

BRCS250C03MFQ

/ Absolute Maximum Ratings(Ta=25 –)

Parameter	Symbol	Rating		Unit
		N-channe	P-channell	
Drain-Source Voltage	V_{DSS}	30	-30	V
Gate-Source Voltage	V_{GSS}	± 12		V
Continuous Drain Current	$I_D (T_C=25^\circ C)$	5.5	-4.0	A
Pulsed Drain Current	I_{DM}	35	-25	A
Power Dissipation	$P_D (T_C=25^\circ C)$	1.3	1.3	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150		
Maximum Junction-to-Ambient	$R_{\theta JA}$	140		/W
Maximum Junction-to-Lead	$R_{\theta JL}$	75		/W

N- 2N-CHANNEL Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\text{ A}$	30	32.6		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1.0	A
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\text{ A}$	0.5	0.9	1.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=4A$		21.5	25	m
		$V_{GS}=4.5V$ $I_D=4A$		23	35	m
		$V_{GS}=2.5V$ $I_D=1A$		30	50	m
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1A$		0.74	1.2	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		690		pF
Output Capacitance	C_{oss}			200		pF
Reverse Transfer Capacitance	C_{rss}			130		pF
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		3.5		Ω
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V$ $V_{DS}=15V$ $I_D=3.5A$		4.1		nC
Total Gate Charge	$Q_{g(4.5V)}$			2.2		nC
Gate-Source Charge	Q_{gs}			0.6		nC
Gate-Drain Charge	Q_{gd}			1.1		nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=4.2$ $R_{GEN}=3$		4.6		ns
Turn-On Rise Time	t_r			1.4		ns
Turn-Off Delay Time	$t_{d(off)}$			18.7		ns
Turn-Off Fall Time	t_f			15.8		ns

N- / N-CHANNEL Electrical Characteristic Curve

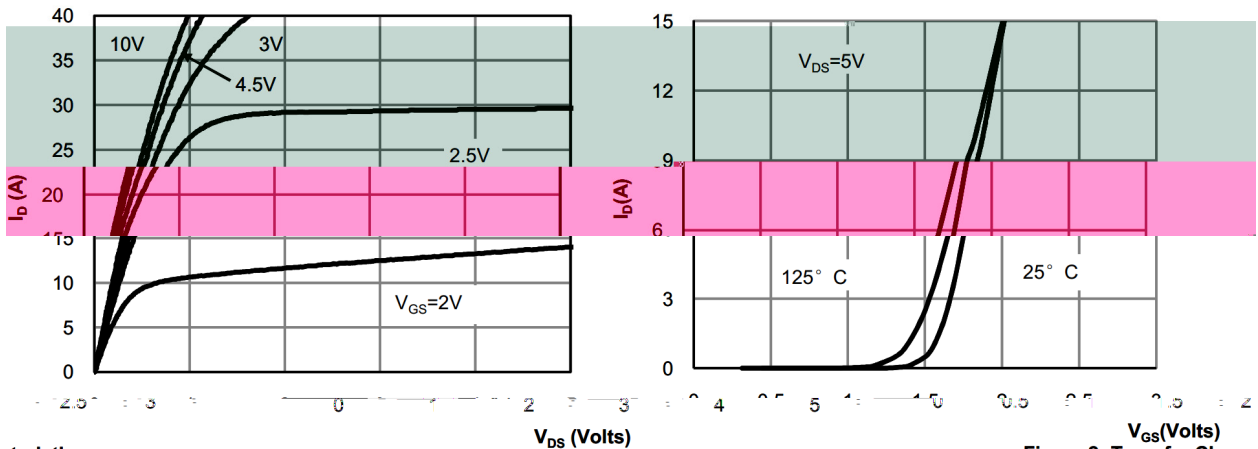


Fig 1: On-Region Characteristics

Figure 2: Transfer Characteristics

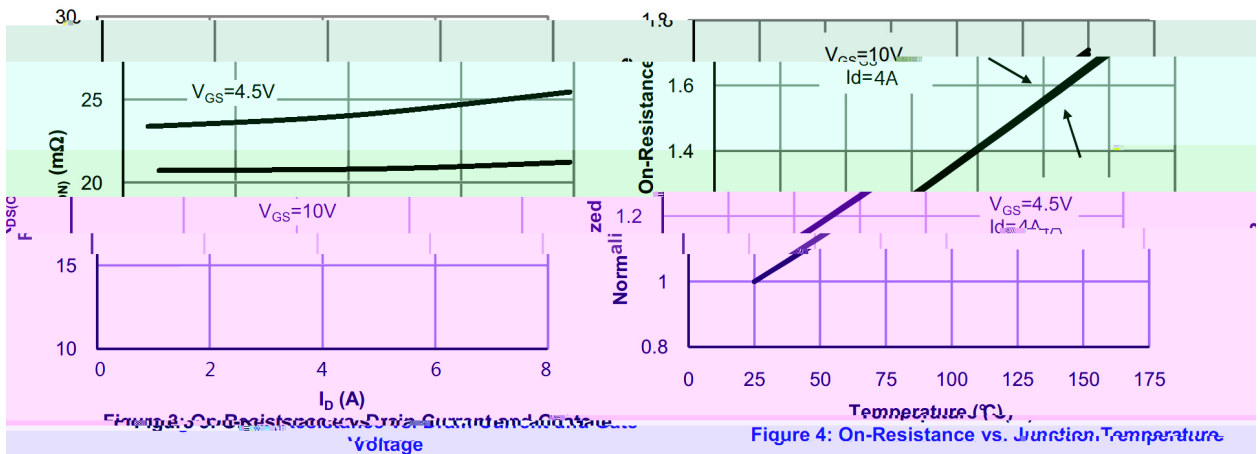


Figure 3: On-Resistance vs. Drain Current and Gate-Source Voltage

Figure 4: On-Resistance vs. Junction Temperature

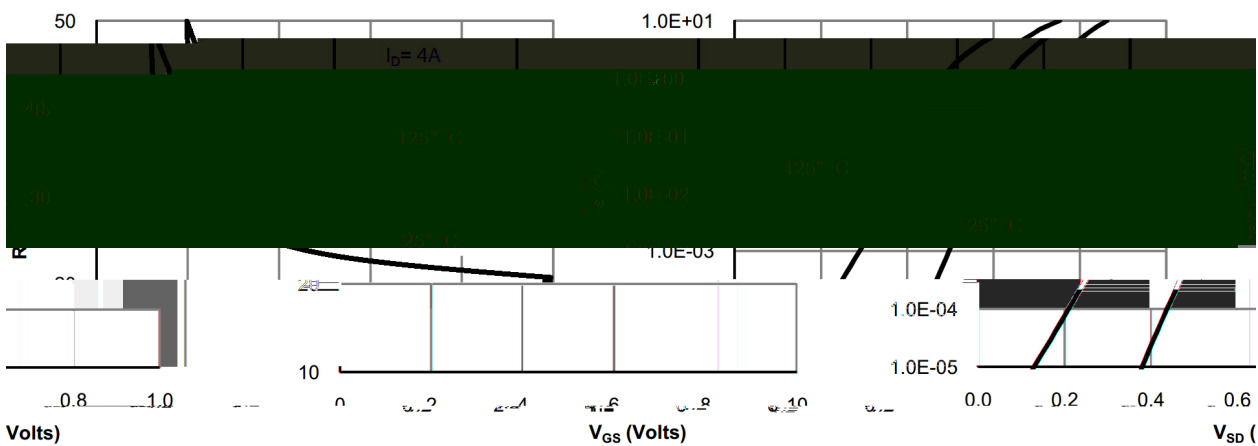
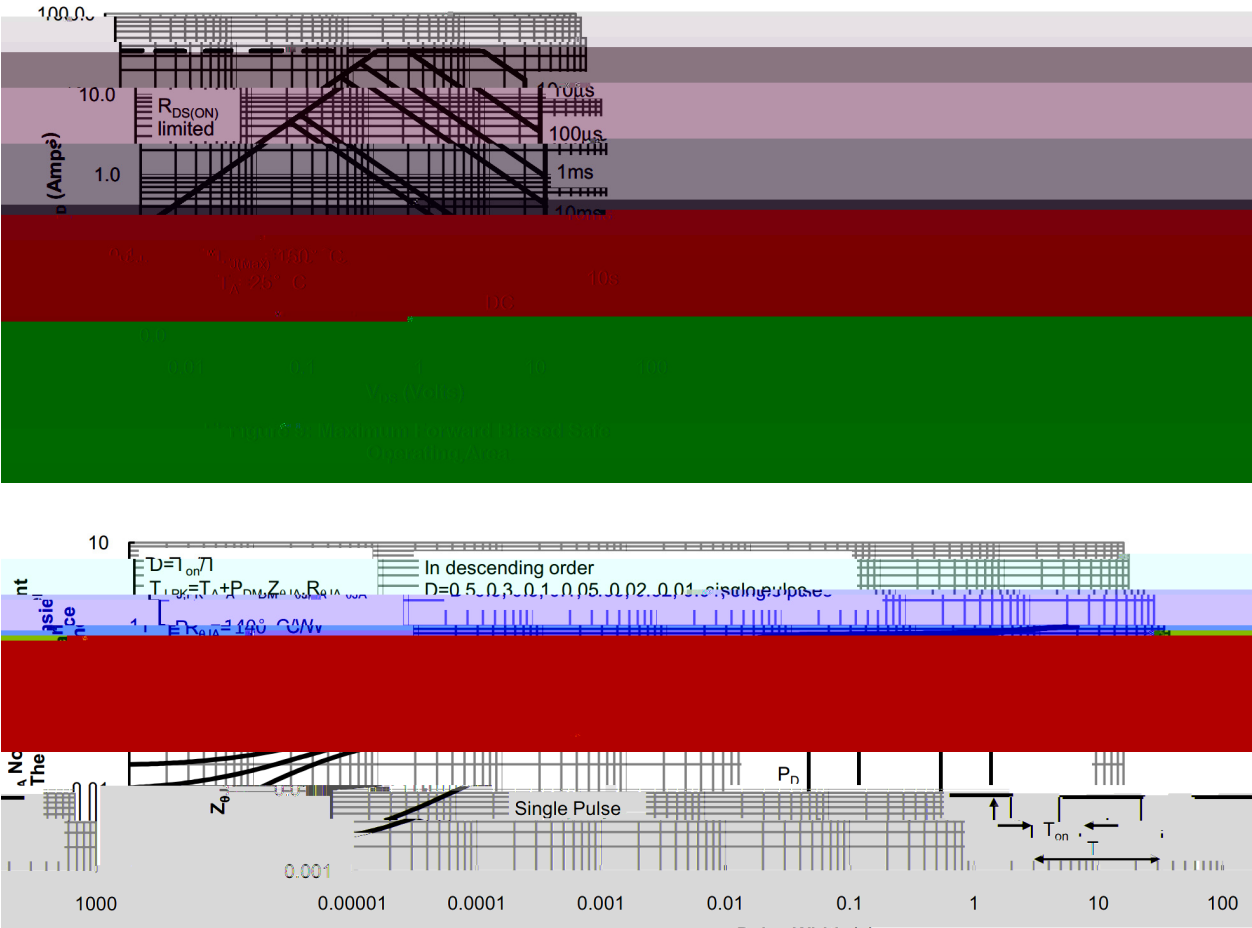
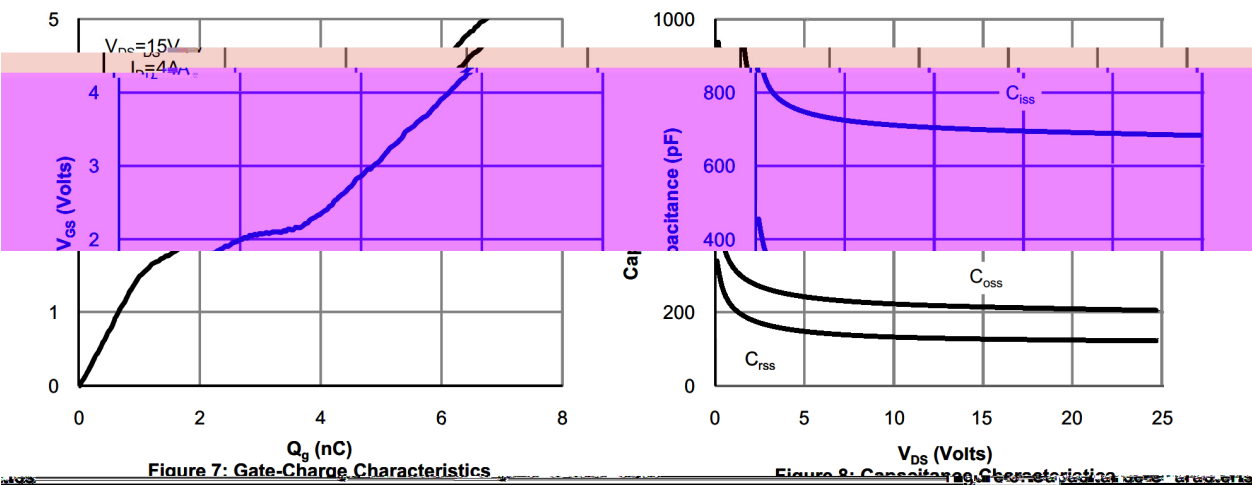


Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Body-Diode Characteristics

N- / N-CHANNEL Electrical Characteristic Curve



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Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=-250 A$	-30	-32		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V$ $V_{GS}=0V$			-1.0	A
Gate-Body leakage current	I_{GSS}	$V_{GS}=\pm 12V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250 A$	-0.5	-0.9	-1.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V$ $I_D=-4A$		46	55	m
		$V_{GS}=-4.5V$ $I_D=-4A$		53	65	m
		$V_{GS}=-2.5V$ $I_D=-1A$		70	120	m
Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=-1A$		-0.76	-1.2	V
Input Capacitance	C_{iss}	$V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$		900		pF
Output Capacitance	C_{oss}			240		pF
Reverse Transfer Capacitance	C_{rss}			190		pF
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		4.5		Ω
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=-10V$ $V_{DS}=-15V$ $I_D=-2.7A$		4.4		nC
Total Gate Charge	$Q_{g(4.5V)}$			2.3		nC
Gate-Source Charge	Q_{gs}			0.75		nC
Gate-Drain Charge	Q_{gd}			1.2		nC
Turn-On Delay Time	$t_{d(on)}$			7.8		ns

$V_{DS}=-15 V$ $V_{GS}=-10V$
 $R_L=5.55$ $R_{GEN}=3$

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DATA SHEET

P- / P-CHANNEL Electrical Characteristic Curve

P-?è Ô ? d • Ž ¢ / P-CHANNEL Electrical Characteristic Curve

Ø □ =) ¢ / Package Dimensions

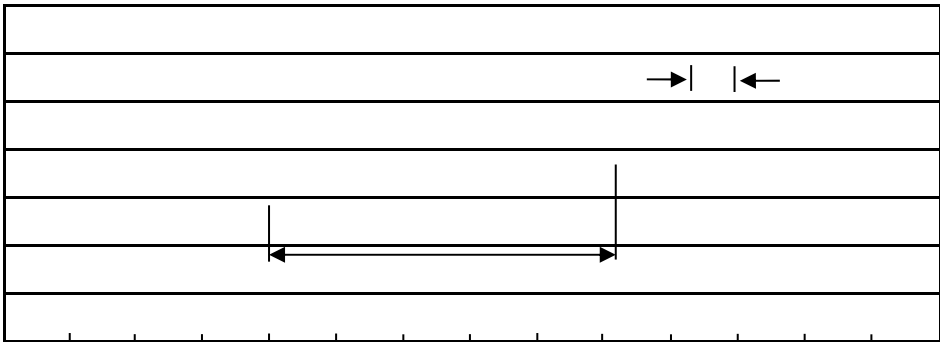
, M y f / Marking Instructions

B01Q

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B01: ° Z W A
7 y V ñ —) í D } ö œ
****: ÿ D Z W A k š Ÿ D Z J

Note:
B01 y Product Type Code
Q: Automobile halogen-free product Code
****: Lot No.Code,code change with Lot No

šWD t...•Žč (x/) / :KSVKXGZ[XK 6XULORK LUX /8 8KL RU] 9URJKXOTM 6



- ačy

10•Ä½“† 150½200 - kž• 60½120sec;

20•Q>“† 255 r5 - kž•4 Ò 5 r0.5sec;

30•D Nò i Ò 0 ,† 2½10 - /sec.
- Note:

1.Preheating:150~200 - , Time:60~120sec.

2.Peak Temp.:255 r5 - , Duration:5 r0.5sec.

3. Cooling Speed: 2~10 - /sec.

ÂD /Cã p ¯ »] / Resistance to Soldering Heat Test Conditions

“†y 260 r5 - ž•y 10 r1 sec. Temp.:260±5 Time:10±1 sec

G P á / Packaging SPEC.

2 & x / REEL

Package Type 7>û ~ E	Units ;>û H					Dimension ;>û p . (unit Åmm³)		
	Units/Reel /-	Reels/Inner Box -- /-	Units/Inner Box /-	Inner Boxes/Outer Box - /1ç	Units/Outer Box /1ç	Reel	Inner Box	Outer Boxç
SOT23-5/6	3,000	10	30,000	4	120,000	7 s ×8	210×205×205	445×435×230

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