

BRCS700P10DP

Rev.C Aug.-2023

/ Descriptions

TO-252 P MOS

P-CHANNEL MOSFET in a TO-252 Plastic Package.

/ Features

$V_{DS}(V)=-100V$ $I_D=-22A$

$R_{DS(ON)}@-10V<70m\Omega$ (Typ.67mR)

$R_{DS(ON)}@-4.5V<85m\Omega$ (Typ.70mR)

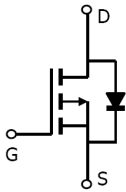
HF Product.

/ Applications

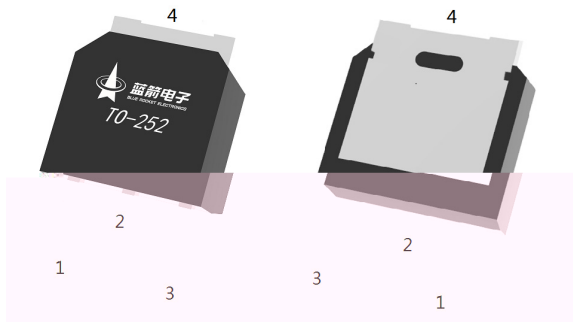
DC/DC

Power Management of Industrial DC/DC Converter.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 D PIN 3 S PIN 4 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		$I_D(T_c=25^\circ\text{C})$	-22	A
Drain Current – Pulsed		I_{DM}	-66	A
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation		$P_D(T_c=25^\circ\text{C})$	75	W
Single Pulse Avalanche Energy($L=0.5\text{mH}$)		E_{AS}	176.4	mJ
Avalanche Current($L=0.5\text{mH}$)		I_{AS}	-21	A
Junction and Storage Temperature Range		T_j, T_{stg}	-55 to 150	
Thermal resistance, junction - ambient	Steady-State	$R_{\theta JA}$	62	/ W
Thermal resistance, junction - case	Steady-State	$R_{\theta JC}$	1.67	

