

BRCS120P04YBQ
Rev.A Dec.-2022



DATA SHEET

1. Absolute Maximum Ratings(Ta=25℃ ;)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	-40	V
Drain Current - Continuous	I _D (T _c =25℃)	-41	A
Drain Current – Pulsed	I _{DM}	-72	A
Gate-Source Voltage	V _{GS}	±20	V
Power Dissipation	P _D (T _c =25℃)	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	°C
Thermal resistance, junction - ambient	t = 0 ~ 10s	R _{θJA}	22
	Steady-State		55
Thermal resistance, junction - case	Steady-State	R _{θJC}	4.2

2. Electrical Characteristics(Ta=25℃ ;)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =-250μA, V _{GS} =0V	-40	-48		V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V			-1	μA
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.7	-2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-20A		11.6	13.5	mΩ
		V _{GS} =-4.5V, I _D =-10A		15	25	
Diode Forward Voltage	V _{SD}	I _S =-1A, V _{GS} =0V			-1.2	V
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V, f=1.0MHz		4760		pF
Output Capacitance	C _{oss}			2800		
Reverse Transfer Capacitance	C _{rss}			1960		
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		17.5		
Total Gate Charge	Q _{g(10V)}	V _{GS} =-10V, V _{DS} =-20V, I _D =-20A		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

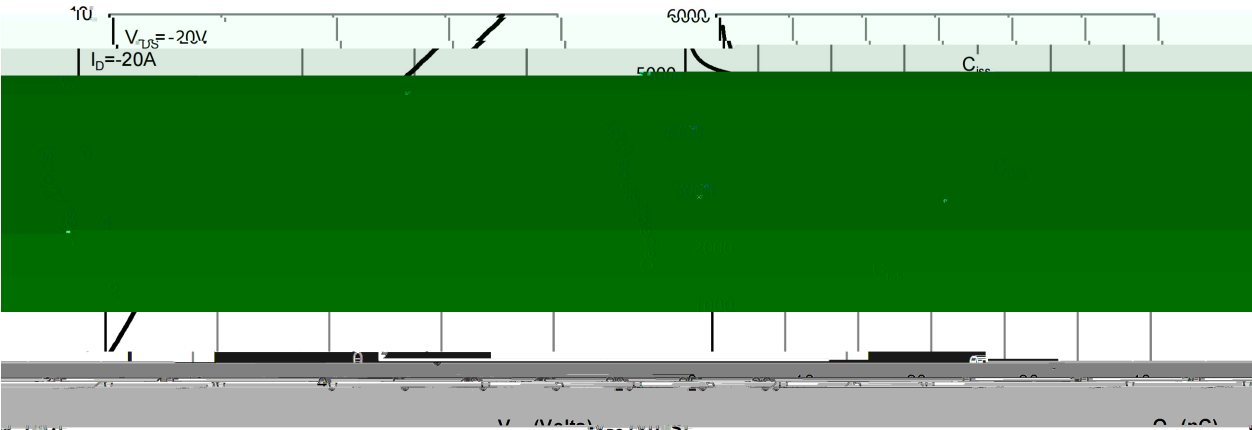
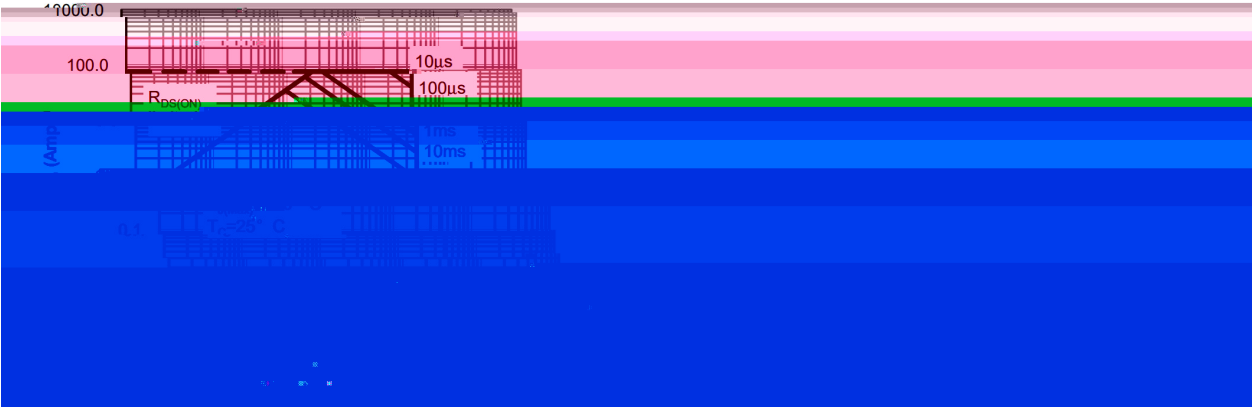
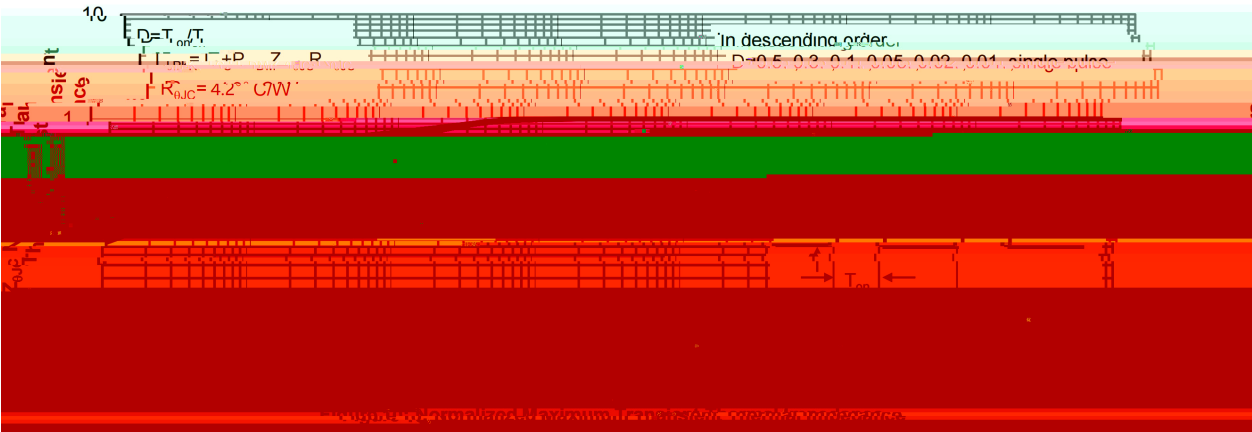


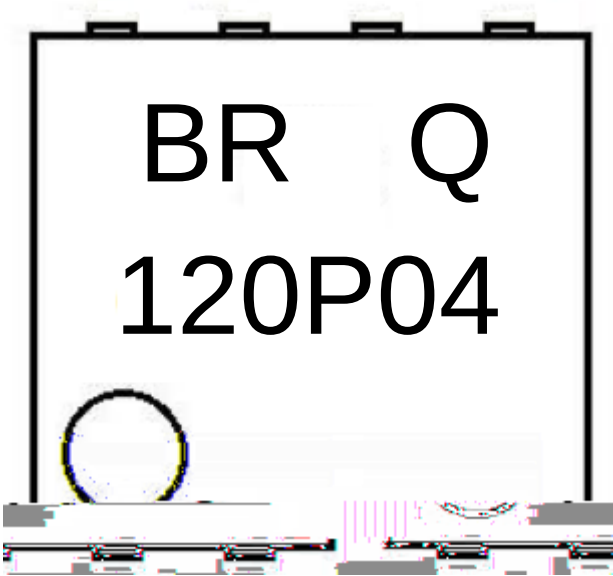
Figure 7: Gate-Charge Characteristics

Figure 8: Capacitance Characteristics



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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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