

BRCS20P06DPQ

Rev.B Feb.-2025

/ Descriptions

TO-252 P

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

/ Features

$V_{DS} (V) = -60V$ $I_D = -20A (V_{GS} = \pm 20V)$

$R_{DS(ON)} @ -10V \leq 75m$ (Typ.62m)

$R_{DS(ON)} @ -4.5V$ 100m (Typ.70m)

AEC-Q101

Qualified to AEC-Q101 Standards for High Reliability, HF Product.

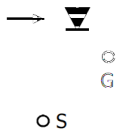
/ Applications

DC/DC

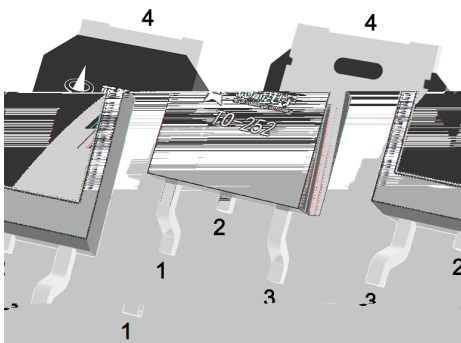
Suited for low voltage applications such as automotive, DC/DC Converters, and high efficiency switching for power management in portable and battery operated products, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit

_____ o D _____



/ Pinning



PIN 1 G

PIN 2 D

PIN 3 S

PIN 4 D

/ Marking

See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	-60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	$I_D (T_c=25^\circ\text{C})$	-20	A
Pulsed Drain Current	I_{DM}	-80	A
Avalanche Current	I_{AS}	-13.8	A
Avalanche energy $L=0.5\text{mH}$	E_{AS}	95	mJ
Power Dissipation for Single Operation	$P_D (T_c=25^\circ\text{C})$	45	W
Maximum Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	
Thermal Resistance-Junction to Ambient	R_{JA}	50	/W
Thermal Resistance- Junction-to-Case	R_{JC}	2.8	/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=-250\mu\text{A}$ $V_{GS}=0\text{V}$	-60	-69		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60\text{V}$ $V_{GS}=0\text{V}$			-1.0	
Gate-Body leakage current	I_{GSS}	$V_{DS}=0\text{V}$ $V_{GS}=\pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=-250\mu\text{A}$	-1.0	-1.5	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10\text{V}$ $I_D=-20\text{A}$		62	75	m
		$V_{GS}=-4.5\text{V}$ $I_D=-10\text{A}$		70	100	
Diode Forward Voltage	V_{SD}	$I_S=-1\text{A}$ $V_{GS}=0\text{V}$			-1.0	V
Input Capacitance	C_{iss}	$V_{GS}=0\text{V}$ $V_{DS}=-25\text{V}$ $f=1\text{MHz}$		1380		pF
Output Capacitance	C_{oss}			100		
Reverse Transfer Capacitance	C_{rss}			65		
Total Gate Charge	$Q_{g(10V)}$			20.8		