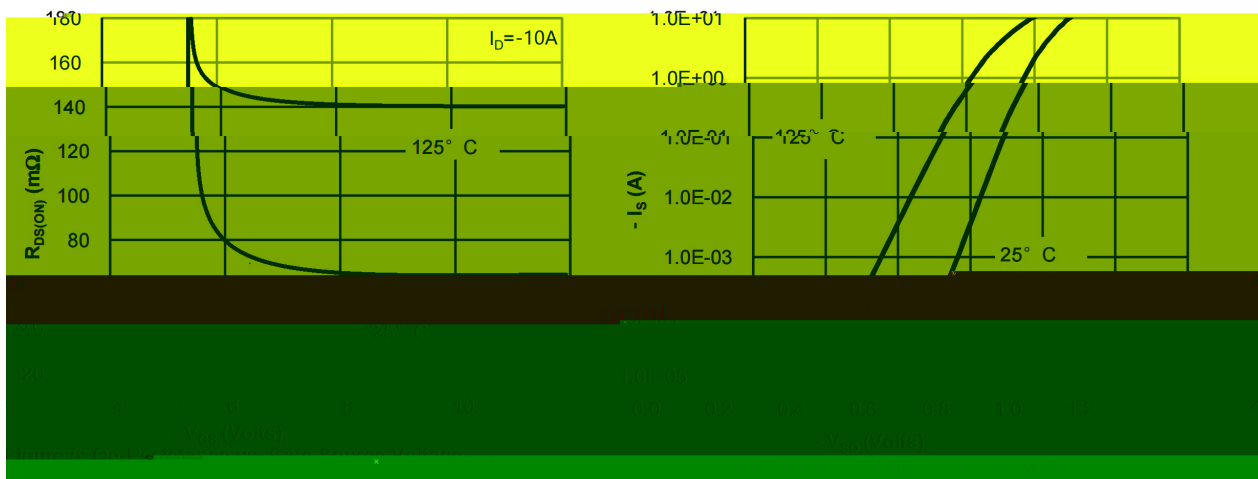
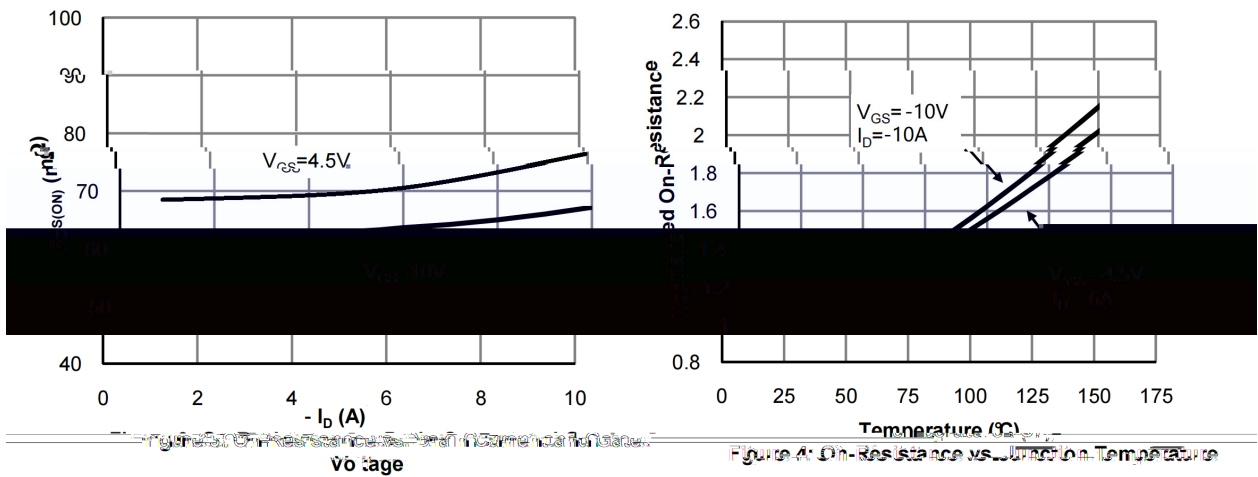
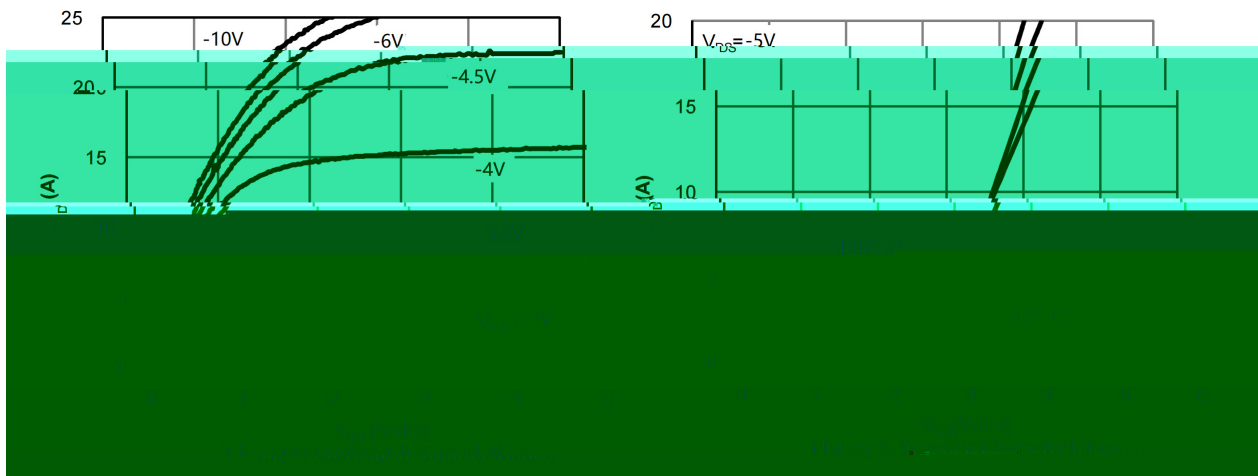
/ Electrical Characteristics($T_a=25^\circ\text{C}$)

