

BRD20N03

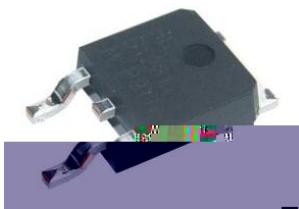
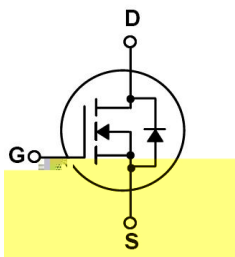
Rev.F Jul.-2019

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

$R_{DS(on)}$ C_{rss}
Low $R_{DS(on)}$, low gate charge, low C_{rss} , fast speed switching.

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.



PIN1 G PIN 2

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Drain Current		$I_D(T_c=25^\circ\text{C})$	20	A
Gate-Source Voltage		V_{GS}	± 20	V
Avalanche Current		I_{AS}	10.4	A
Single Pulsed Avalanche Energy		E_{AS}	130	mJ
Power Dissipation		$P_D(T_c=25^\circ\text{C})$	55	W
Junction Temperature Range		T_j	150	
Storage Temperature Range		T_{stg}	-55 ~ 150	
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	62.7	/W
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	2.3	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=30V$ $T_J=150$			50	
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V$ $V_{DS}=0V$			± 0.1	μA
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=20.0A$		11	13	$m\Omega$
		$V_{GS}=4.5V$ $I_D=10.0A$		16	18	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1	1.8	3	V
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_F=1.0A$		0.7	1.2	V
Signal Source Resistance	R_g	$F=1MHz$		1.67		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		666		pF
Output Capacitance	C_{oss}			26		
Reverse Transfer Capacitance	C_{rss}			63		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=0.75\Omega$ $R_{GEN}=3.0\Omega$		7		ns
Turn-On Rise Time	t_r			13.5		
Turn-Off Delay Time	$t_{d(off)}$			18.5		
Turn-Off Fall Time	t_f			4		
Total Gate Charge	$Q_{g(10V)}$	$V_{DS}=15V$ $V_{GS}=10V$ $I_D=20.0A$		14		nC
Total Gate Charge	$Q_{g(4.5V)}$			6.5		