$V_{GS}=-10\text{V}$ $V_{DS}=-30\text{V}$
 $I_D=-4\text{A}$

nC $\pm 20\text{V}$

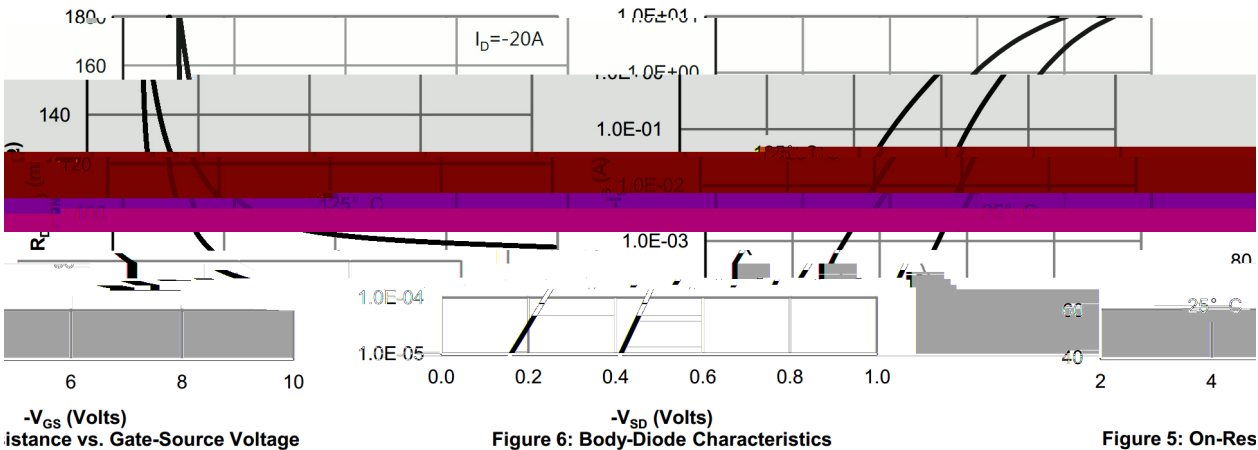
