

/ Descriptions

TO-252 N

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

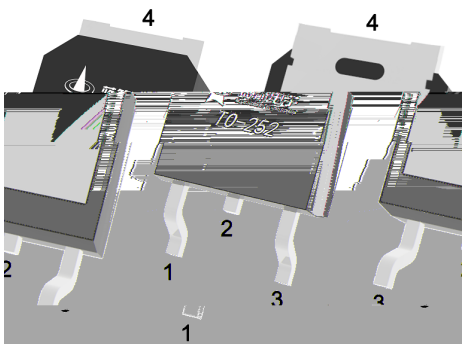
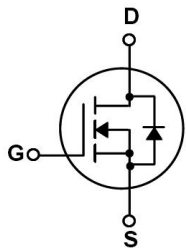
/ Features $V_{DS} (V) = 20V$ $I_D = 95A (V_{GS} = \pm 20V)$ $R_{DS(ON)} @ 4.5V \leq 4mR (Typ. 3.7mR)$ $R_{DS(ON)} @ 2.5V \leq 6mR (Typ. 5.5mR)$ $R_{DS(ON)} @ 2.0V \leq 15mR (Typ. 8mR)$

。 HF Product.

/ Applications

POL DC/DC

DC/DC Converters in Computing, Servers, and POL, Battery protection switch.

/ Equivalent Circuit

PIN1 G

PIN 2 D

PIN 3 S

PIN 4 D

/ Marking

See Marking Instructions.

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Drain Current		$I_D(T_c=25^{\circ}\text{C})$	95	A
Drain Current - Pulsed		I_{DM}	212	A
Gate-Source Voltage		V_{GS}	± 12	V
Avalanche Current		I_{AS}	24	A
Single Pulsed Avalanche Energy		E_{AS}	201	mJ
Power Dissipation		$P_D(T_c=25^{\circ}\text{C})$	55	W
Storage Temperature Range		T_{stg}	-55~150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	$R_{\theta JA}$	20	$^{\circ}\text{C/W}$
	Steady-State		50	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	2.27	

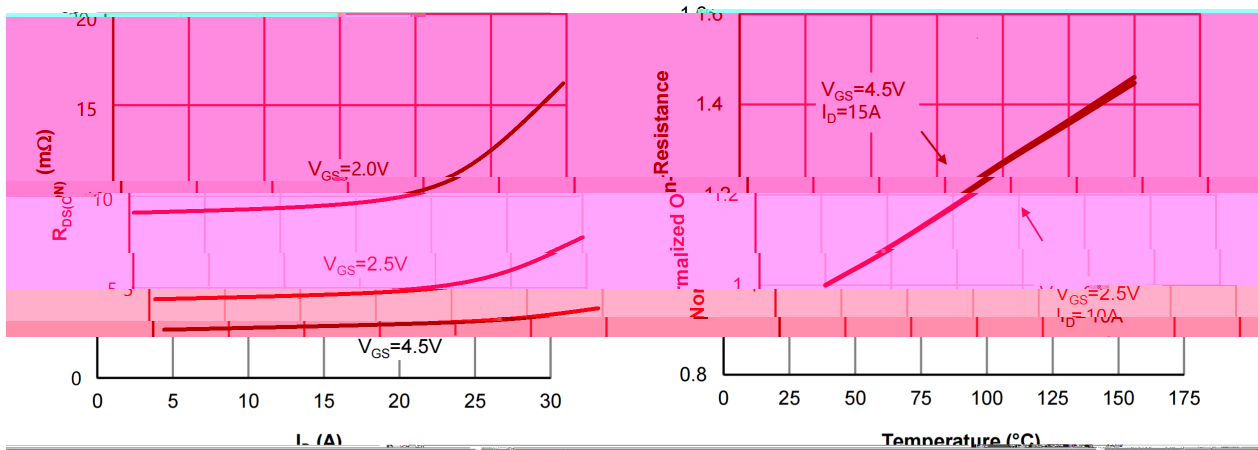
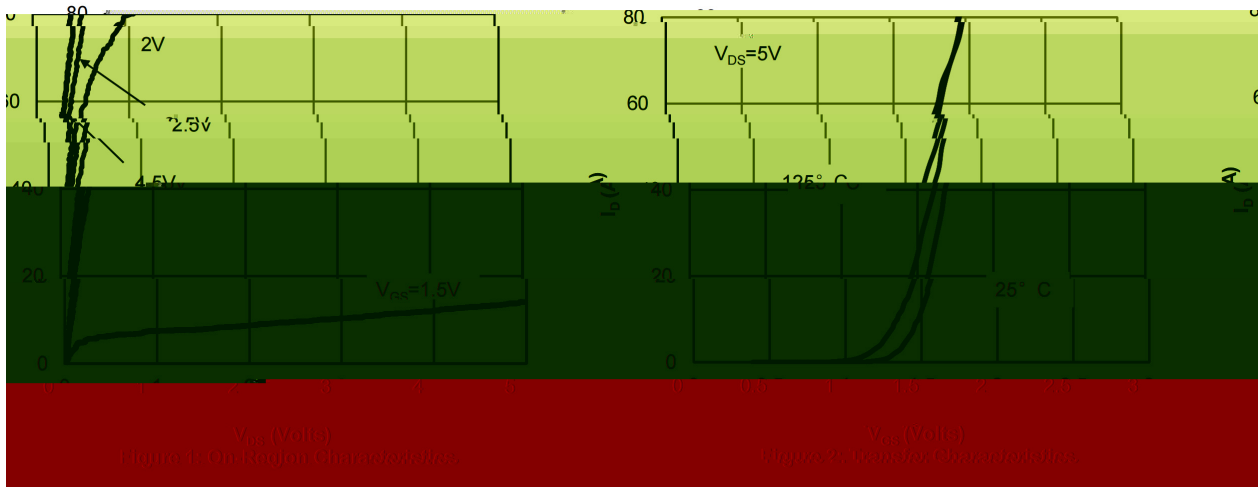
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	20	24		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20\text{V}$ $V_{GS}=0\text{V}$			1.0	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 12\text{V}$ $V_{DS}=0\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	0.4	0.7	1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5\text{V}$ $I_D=15\text{A}$		3.7	4	m Ω
		$V_{GS}=2.5\text{V}$ $I_D=10\text{A}$		5.5	6	
		$V_{GS}=2.0\text{V}$ $I_D=6.0\text{A}$		8	15	
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=1\text{A}$			1.25	V
Gate resistance	R_g	$V_{GS}=0\text{V}$ $V_{DS}=0\text{V}$, $f=1\text{MHz}$		2.2		Ω
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$ $V_{GS}=0\text{V}$ $f=1.0\text{MHz}$		2700		pF
Output Capacitance	C_{oss}			370		
Reverse Transfer Capacitance	C_{rss}			360		
Total Gate Charge	$Q_g(4.5\text{V})$	$V_{GS}=4.5\text{V}$ $V_{DS}=10\text{V}$ $I_D=20\text{A}$		31		nC
Gate Source Charge	Q_{gs}			5.2		
Gate Drain Charge	Q_{gd}			8		

BRCS040N02DP

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Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=10V$ $R_L=0.5\Omega$ $R_{GEN}=3\Omega$		7.5		ns
Turn-On Rise Time	t_r			15		
Turn-Off Delay Time	$t_{d(off)}$			72		
Turn-Off Fall Time	t_f					

