

BRCS500P10ZC

Rev.A Sep.-2023

/ Descriptions

PDFN5×6 N MOS

P-CHANNEL MOSFET in a PDFN5×6 Plastic Package.

/ Features

$V_{DS}(V)=-100V$ $I_D=-29A$

$R_{DS(ON)}@-10V<50m\Omega$ (Typ.42mR)

$R_{DS(ON)}@-4.5V<55m\Omega$ (Typ.45mR)

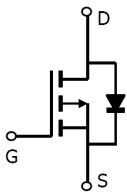
HF Product.

/ Applications

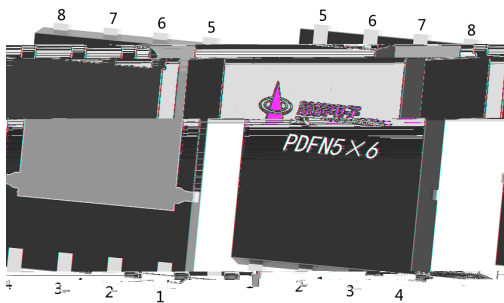
DC/DC

Power Management of Industrial DC/DC Converter.

/ Equivalent Circuit



/ Pinning



PIN1 2 3 S

PIN 4 G

PIN 5 6 7 8 D

/ Marking

See Marking Instructions.

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-100	V
Drain Current - Continuous		$I_D(T_c=25^\circ\text{C})$	-29	A
Drain Current – Pulsed		I_{DM}	-118	A
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation		$P_D(T_c=25^\circ\text{C})$	90	W
Single Pulse Avalanche Energy($L=0.5\text{mH}$)		E_{AS}	410	mJ
Avalanche Current($L=0.5\text{mH}$)		I_{AS}	-32	A
Junction and Storage Temperature Range		T_j, T_{stg}	-55 to 150	
Thermal resistance, junction - ambient	Steady-State	$R_{\theta JA}$	60	/ W
Thermal resistance, junction - case	Steady-State	$R_{\theta JC}$	1.39	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$ $V_{GS}=0\text{V}$	-100	-120		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100\text{V}$ $V_{GS}=0\text{V}$			-1	μA
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu\text{A}$	-1	-1.7	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10\text{V}$, $I_D=-15\text{A}$		42	50	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-10\text{A}$		45	55	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$, $V_{GS}=0\text{V}$			-1.4	V
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		6200		pF
Output Capacitance	C_{oss}			1350		
Reverse Transfer Capacitance	C_{rss}			630		
Gate resistance	R_g	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$ $f=1\text{MHz}$		2.5		Ω
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=-10\text{V}$, $V_{DS}=-50\text{V}$, $I_D=-5\text{A}$		5.9		nC
Total Gate Charge	$Q_{g(4.5V)}$			2.7		
Gate Source Charge	Q_{gs}			1.2		
Gate Drain Charge	Q_{gd}			1.2		

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DATA SHEET

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=-10V$ $V_{DS}=-50V$ $R_L=10\Omega$ $R_{GEN}=3\Omega$		6		ns
Turn-On Rise Time	t_r			2.4		
Turn-Off Delay Time	$t_{d(off)}$			19		