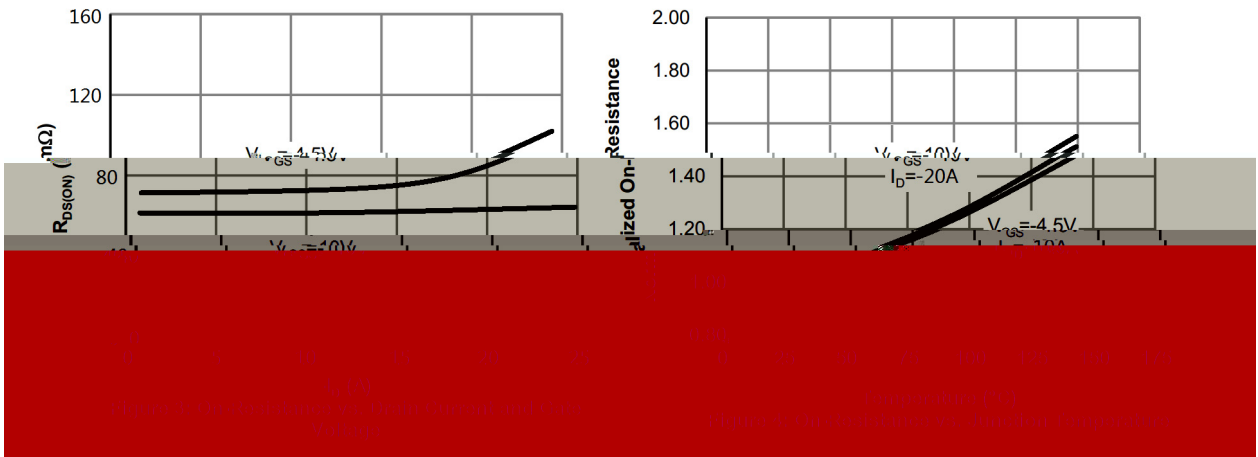
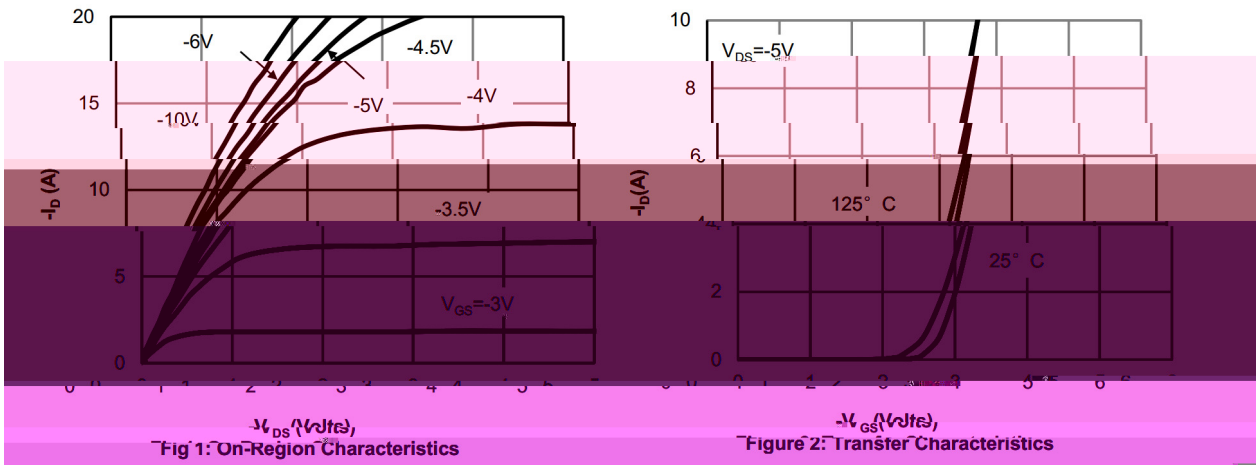
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