS4606SC 规格书改 BRCS4606HSC 规格书	庞隆基	陈逸晞
B	2022-3-21	1	特征栏 $I_D=6.8A$ 改为 6.9A $I_D=-5.8A$ 改为-6.0A		

BRCS4606HSC

Rev.B Mar.-2022



DATA SHEET

SOP-8

MOS

Complementary Enhancement MOSFET in a SOP-8 Plastic Package.

N-channel

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

$I_D=6.9A$

$R_{DS(ON)}<32m\ \Omega$ ($V_{GS}=10V$)

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

P-channel

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

$I_D=-6.0A$

$R_{DS(ON)}<70m\ \Omega$ ($V_{GS}=-10V$)

$R_{DS(ON)}<90m\ \Omega$ ($V_{GS}=-4.5V$)

/ Absolute Maximum Ratings($T_A=25$)

参数 Parameter	符号 Symbol	数值 Rating		单位 Unit
		N-channel	P-channel	
Drain-Source Voltage	V_{DSS}	± 30		V
Gate-Source Voltage	V_{GSS}	± 20		V
Continuous Drain Current ^A	$I_D(T_A=25^\circ\text{C})$	6.9	-6.0	A
	$I_D(T_A=70^\circ\text{C})$	5.8	-5.0	A
Pulsed Drain Current ^B	I_{DM}	± 30		A
Power Dissipation	$P_D(T_A=25^\circ\text{C})$	2		W
	$P_D(T_A=70^\circ\text{C})$	1.44		W
Maximum Junction-to-Ambient ^A	$R_{\theta JA}(t\ 10s)$	62.5		$^\circ\text{C/W}$
	$R_{\theta JA}$ (Steady-State)	90		$^\circ\text{C/W}$
Maximum Junction-to-Lead ^C	$R_{\theta JL}$ (Steady-State)	40		$^\circ\text{C/W}$
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		$^\circ\text{C}$

Notes:

A: The value of R_{JA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The value in any a given application depends on the user's specific board design. The current rating is based on the t 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C: The R_{JA} is the sum of the thermal impedance from junction to lead R_{JL} and lead to ambient.

D: The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The SOA curve provides a single pulse rating.

