

BRCS150P02MC

Rev.B Mar.-2023



DATA SHEET

SOT23-3 P MOS

S- CHANNEL MOSFET in a SOT23-3 Plastic Package.

$V_{DS} (V) = -20V$

$I_D = -7.0A$

$R_{DS(ON)}@-4.5V$

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current		I_D	7.0	A
Pulsed Drain Current		I_{DM}	38	A
Avalanche Current		I_{AS}	13	A
Avalanche energy $L=0.5\text{mH}$		E_{AS}	59	mJ
Power Dissipation for Single Operation		P_D	1.3	W
Maximum Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 150	$^\circ\text{C}$
Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	R_{JA}	90	$^\circ\text{C/W}$
	Steady State		125	$^\circ\text{C/W}$
Thermal Resistance-Junction to Lead	Steady State	R_{JL}	80	$^\circ\text{C/W}$

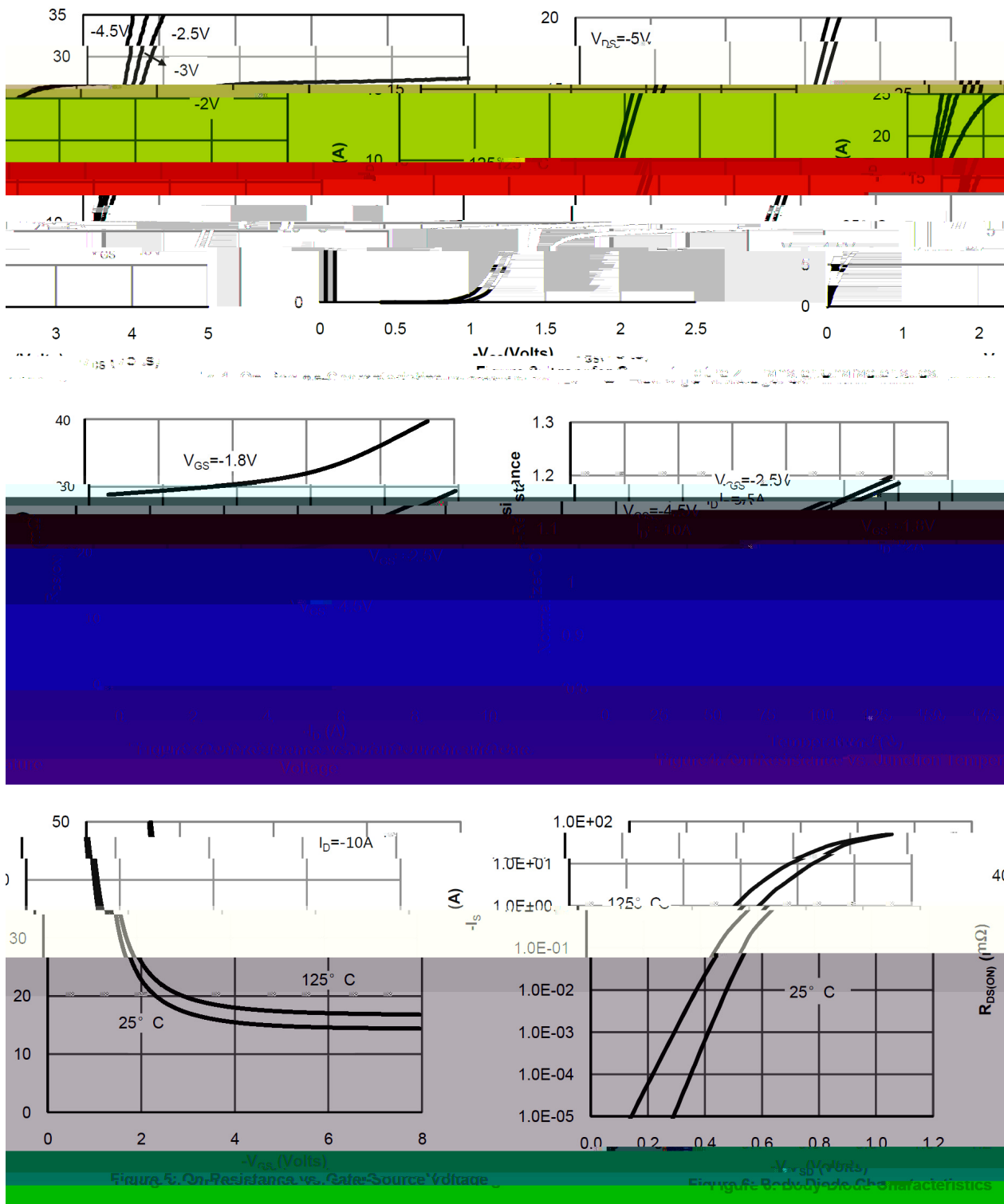
/ Electrical Characteristics($T_a=25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$I_D=-250\text{ A}$ $V_{GS}=0\text{V}$	-20	-23		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20\text{V}$ $V_{GS}=0\text{V}$			-1.0	A