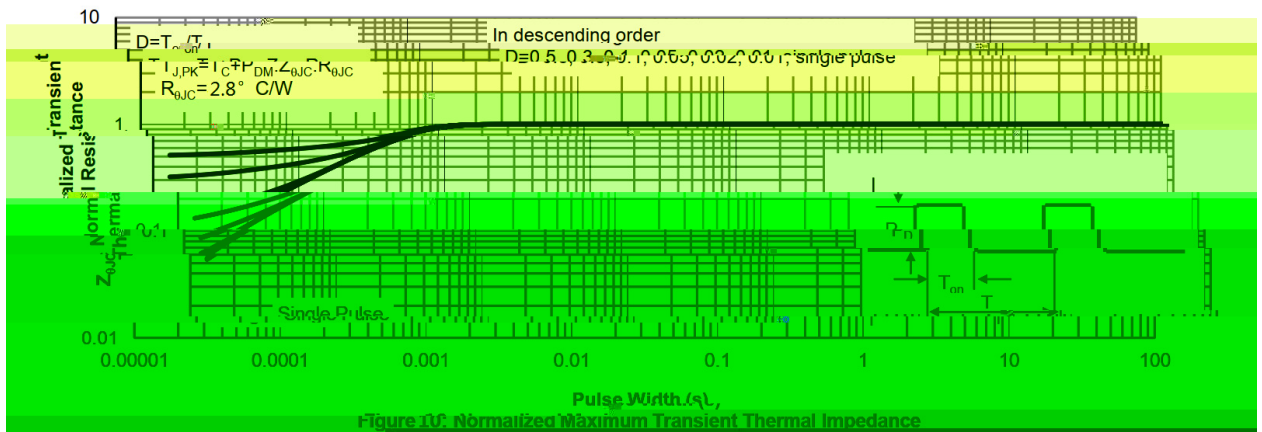
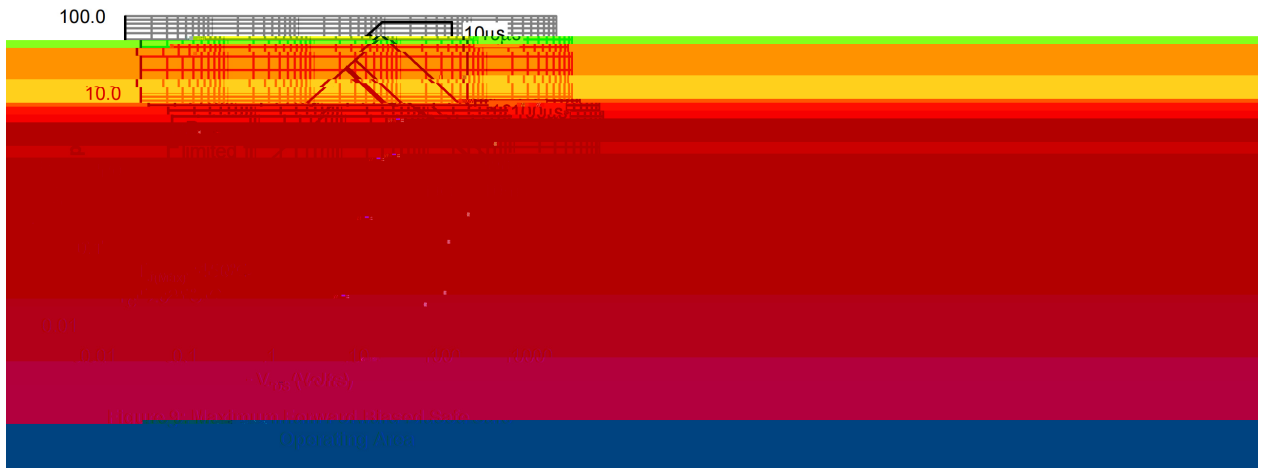
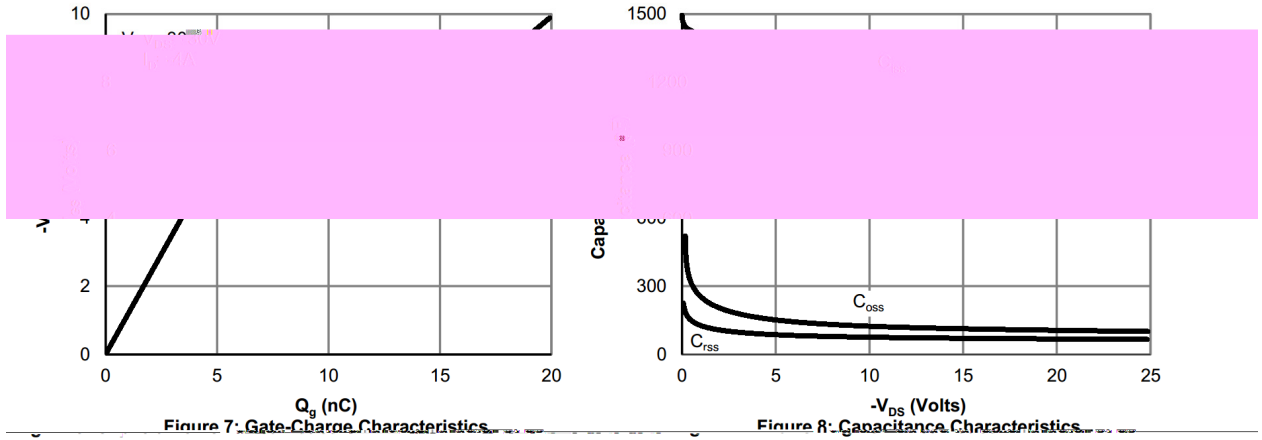