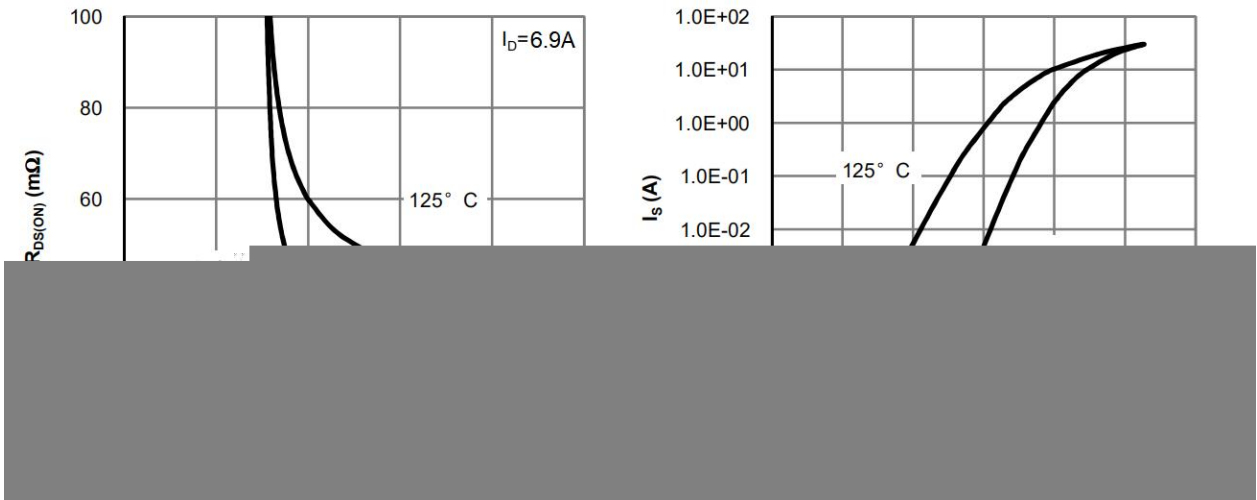
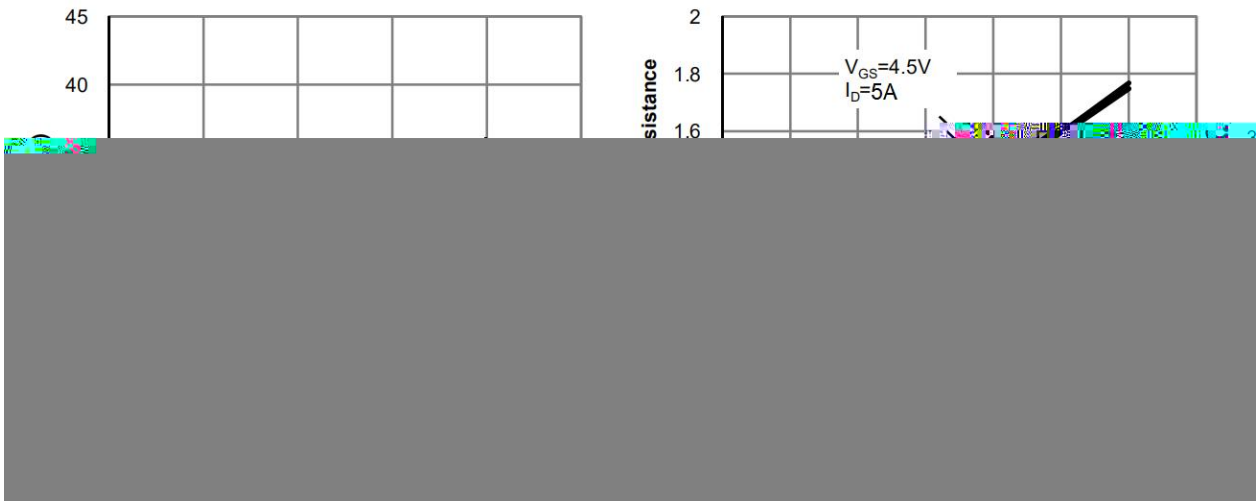


N- /N-CHANNEL Electrical Characteristics(Ta=25°C)

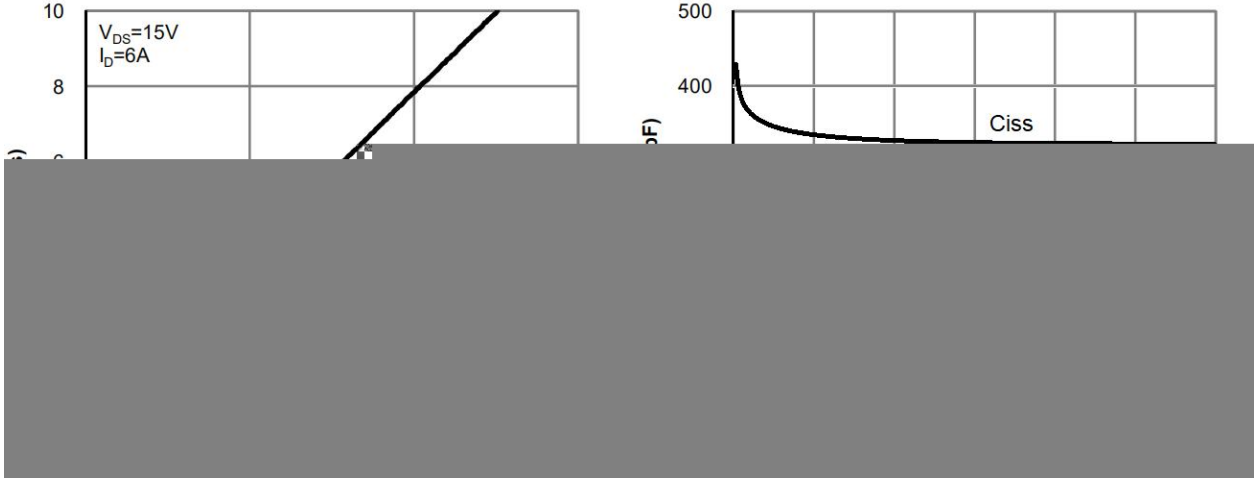
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30	33.7		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=24V$ $V_{GS}=0V$ $T_J=55^\circ C$			5.0	μA
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.1	1.7	2.4	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=6.9A$		21.6	32	m
		$V_{GS}=4.5V$ $I_D=5.0A$		31.8	40	m
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.0A$		0.78	1.0	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		325		pF
Output Capacitance	C_{oss}			140		pF
Reverse Transfer Capacitance	C_{rss}			30		pF
Gate resistance	R_g	$V_{DS}=0V$ $f=1.0MHz$ $V_{GS}=0V$		4.6		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	$t_{d(on)}$				4.5	
Turn-On Rise Time	t_r	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=2.5$ $R_{GEN}=3$		2.5		ns
Turn-Off Delay Time	$t_{d(off)}$			14.5		ns
Turn-Off Fall Time	t_f			3.5		ns