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DATA SHEET

Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			2.5		

/ Electrical Characteristic Curve

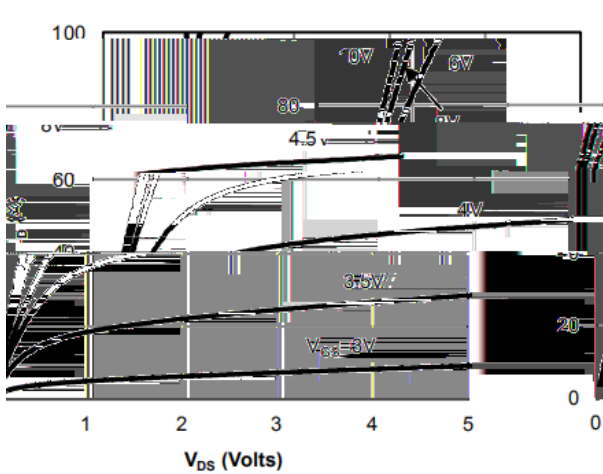


Figure 1: On-Region Characteristics

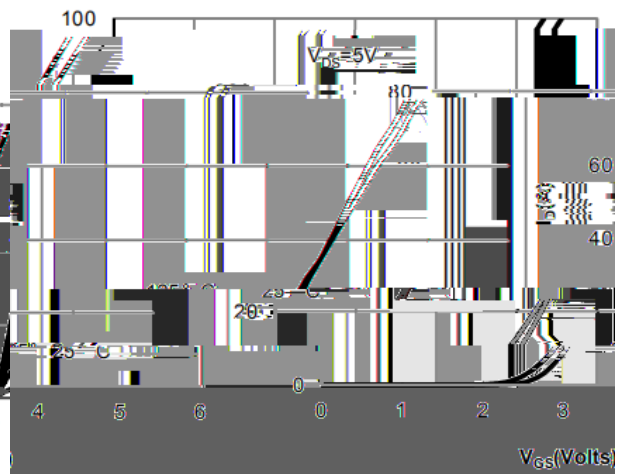


Figure 2: Transfer Characteristics

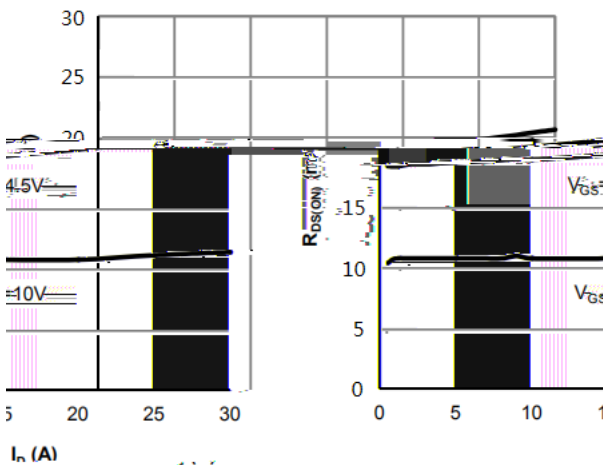


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

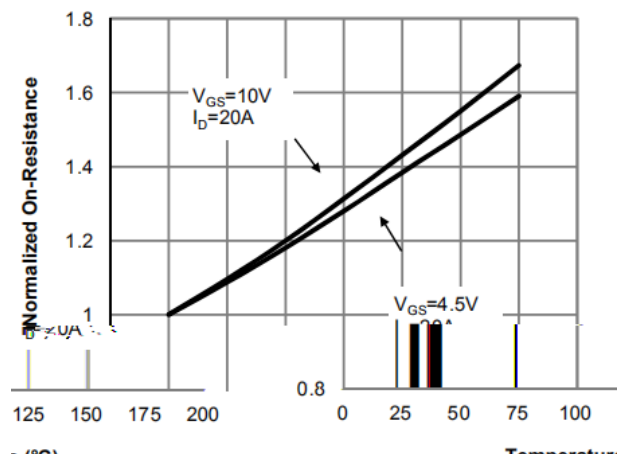


Figure 4: On-Resistance vs. Junction Temperature

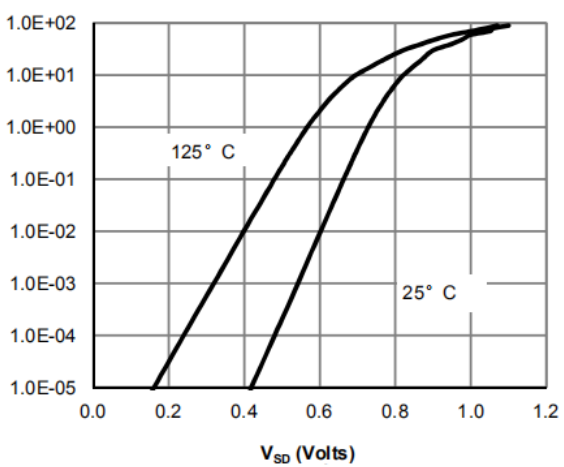
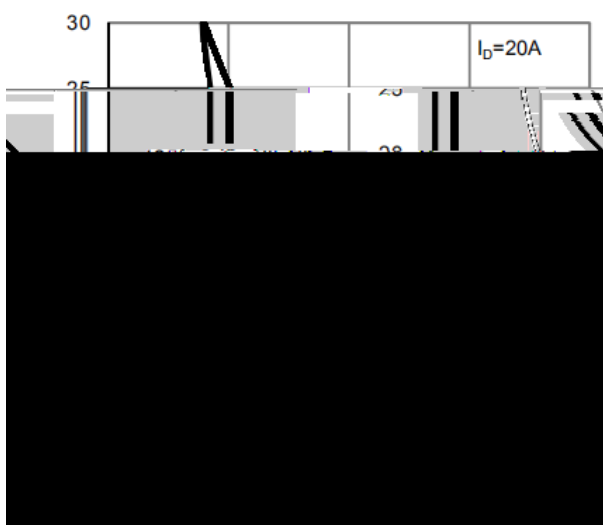
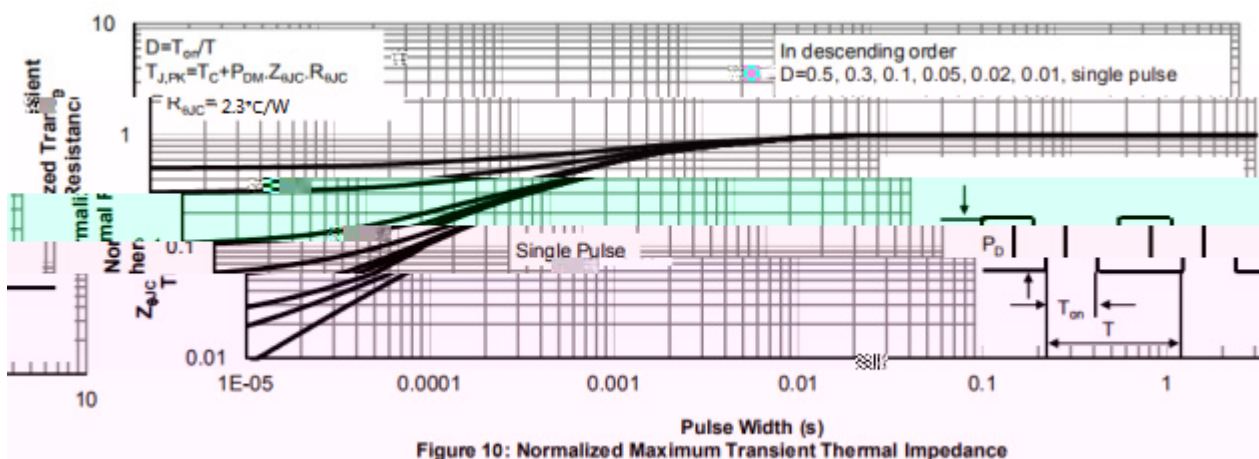
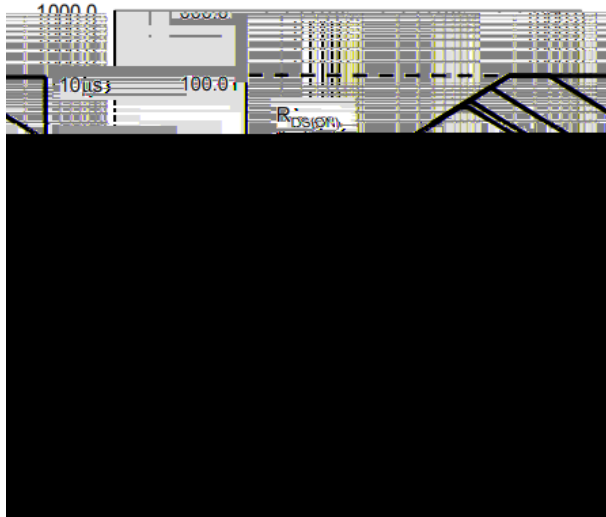
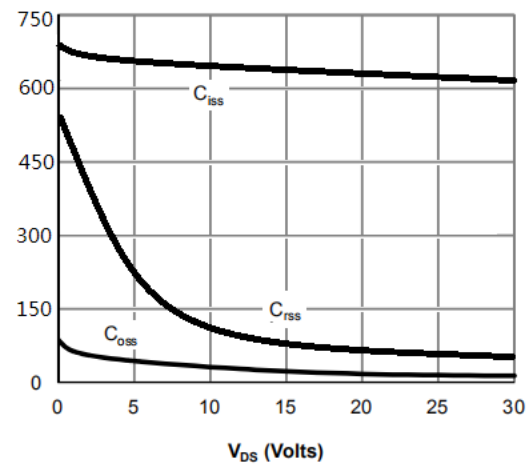
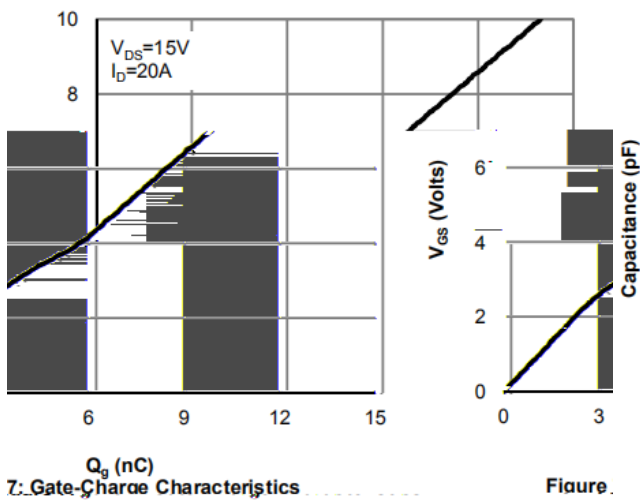
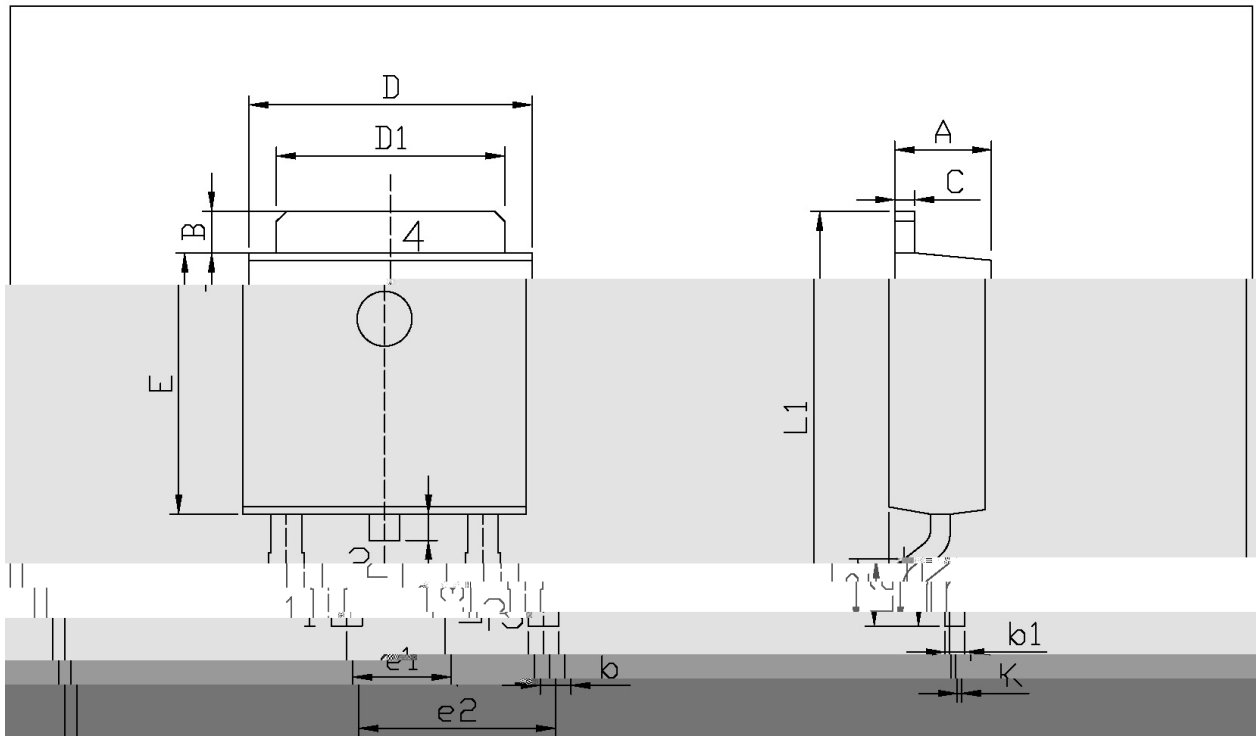