Parameter	Symbol	Test Conditions	Min	Typ
Turn-on Delay Time	$t_{d(ON)}$	$V_{GS}=-10V$ $V_{DS}=-30V$ $R_L=7.5$ $R_{GEN}=3$		8
Turn-on Rise Time	t_r			3.8
Turn-off Delay Time	$t_{d(OFF)}$			31.5

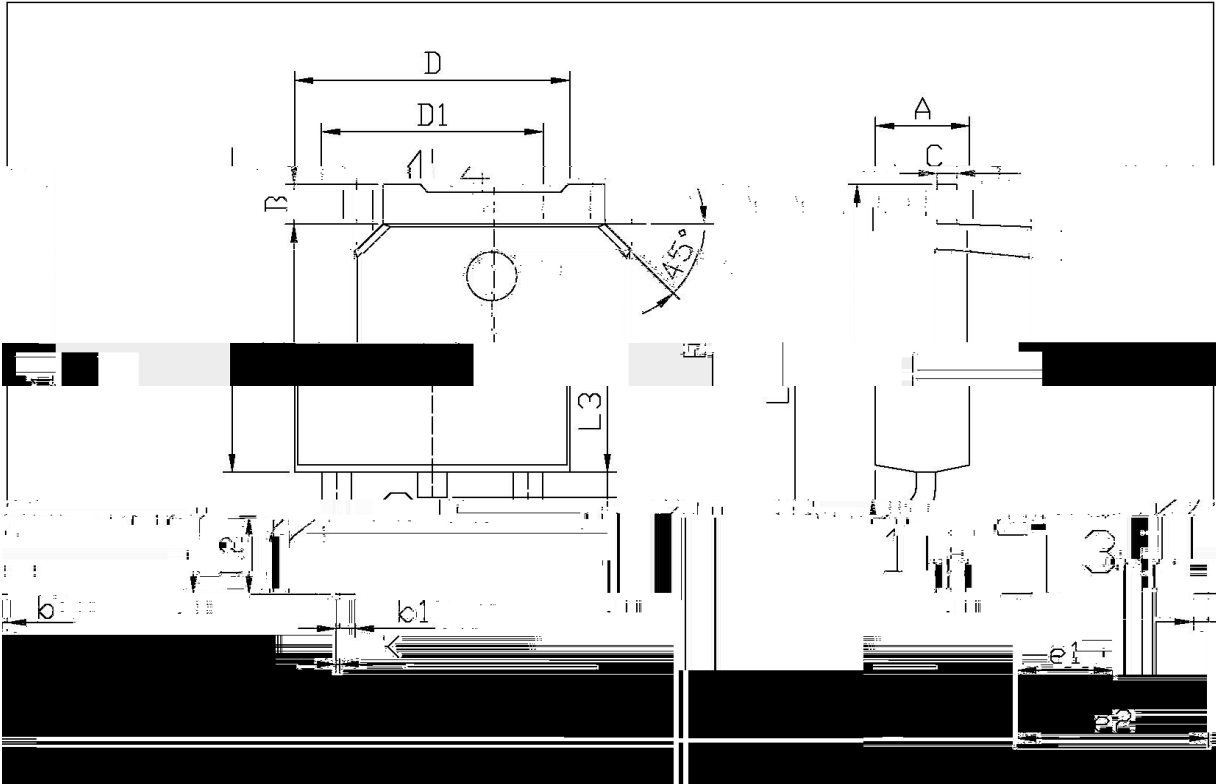
/ Electrical Characteristic Curve



/ Electrical Characteristic Curve



/ Package Dimensions



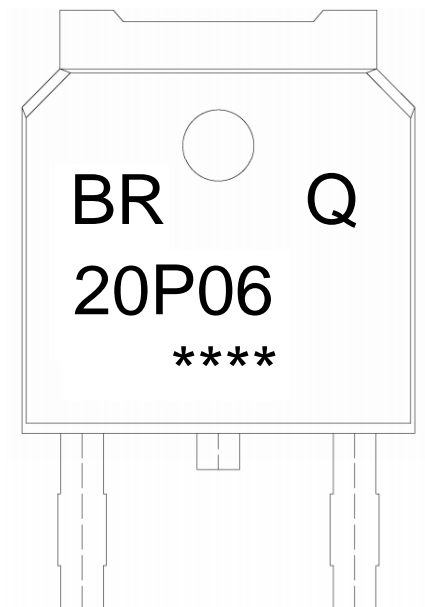
单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters		
	Min	Max		Min	Max	
6.25	A	2.20	2.40	E	5.95	
2.34	B	0.95	1.25	e1	2.24	
4.72	C	0.70	0.90	e2	1.20	
L1	9.85	10.35	b1	0.45	0.55	
0.45	L2	1.70	2.00	L2	1.70	2.00
0.60	D	6.45	6.75	L3	0.60	0.90
0.00	D1	5.10	5.80			

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T0-25

/ Marking Instructions



BR

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20P06

Note:

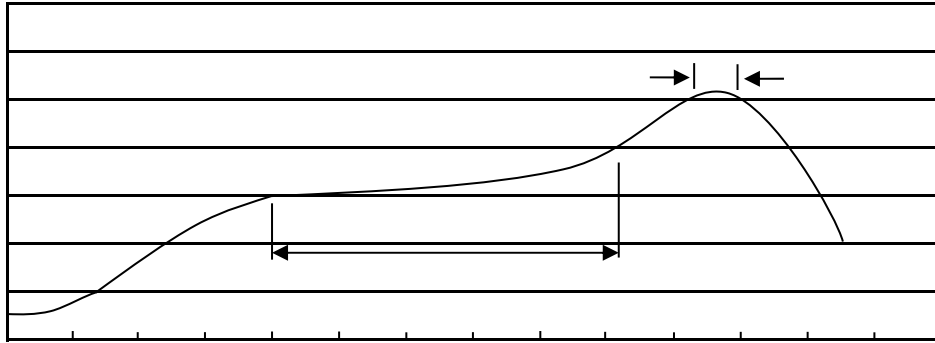
BR: Company Code

Q: Automobile halogen-free product Code

20P06: Product Type Code

****: Lot No. Code, code change with Lot No

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



Note:

- 1 150 200 60 120sec; 1.Preheating:150~200 , Time:60~120sec.
- 2 255±5 5±0.5sec; 2.Peak Temp.:255±5 , Duration:5±0.5sec.
- 3 2 10 /sec. 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)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13" x16	360x360x50	380x335x366

/ TUBE

Package Type	Units					Dimension (unit mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-251/252	75	48	3,600	5	18,000	526x20.5x5.25	555x164x50	575x290x180

/ Notices