N- / N-CHANNEL Electrical Characteristic Curve



N- / N-CHANNEL Electrical Characteristic Curve

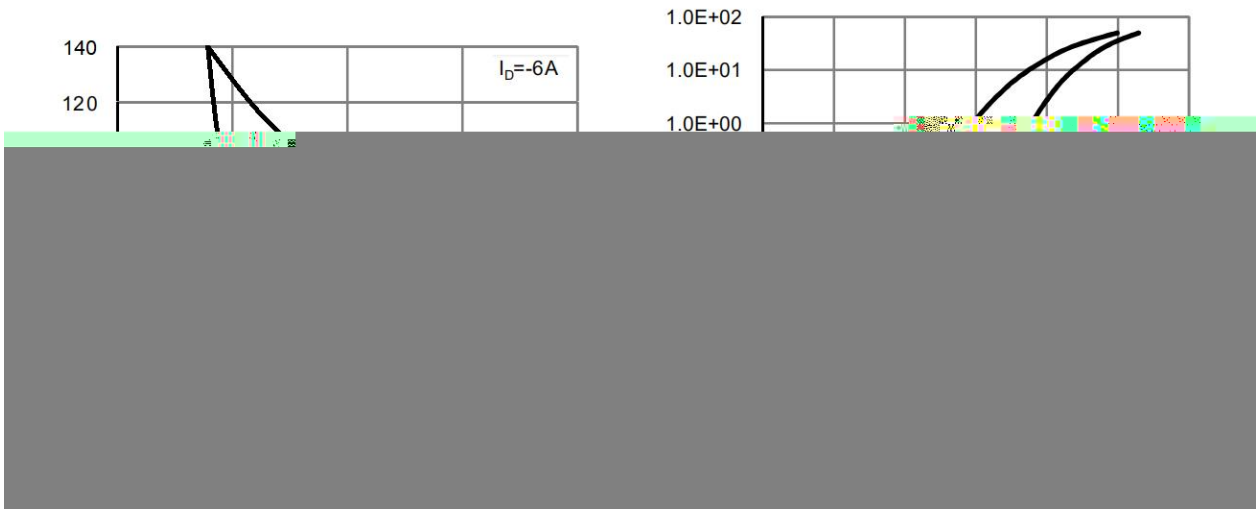
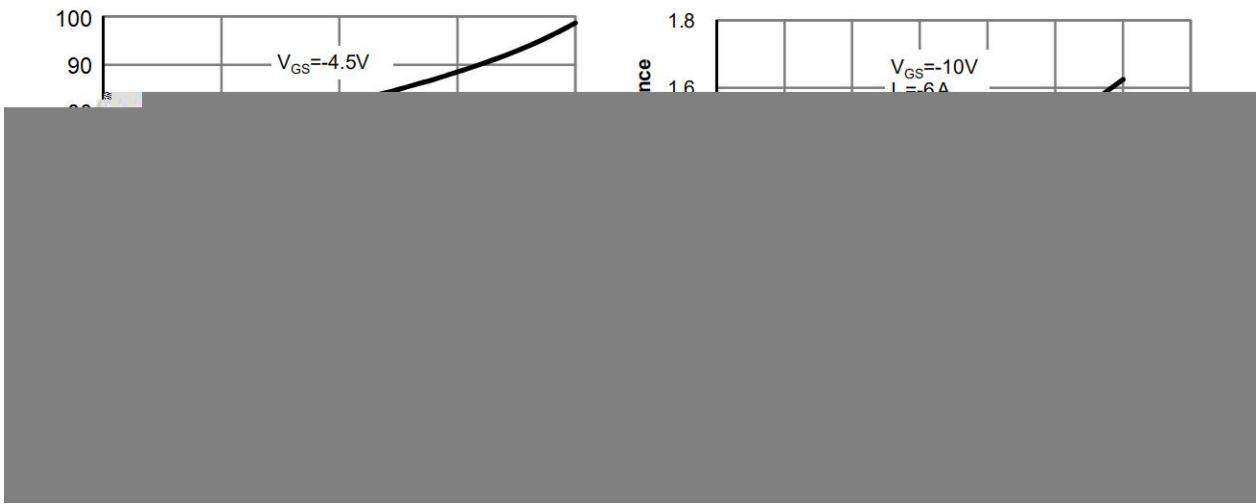
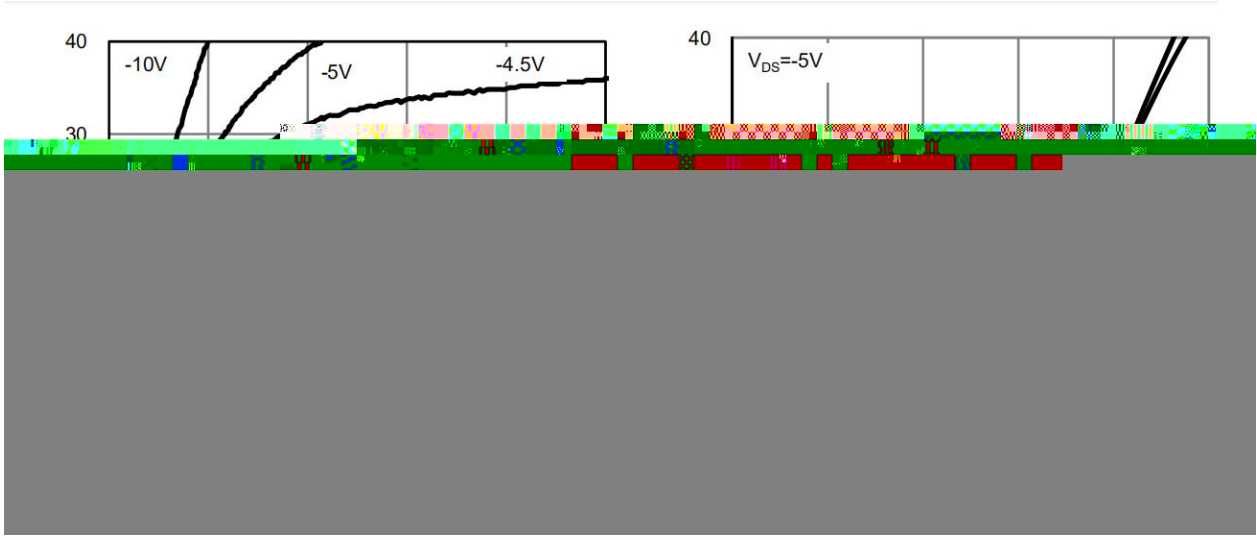