Figure 6: Body-Diode Characteristics

/ Electrical Characteristic Curve



/ Package Dimensions

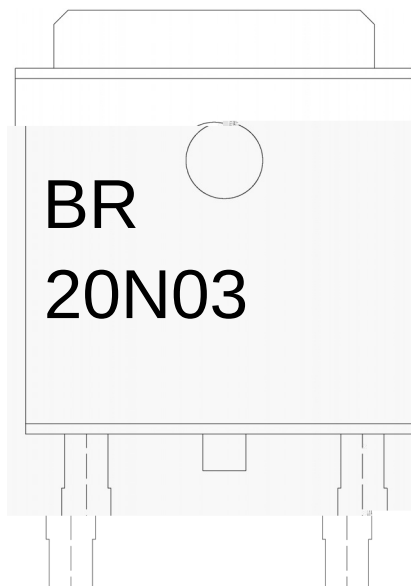


单位: mm

Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.55
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

T0-252

/ Marking Instructions



BR

20N03

Note:

BR: Company Code

20N03: Product Type.

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

šWD t... •Žč (x/) / :KSVKXGZ[XK 6XULORK LUX /8 8KLRU] 9URJKXOTM 6

^ačy

10•Ä½“† 25½150 - kž• 60½90sec;

20•Q>“† 245 r5 - kž•4Ö 5 r0.5sec;

30•D Nò i Ö 0,† 2½10 - /sec.

Note:

1.Preheating:25~150 - , Time:60~90sec.

2.Peak Temp.:245 r5 - , Duration:5 r0.5sec.

3. Cooling Speed: 2~10 - /sec.

ÂD /Cã p¯»] / Resistance to Soldering Heat Test Conditions

“†y 260 r5 -

ž•y 10 r1 sec.

Temp.:260±5

Time:10±1 sec

G P á / Packaging SPEC.

2 & x / REEL

Package Type ß m ù´	Units g m ô h					Dimension g m d Ê (unit ! mm ³)		
	Units/Reel / í	Reels/Inner Box í /ç	Units/Inner Box /ç	Inner Boxes/Outer Box ç/±	Units/Outer Box /±	Reel	Inner Boxç	Outer Box±
TO-252	2,500	2	5,000	5	25,000	13s ×16	360×360×50	385×257×392

ì´ x / TUBE

Package Type ß m ù´	Units g m ô h					Dimension g m d Ê (unit ! mm ³)		
	Units/Tube /Š•	Tubes/Inner Box Š• /ç	Units/Inner Box /ç	Inner Boxes/Outer Box ç/±	Units/Outer Box /±	Tube Š•	Inner Boxç	Outer Box±
TO-251/252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

„Đ y f / Notices