/ Electrical Characteristic Curve

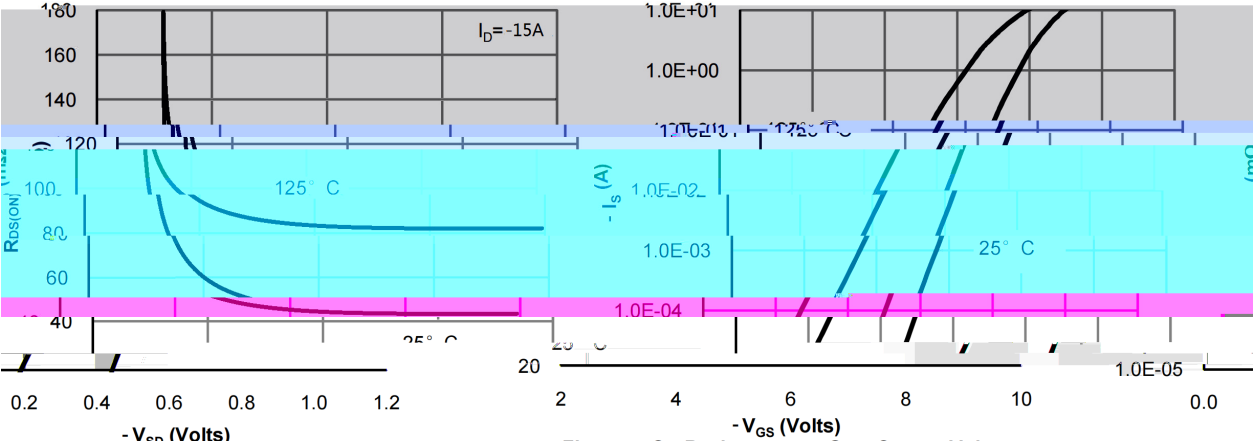
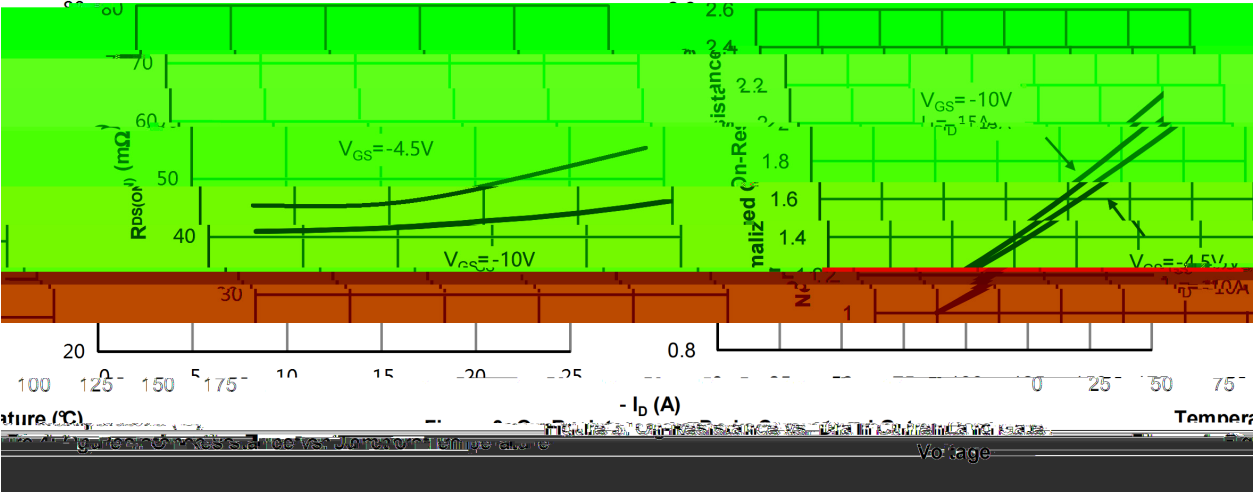
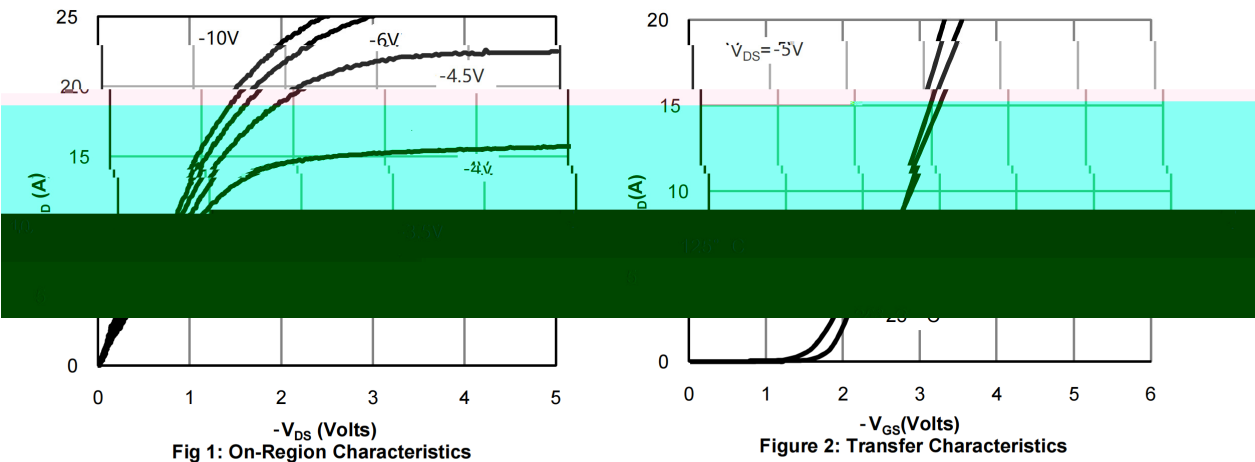