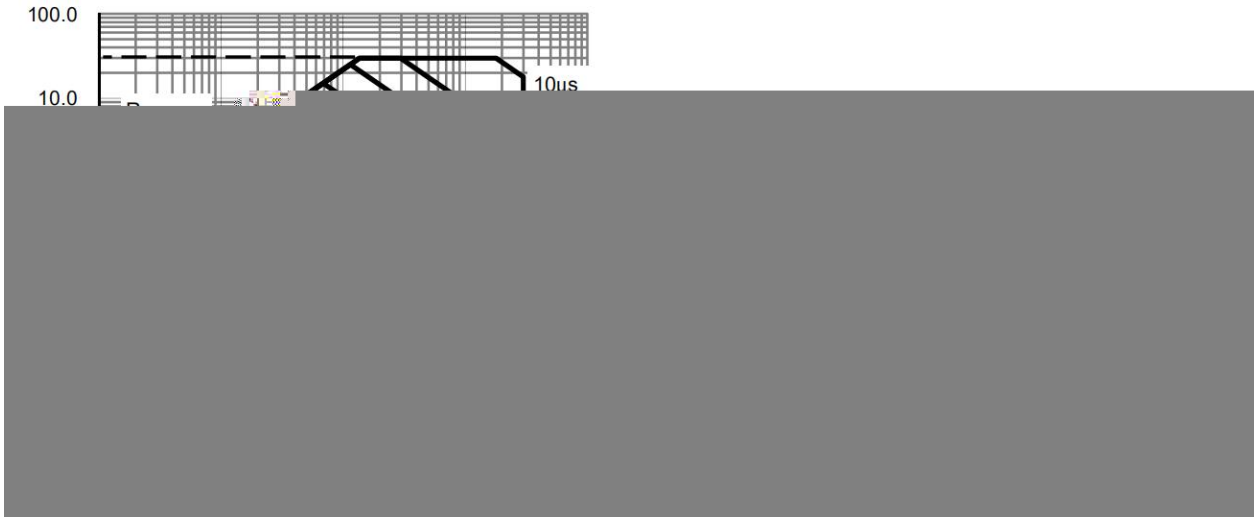
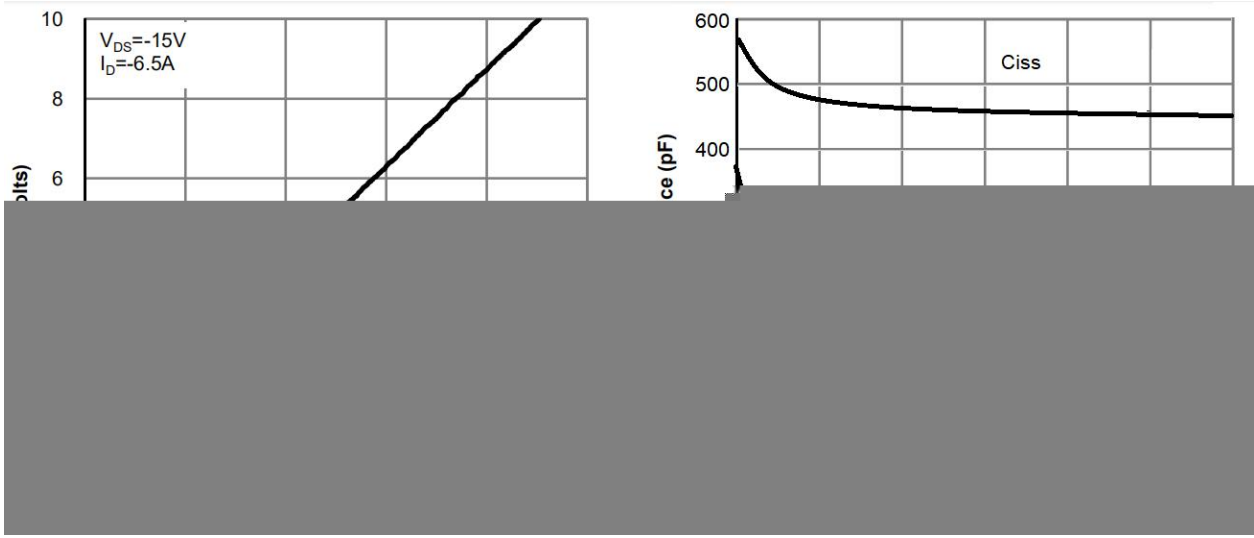
P- /P-CHANNEL Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=-250\mu A$	-30	-33.8		V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24V$ $V_{GS}=0V$			-1.0	μA	
		$V_{DS}=-24V$ $V_{GS}=0V$ $T_J=55^\circ C$			-5.0	μA	
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 100	nA	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu A$	-1.3	-1.85	-2.4	V	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-6.0A$		50.3	70	m	
		$V_{GS}=-4.5V$ $I_D=-5.0A$		79.4	90	m	
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=-1.0A$		-0.81	-1.0	V	
Input Capacitance	C_{iss}	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$		465		pF	
Output Capacitance	C_{oss}			150		pF	
Reverse Transfer Capacitance	C_{rss}			40		pF	
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		5.5		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	$t_{d(on)}$	$V_{DS}=-15V$ $V_{GS}=-10V$ $R_L=2.3$ $R_{GEN}=3$		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	