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$ $V_{GS}=\pm 12\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\text{ A}$	-0.4	-0.7	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5\text{V}$ $I_D=-10\text{A}$		15	17	m Ω
		$V_{GS}=-2.5\text{V}$ $I_D=-5\text{A}$		19	25	
		$V_{GS}=-1.8\text{V}$ $I_D=-1\text{A}$		27	38	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$ $V_{GS}=0\text{V}$			-1.2	V
Gate resistance	R_g	$V_{GS}=0\text{V}$, $V_{DS}=0\text{V}$, $f=1\text{MHz}$		13.5		
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$ $V_{DS}=-20\text{V}$ $f=1\text{MHz}$		2550		pF
Output Capacitance	C_{oss}			205		
Reverse Transfer Capacitance	C_{rss}			190		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	Q_g	$V_{GS}=-4.5V, \quad V_{DS}=-10V,$ $I_D=-6.5A$		7.4		nC
Gate Source Charge	Q_{gs}			1.3		
Gate Drain Charge	Q_{gd}			2.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-4.5V \quad R_L=1.54$ $V_{DS}=-10V \quad R_{GEN}=3$		7.5		ns
Turn-On Rise Time	t_r			11		
Turn-Off Delay Time	$t_{d(off)}$			33		
Turn-Off Fall Time	t_f			10.5		