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	-113		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	-2.0	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10\text{V}$, $I_D=-10\text{A}$		67	70	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-6\text{A}$		70	85	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$, $V_{GS}=0\text{V}$			-1.2	V
Input Capacitance	C_{iss}	$V_{DS}=-15\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		2820		pF
Output Capacitance	C_{oss}			840		
Reverse Transfer Capacitance	C_{rss}			670		
Gate resistance	R_g	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$ $f=1\text{MHz}$		2.7		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		

/ Electrical Characteristics(Ta=25)

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		
Turn-Off Fall Time	t_f			2.6		

Electrical Characteristic Curve





Electrical Characteristic Curve

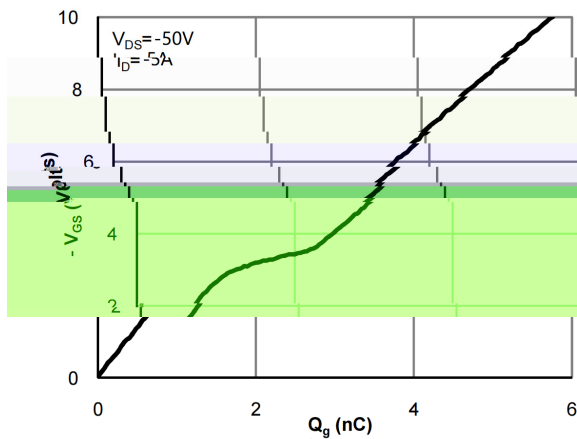


Figure 7: Gate-Charge Characteristics

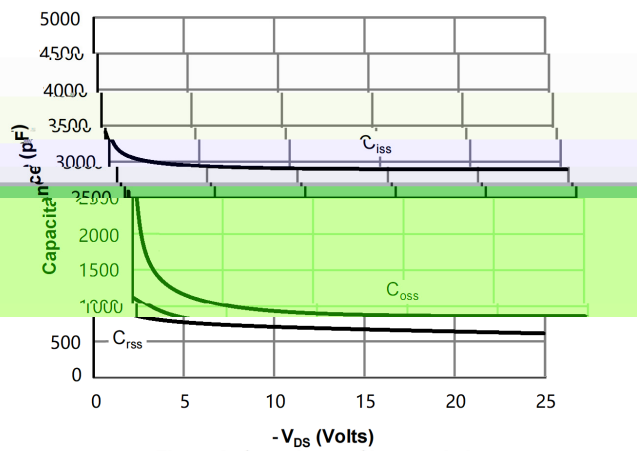


Figure 8: Capacitance Characteristics

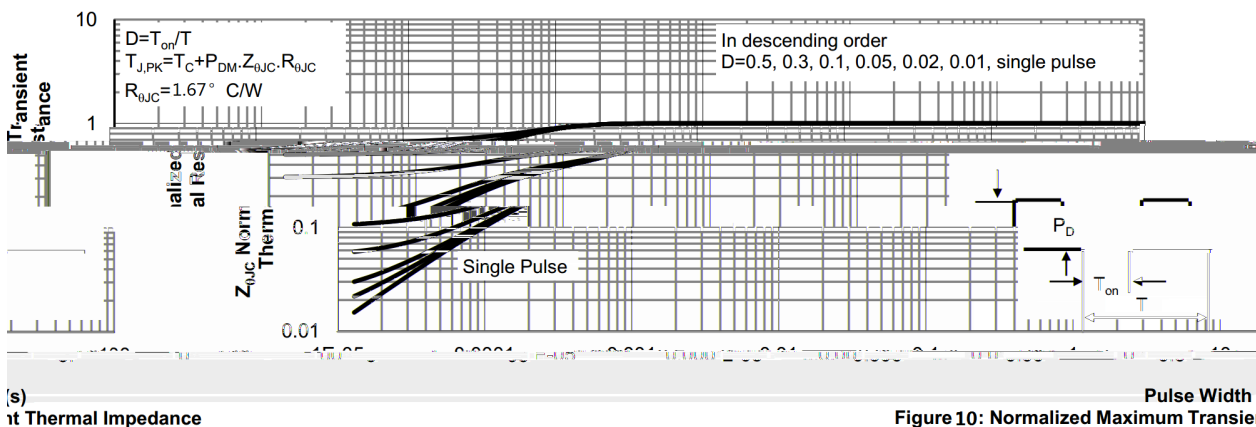
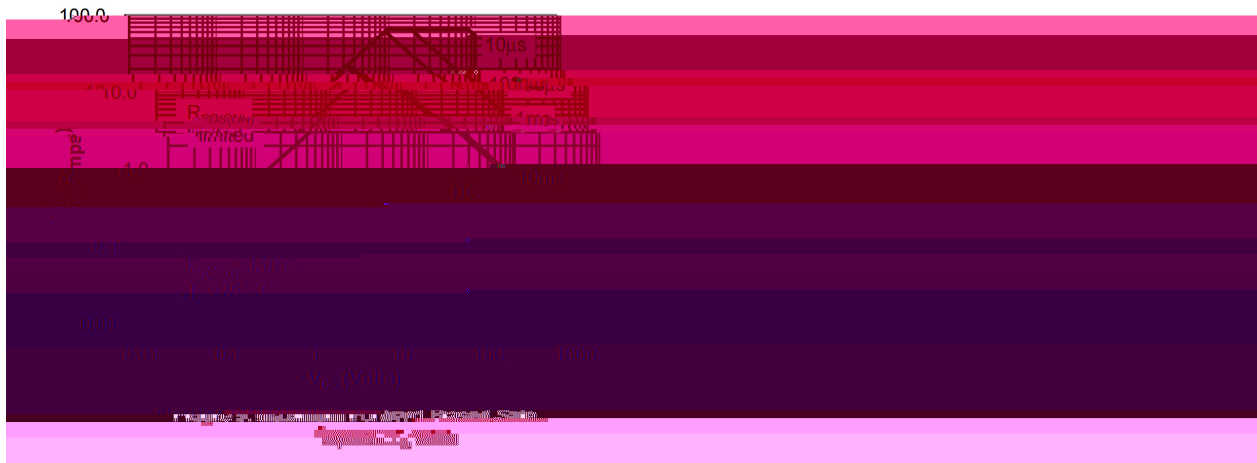
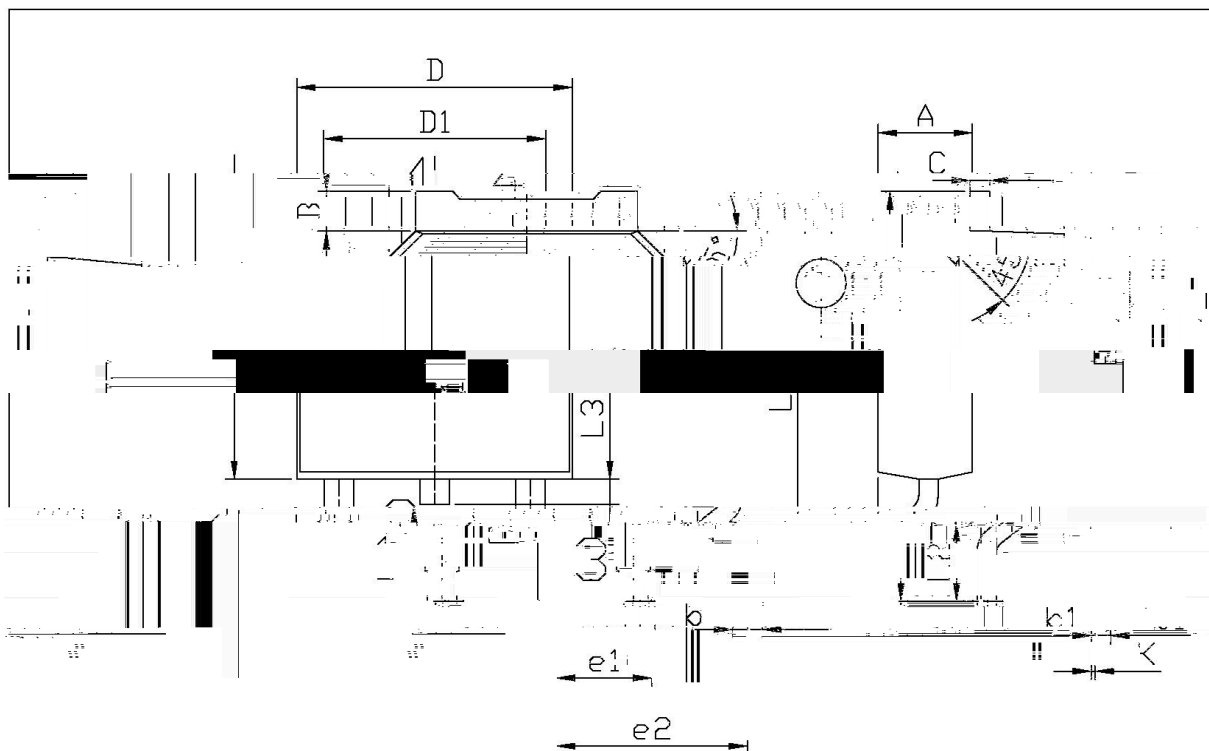