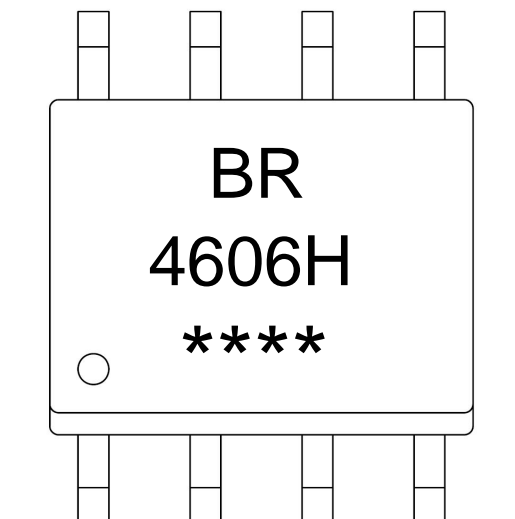
P- / P-CHANNEL Electrical Characteristic Curve



P- / P-CHANNEL Electrical Characteristic Curve



/ Marking Instructions



说明：

BR： 为公司代码

4606H： 为型号代码

****： 为生产批号代码，随生产批号变化。

Note:

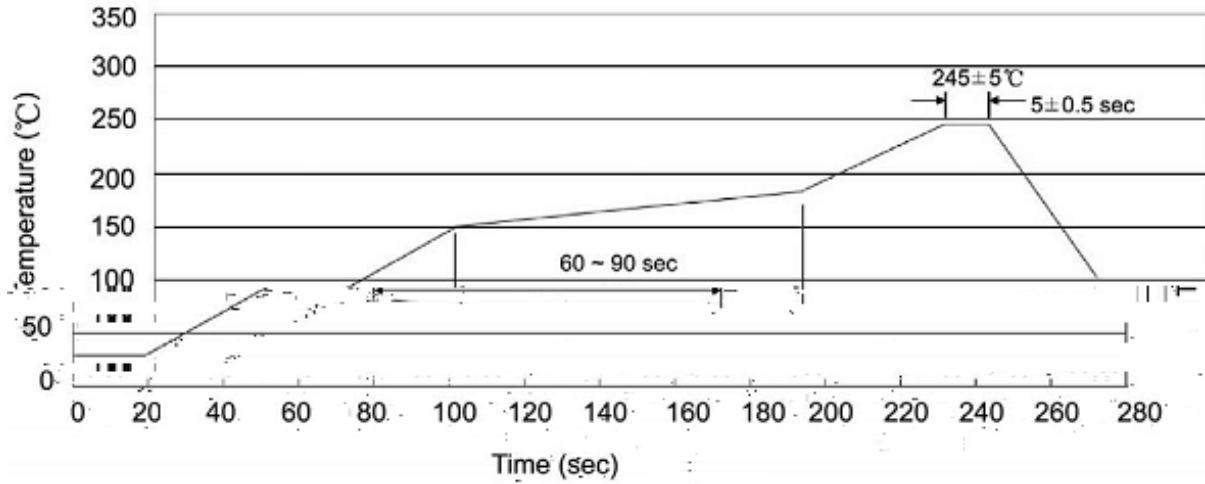
BR: Company Code.

4606H: Product Type.

****: Lot No. Code, code change with Lot No.



() / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- | | | | | | |
|---|-------|-----|-----------|--------|--|
| 1 | 150 | 180 | 60 | 90sec; | 1.Preheating:150~180°C, Time:60~90sec. |
| 2 | 245±5 | | 5±0.5sec; | | 2.Peak Temp.:245±5°C, Duration:5±0.5sec. |
| 3 | | 2 | 10°C/sec. | | 3. Cooling Speed: 2~10°C/sec. |

/ Resistance to Soldering Heat Test Conditions

260±5°C 10±1 sec. Temp.:260±5°C Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units					Dimension (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	Outer Box
SOP/SOP-8	4,000	2	8,000	6	48,000	13" x12	360x360x50	380x335x366

/ Notices