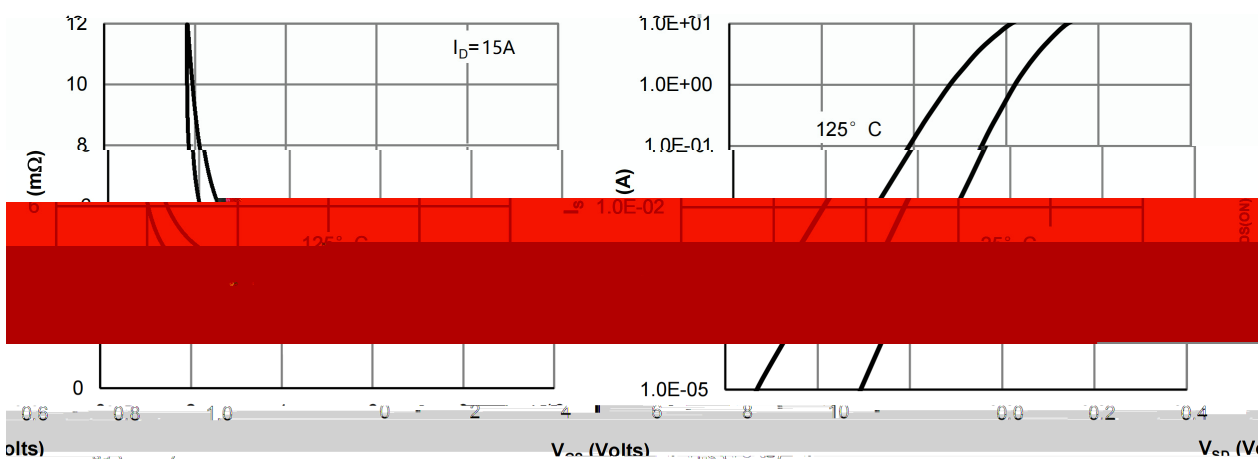
/ Electrical Characteristic Curve



ation Temperature

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

Figure 4: On-Resistance vs. Junction Temperature