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions



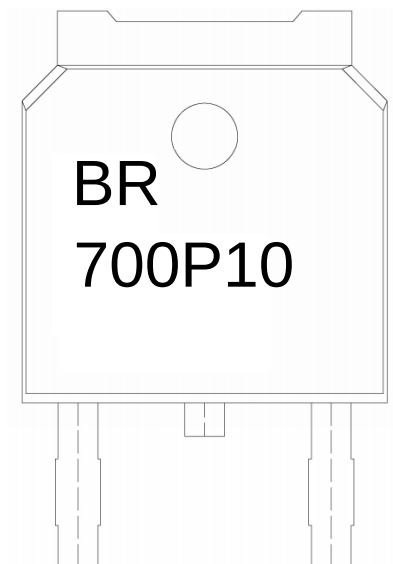
单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
E	5.95	6.25	B	6.20	2.40
e1	2.24	2.34	B1	0.95	1.25
e2	4.42	4.67	b	0.70	0.90
L1	9.85	10.35	b1	0.45	0.55
f	0.15	0.55	J2	7.00	2.00
60	0.90	1.30	6.45	6.75	1.30
6	0.00	0.10	D1	5.10	5.50

12

T0-25

/ Marking Instructions



BR

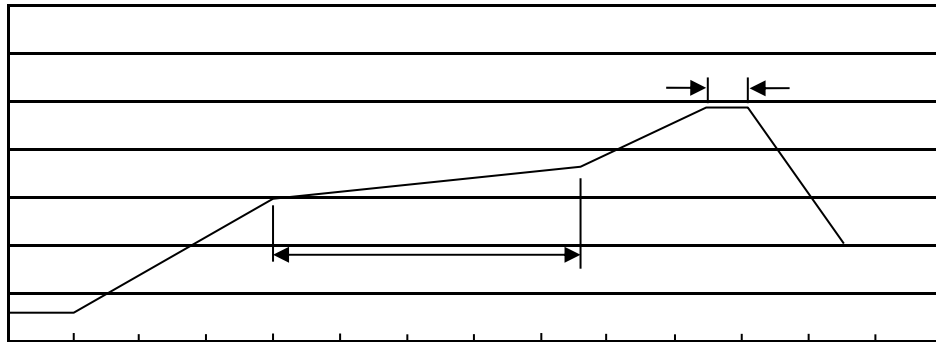
700P10

Note:

BR: Company Code

700P10: Product Type

****: 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)		
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices