

BRCS120P04YBQ
Rev.A Dec.-2022



DATA SHEET

Absolute Maximum Ratings($T_a=25^\circ\text{C}$;)

@ f Parameter		... Z Symbol	f > Rating	% y Unit
Drain-Source Voltage		V _{DS}	-40	V
Drain Current - Continuous		I _D (T _c =25 °C)	-41	A
Drain Current – Pulsed		I _{DM}	-72	A
Gate-Source Voltage		V _{GS}	f 20	V
Power Dissipation		P _D (T _c =25 °C)	30	W
Single Pulse Avalanche Energy(L=0.5mH)		E _{AS}	317.5	mJ
Avalanche Current(L=0.5mH)		I _{AS}	-31.5	A
Junction and Storage Temperature Range		T _j , T _{stg}	-55 to 150	-
Thermal resistance, junction - ambient	t 0 10s	R _{θJA}	22	/ W
	Steady-State		55	
Thermal resistance, junction - case	Steady-State	R _{θJC}	4.2	

 Electrical Characteristics($T_a=25^\circ\text{C}$;)

@ f Parameter	... Z Symbol	y i Ú ^ Test Conditions	Â 4 > Min	Á ° > Typ	Â Ý > Max	% y Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\text{ A}$ $V_{GS}=0\text{V}$	-40	-48		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40\text{V}$ $V_{GS}=0\text{V}$			-1	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			≤ 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\text{ A}$	-1	-1.7	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$, $I_D=-20\text{A}$		11.6	13.5	m S
		$V_{GS}=-4.5\text{V}$, $I_D=-10\text{A}$		15	25	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$, $V_{GS}=0\text{V}$			-1.2	V
Input Capacitance	C_{iss}	$V_{DS}=-25\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		4760		pF
Output Capacitance	C_{oss}			2800		
Reverse Transfer Capacitance	C_{rss}			1960		
Gate resistance	R_g	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$ $f=1\text{MHz}$		17.5		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=-10\text{V}$, $V_{DS}=-20\text{V}$, $I_D=-20\text{A}$		34		nC
Total Gate Charge	$Q_{g(4.5V)}$			17.5		
Gate Source Charge	Q_{gs}			5.8		
Gate Drain Charge	Q_{gd}			9		

Electrical Characteristics(Ta=25℃ ;)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	t _{d(on)}	V _{GS} =-10V V _{DS} =-20V R _L =0.75Ω R _{GEN} =3Ω		11		ns
Turn-On Rise Time	t _r			7.8		
Turn-Off Delay Time	t _{d(off)}			44		
Turn-Off Fall Time	t _f			18		

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Electrical Characteristic Curve