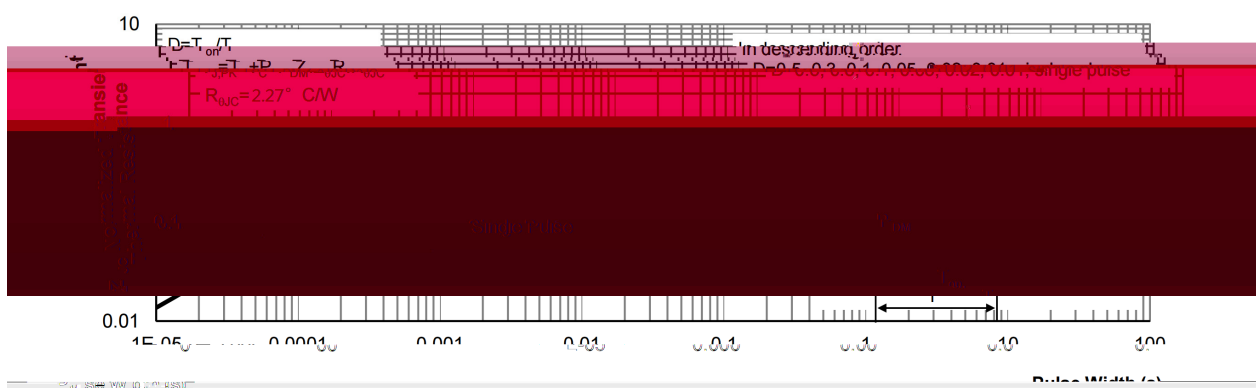
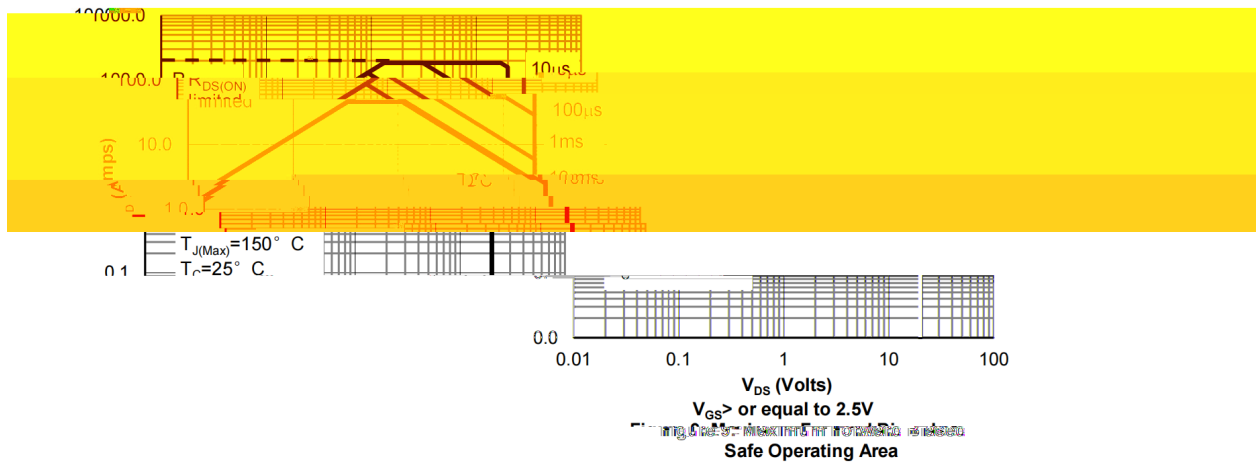
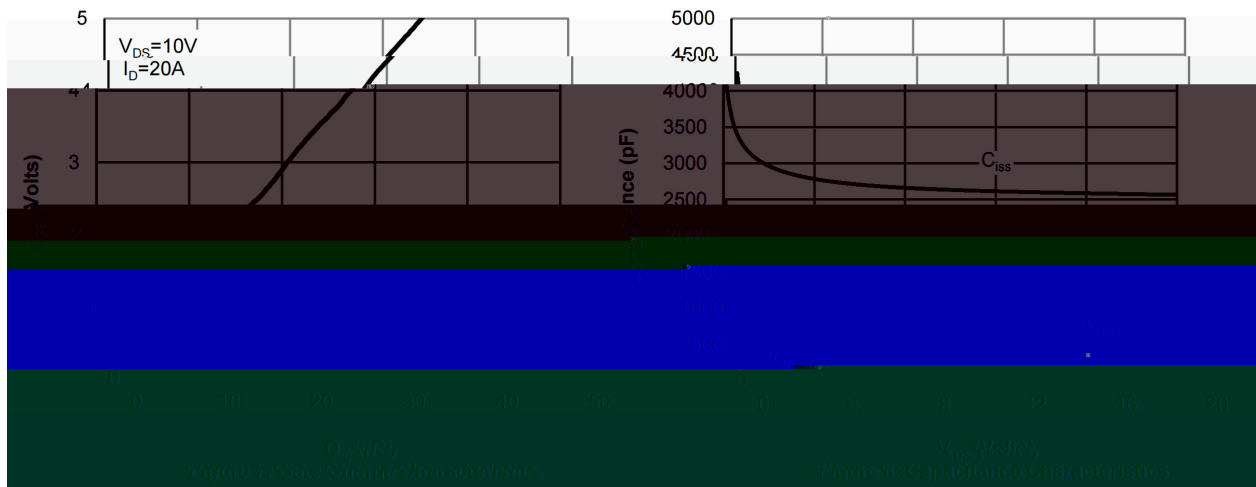
6: Body-Diode Characteristics

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

Figure 6: Body-Diode Characteristics



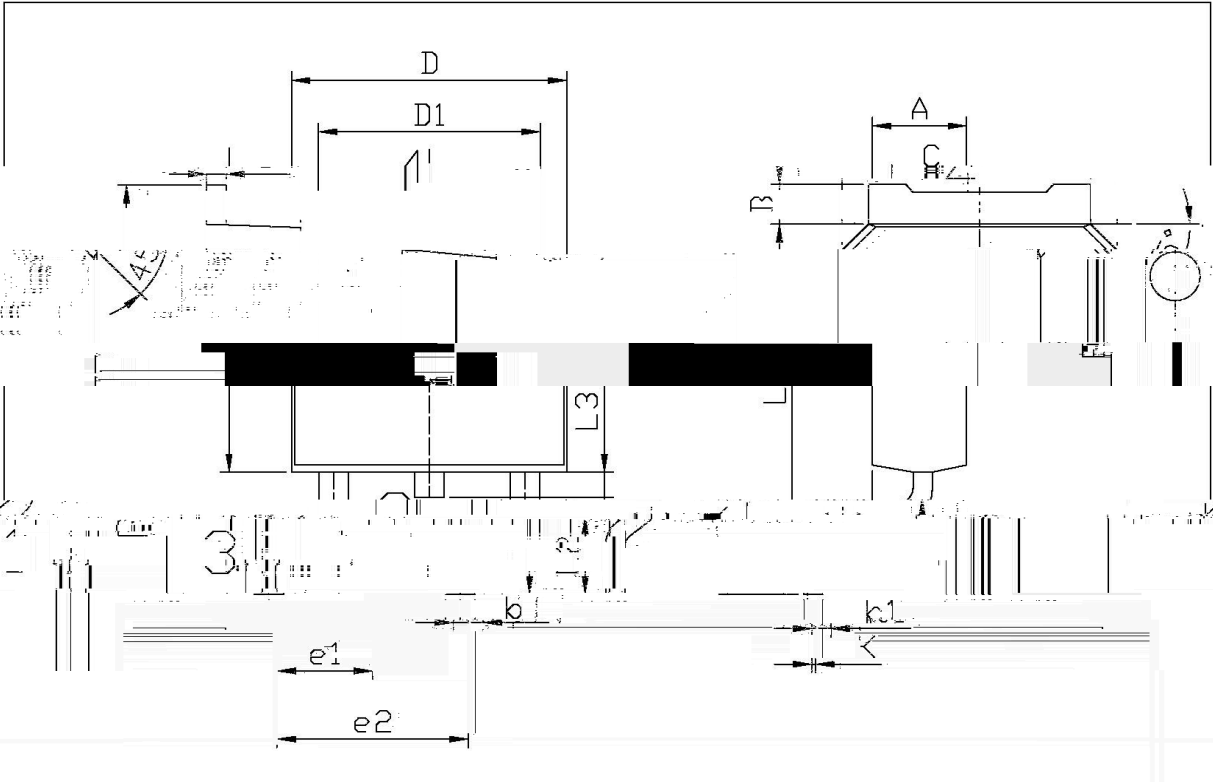
Electrical Characteristic Curve



Maximum Transient Thermal Impedance

Figure 10: Normalized

/ Package Dimensions

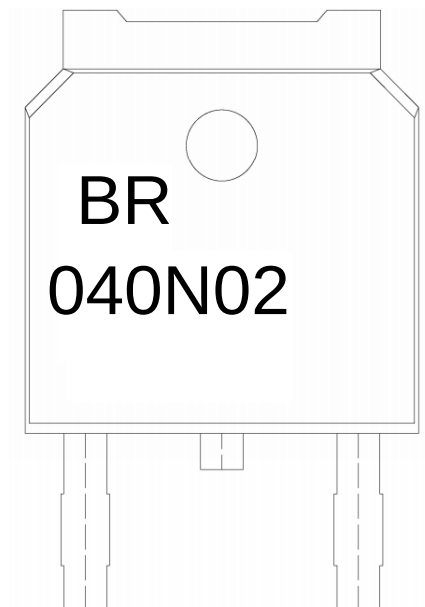


单位: mm

Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
D	5.95	6.25	A	2.20	2.40
e1	2.24	2.34	B	0.95	1.25
e2	9.85	10.35	C	0.70	0.90
L3	0.55	0.70	k1	0.45	0.55
D1	6.45	6.75	k2	0.30	0.60
D01	5.10	5.50	K	0.00	0.00

T0-252

/ Marking Instructions



BR

040N02

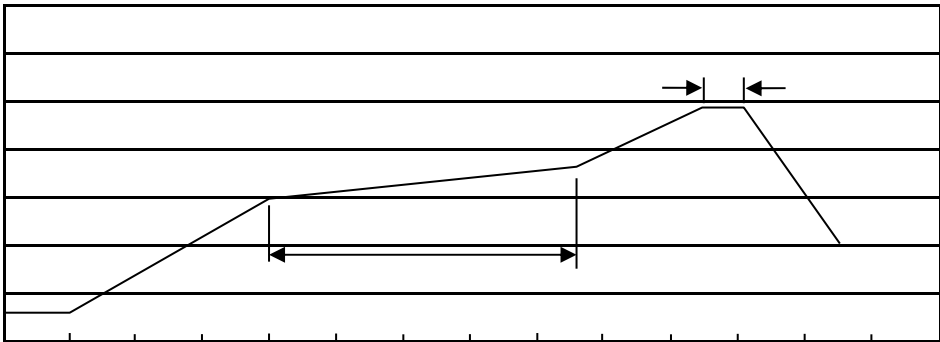
Note:

BR: Company Code

040N02: Product Type Code

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

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- Note:

1

150 180

60 90sec;

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

2

245±5

5±0.5sec;

2.Peak Temp.:245±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 mm³)		
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension (unit mm³)		
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

/ Notices