/ Electrical Characteristic Curve





/ Electrical Characteristic Curve

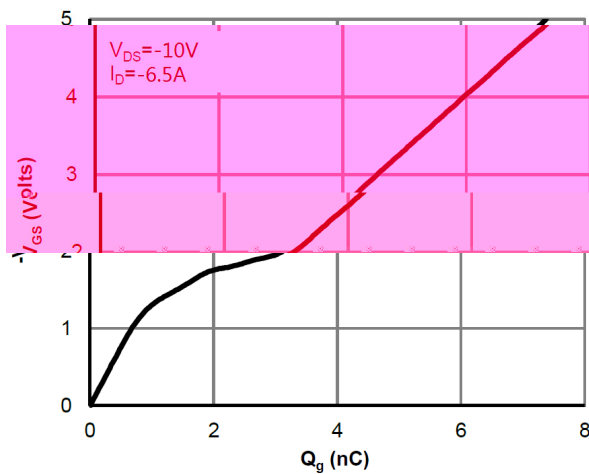


Figure 7: Gate-Charge Characteristics

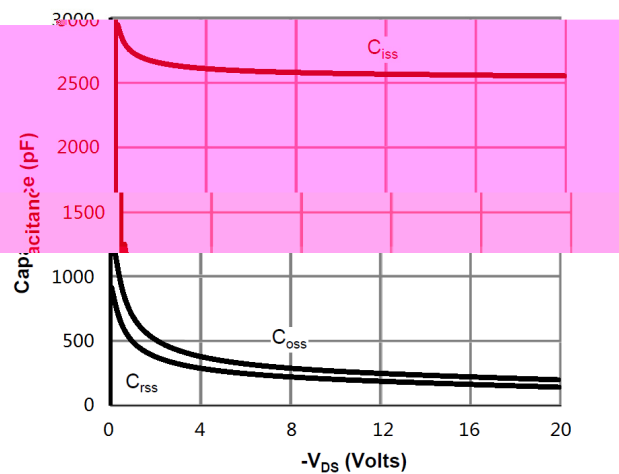


Figure 8: Capacitance Characteristics

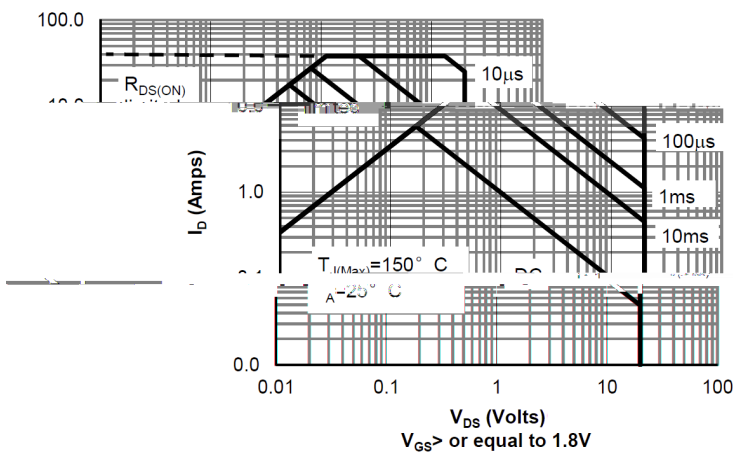
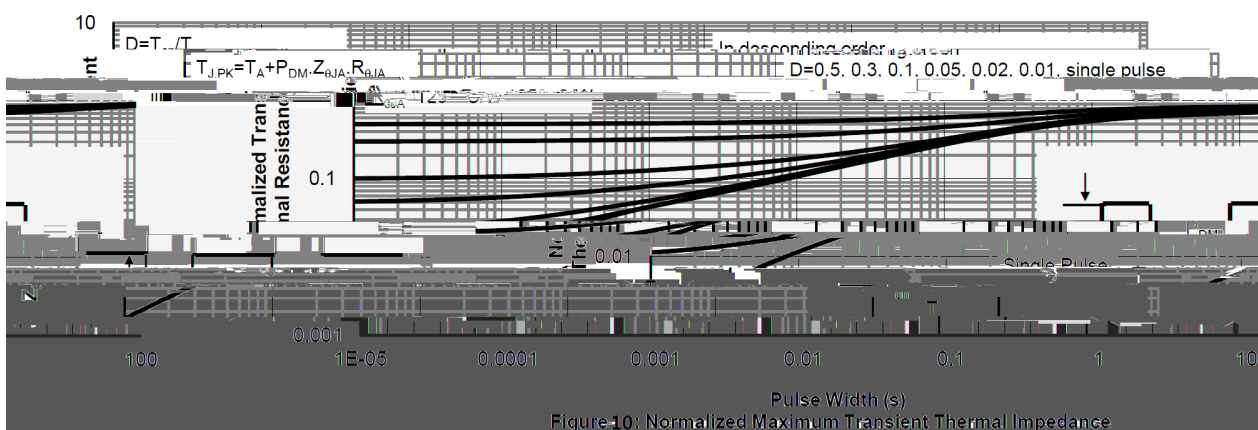
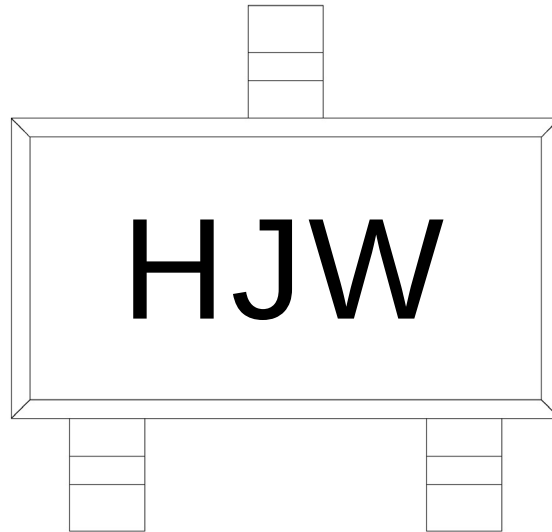
Figure 9: Power Dissipation Characteristics
Safe Operating Area

Figure 10: Normalized Maximum Transient Thermal Impedance

/ Marking Instructions



H
JW

Note:

H: Company Code
JW: Product Type

