



/ Revised record

版本	修订日期	有修订的页码	修订涉及的内容	拟制	审核
A	2019-11-30	ALL	BRD20N03 TO-252 改封装为 BRCS20N03IP TO-251	黄超	庞隆基

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	30	V
Drain Current		$I_D(T_c=25^{\circ}C)$	20	A
Gate-Source Voltage		V_{GS}	± 20	V
Avalanche Current		I_{AS}	10.4	A
Single Pulsed Avalanche Energy		E_{AS}	130	mJ
Power Dissipation		$P_D(T_c=25^{\circ}C)$	55	W
Junction Temperature Range		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	-55~150	$^{\circ}C$
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	62.7	$^{\circ}C/W$
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	2.3	

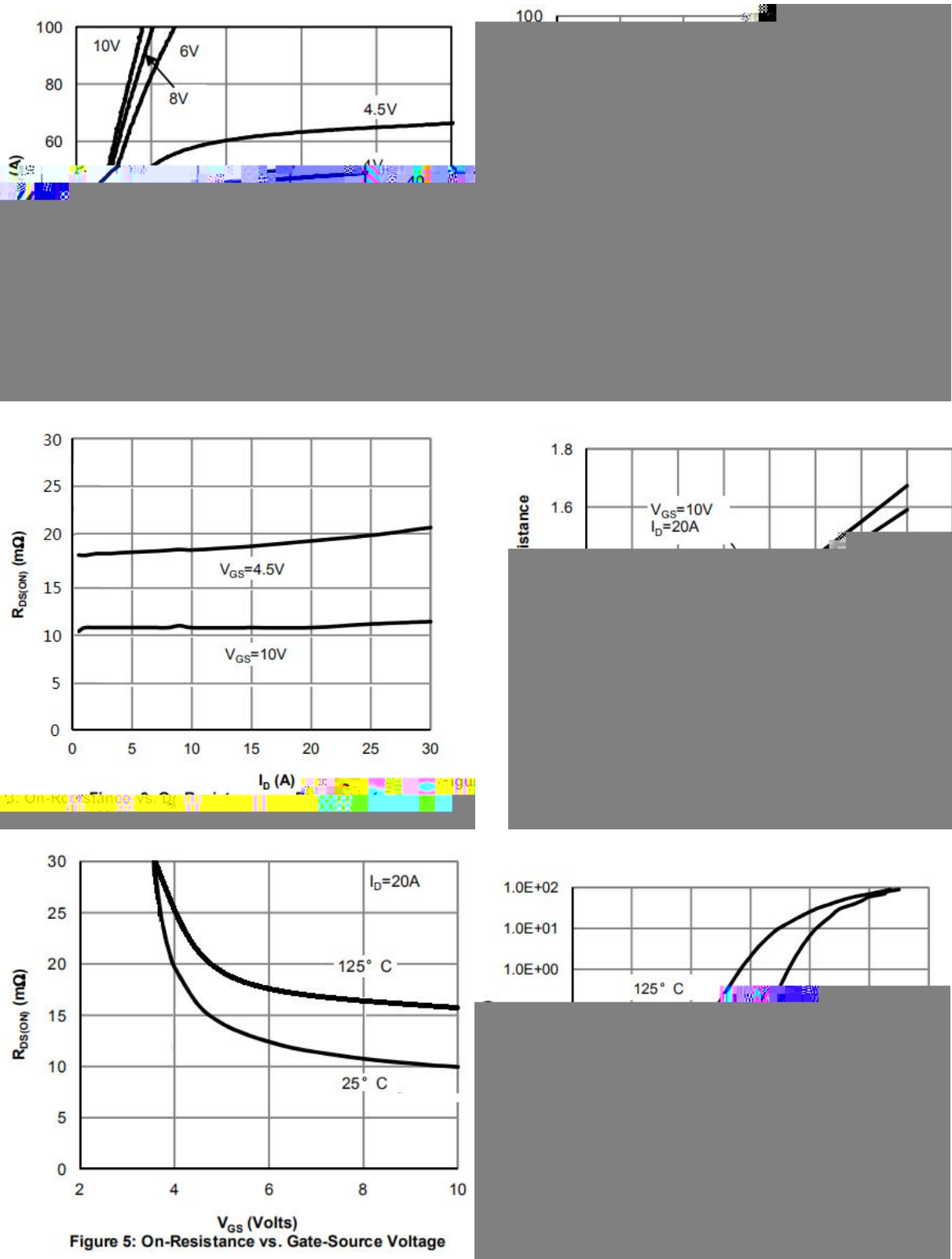
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=30V$ $T_J=150^{\circ}C$			50	
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	μA
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20.0A$		11	13	$m\Omega$
		$V_{GS}=4.5V$ $I_D=10.0A$		16	18	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1	1.8	3	V
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_F=1.0A$		0.7	1.2	V
Signal Source Resistance	R_g	$F=1MHz$		1.67		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		666		pF
Output Capacitance	C_{oss}			26		
Reverse Transfer Capacitance	C_{rss}			63		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=0.75\Omega$ $R_{GEN}=3.0\Omega$		7		ns
Turn-On Rise Time	t_r			13.5		
Turn-Off Delay Time	$t_{d(off)}$			18.5		
Turn-Off Fall Time	t_f			4		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	$Q_{g(10V)}$	$V_{DS}=15V$ $V_{GS}=10V$ $I_D=20.0A$		14		nC
Total Gate Charge	$Q_{g(4.5V)}$			6.5		
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			2.5		

/ Electrical Characteristic Curve





/ Electrical Characteristic Curve

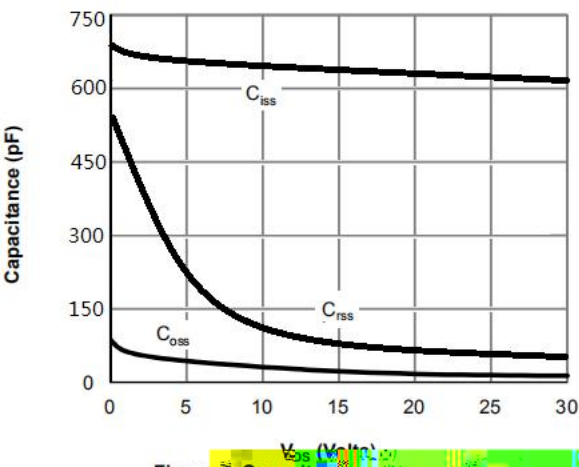
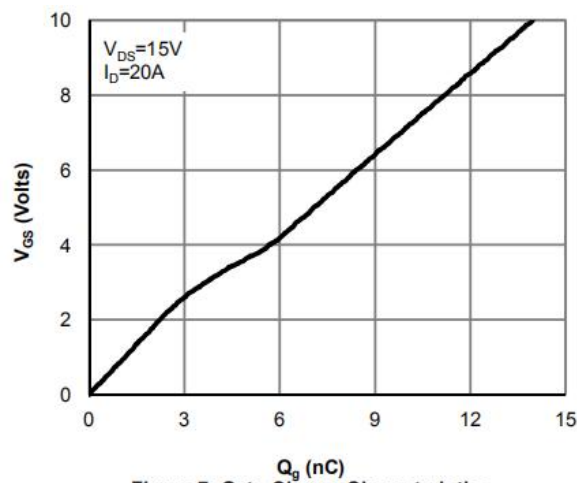
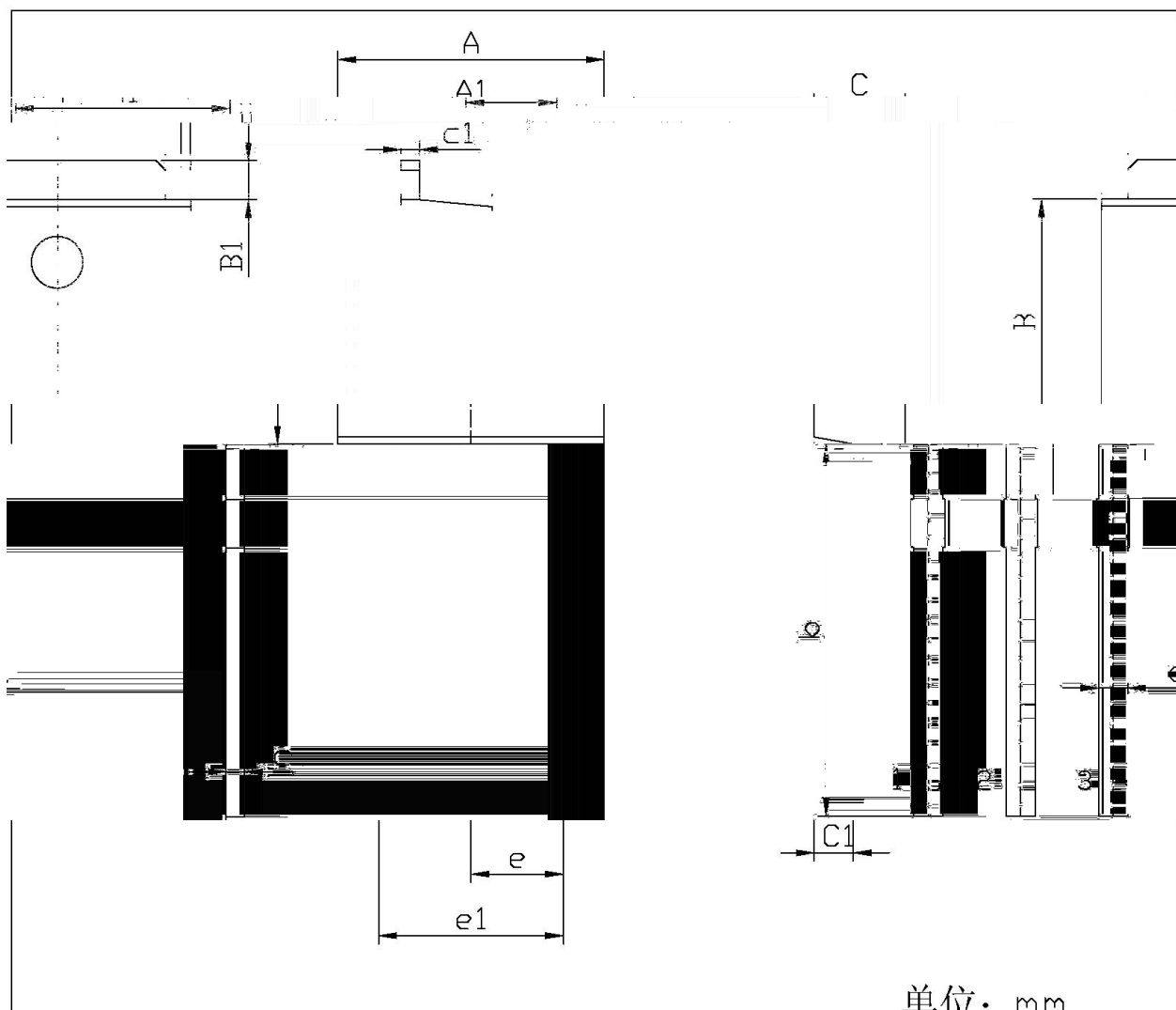


Figure 7-37: Gate-Charge Characteristics

Figure 7-38: Capacitance Characteristics

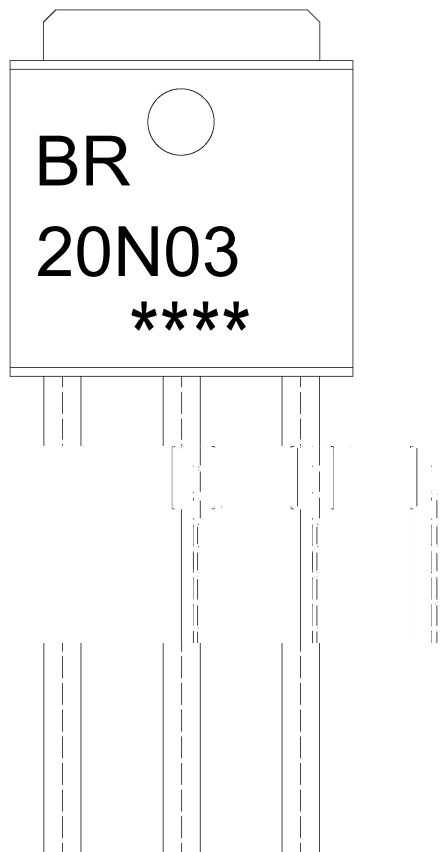


/ Package Dimensions



单位: mm

Dimension in Millimeters			Dimension in Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	6.45	6.75	B	0.50	
A1	5.10	5.50	b	5.00	
C	2.20	2.40	B1	0.95	1.25
C1	0.45	0.55	e	2.24	2.34
e	2.24	2.34	e1	1.40	1.70
e1	1.40	1.70			

/ Marking Instructions

BR

20N03

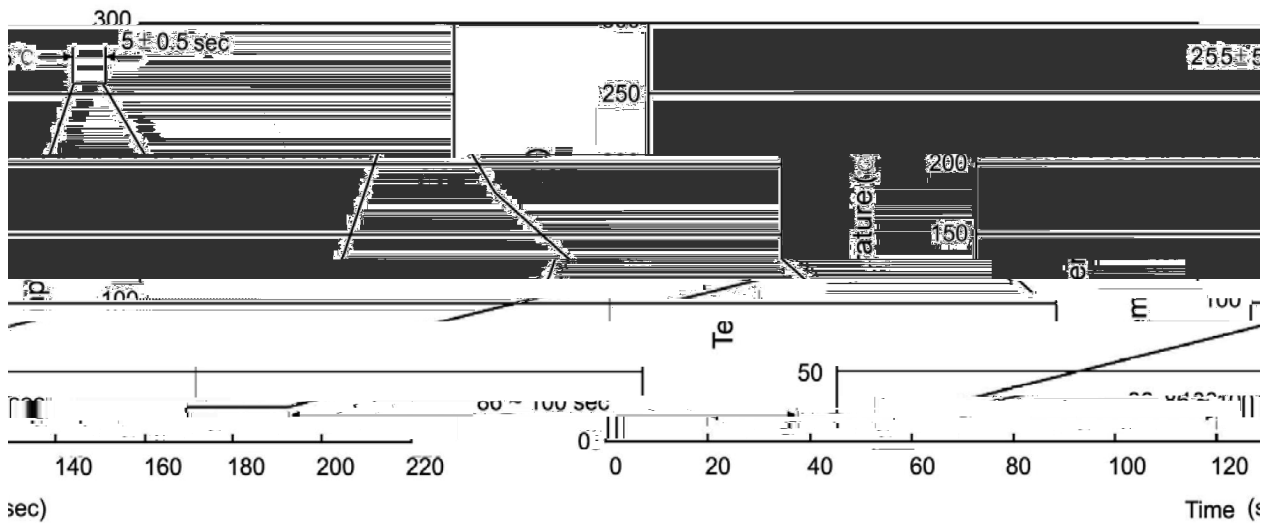
Note:

BR: Company Code

20N03: Product Type.

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

() / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- 1 25 150 60 90sec;
- 2 255±5 5±0.5sec;
- 3 2 10 /sec.

- 1.Preheating:25~150 , Time:60~90sec.
- 2.Peak Temp.:255±5 , Duration:5±0.5sec.
3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

270±5

10±1 sec.

Temp.:270±5℃

Time:10±1 sec

/ Packaging SPEC.

/ BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-251	1,000	10	10,000	5	50,000	135×190	237×172×102	560×245×195