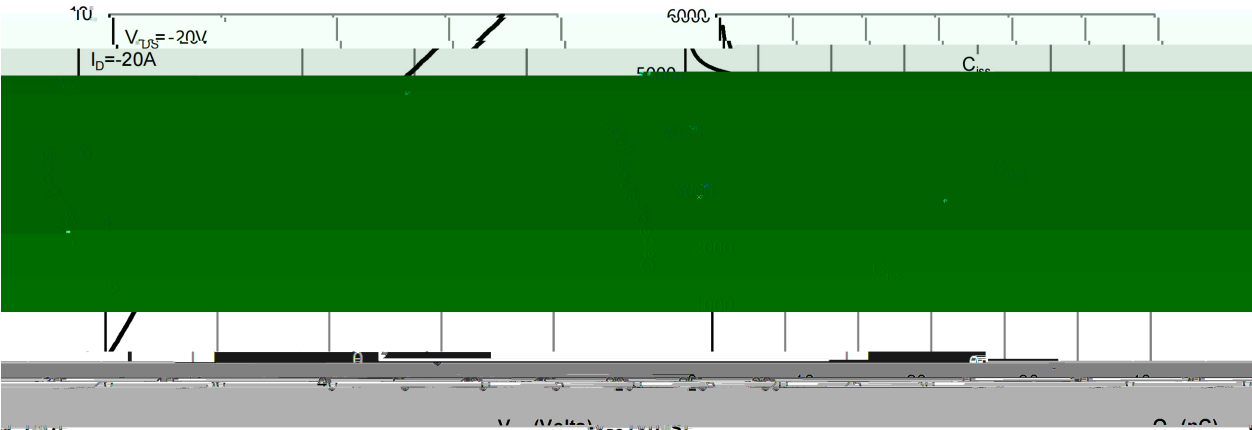
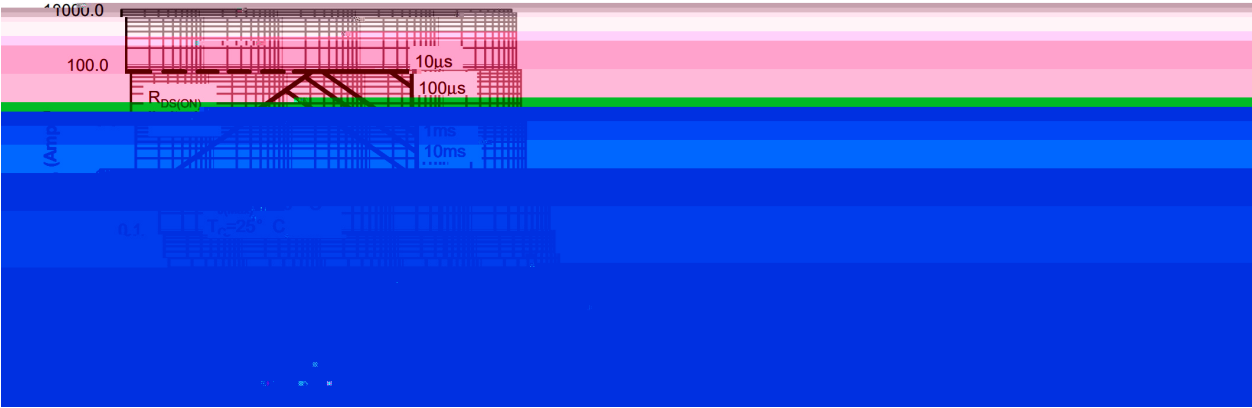
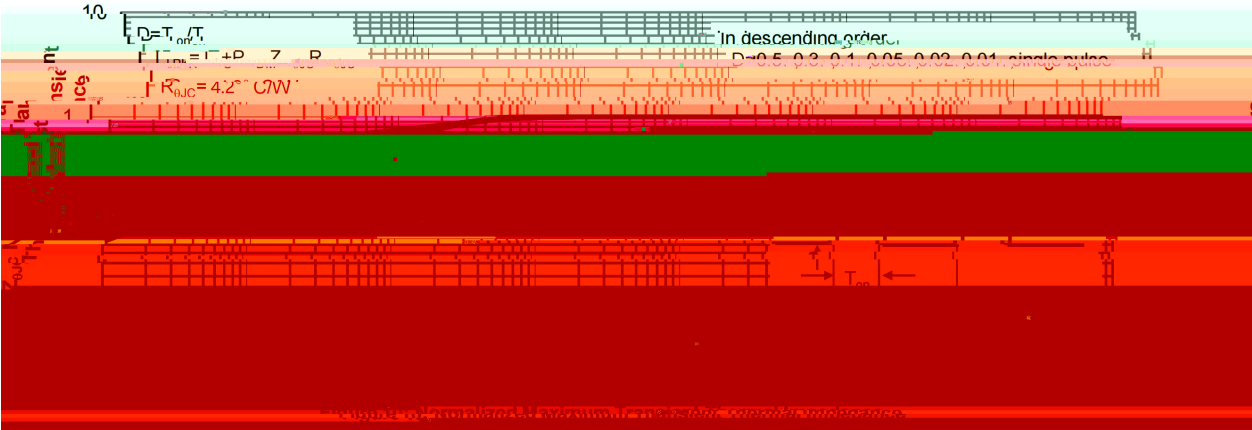


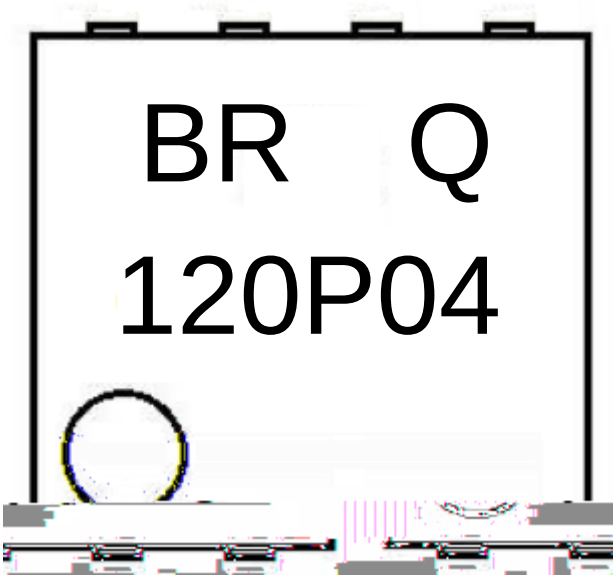
Figure 7: Gate-Charge Characteristics

Figure 8: Capacitance Characteristics



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Marking Instructions

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Note:

BR: Company Code

Q: Automobile halogen-free product Code

120P04: Product Type Code

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

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