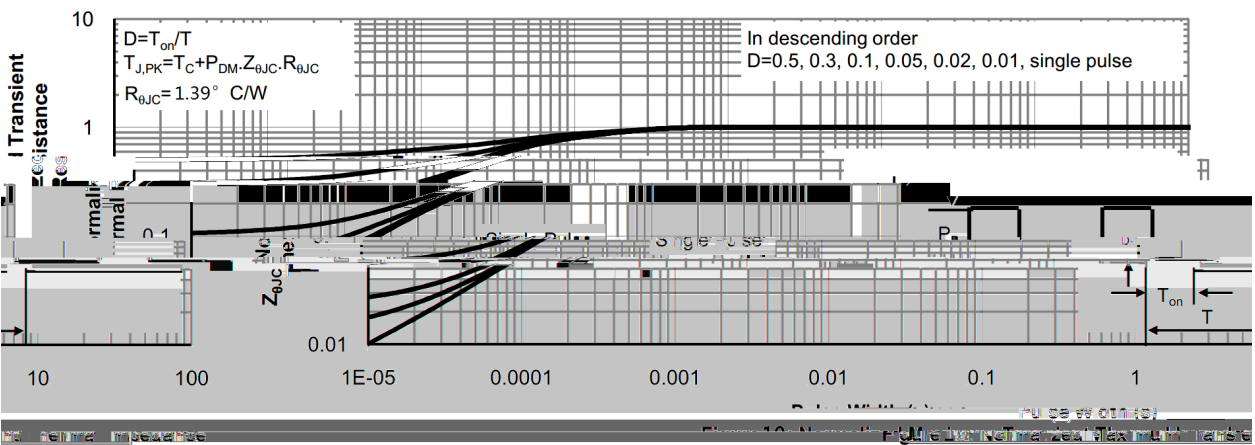
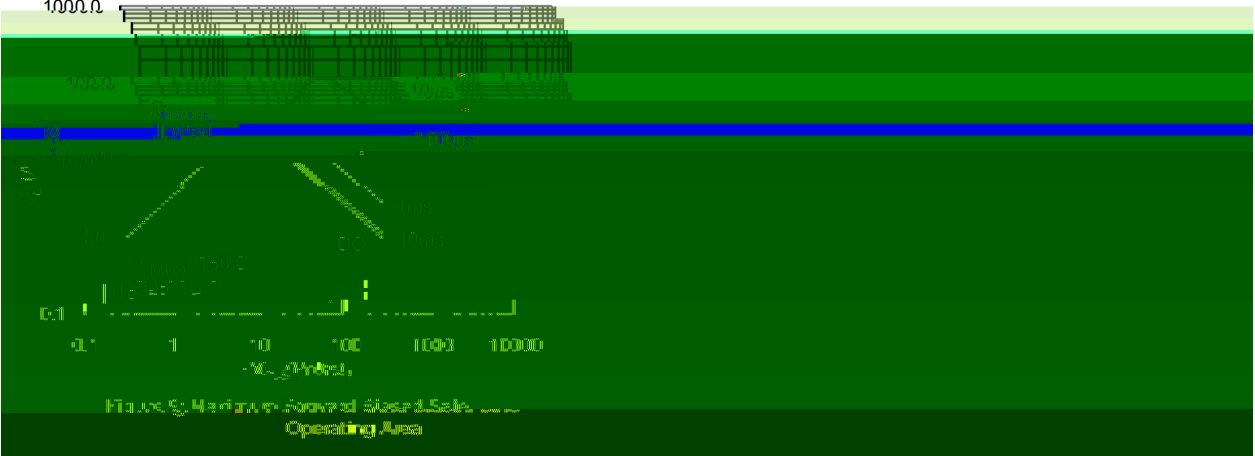
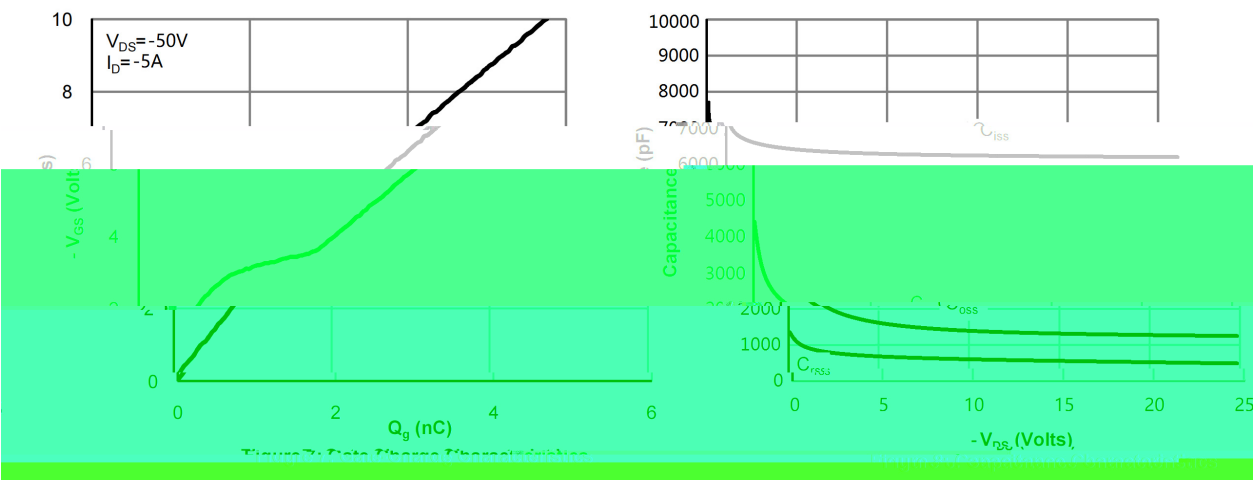


Figure 6: Body-Diode Characteristics

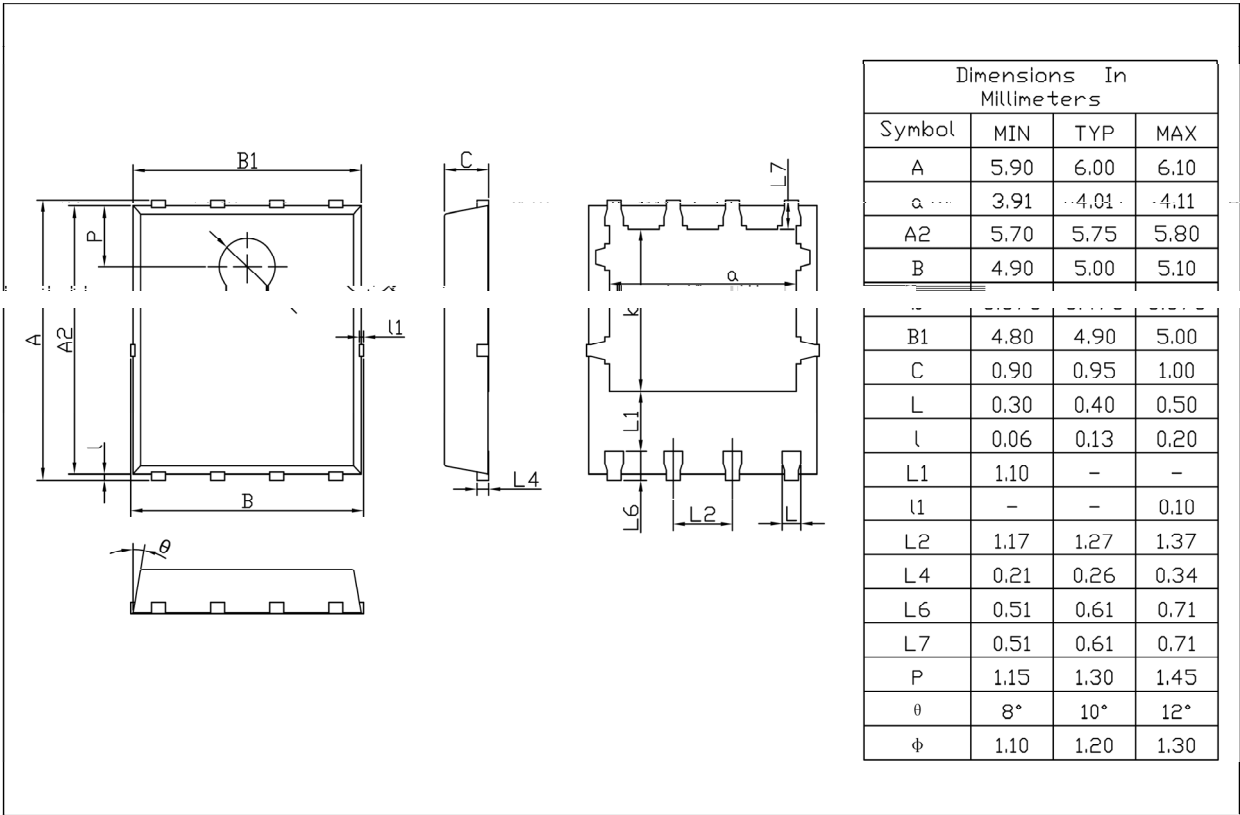
Figure 5: On-Resistance vs. Gate-Source Voltage

/ Electrical Characteristic Curve



/ Package Dimensions

PDFN5×6Unit:mm



Rev.01 202209

/ Marking Instructions



BR
500P10

Note	
BR	Company Code
500P10	Product Type Code
****	Lot No. Code, code change with Lot No

() / Temperature Profile for IR Reflow Soldering(Pb-Free)

- Note:

1

150 180

60 90sec;

2

245±5

5±0.5sec;

3

2 10 /sec.

1.Preheating:150~180 , Time:60~90sec.

2.Peak Temp.:245±5 , Duration:5±0.5sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5

10±1 sec.

Temp.:260±5

Time:10±1 sec

/ Packaging SPEC.

/ REEL

Package Type	Units	Dimension	(unit mm ³)
/			