BRCS030N03DP

Rev.A Jul.-2023

ATA SHEET

/ Descriptions

TO-252 N MOS

N-Channel Enhancement Mode Field Effect Transistor in a TO-252 Plastic Package.

/ Features

V_{DS} (V) = 30V I_D =135 A (V_{GS} = ±20V)

$R_{DS(ON)}$@10V 3mR(Typ.2.3mR)

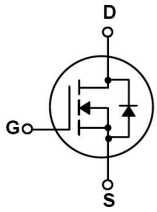
$R_{DS(ON)}$@4.5V 5mR(Typ.3.1mR)

HF Product.

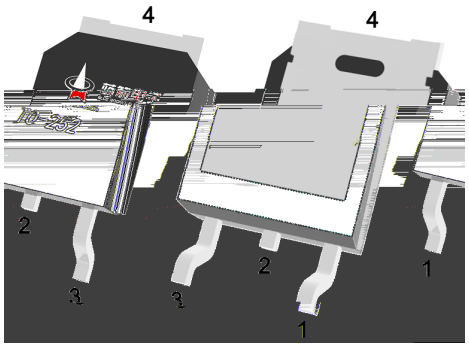
/ Applications

Load Switch Applications,Battery Power Management.

/ Equivalent Circuit



/ Pinning



PIN1 G PIN 2 4 D PIN 3 S

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	30	V
Drain Current		I_D(Tc=25)	135	A
Drain Current - Pulsed		I_{DM}	285	A
Gate-Source Voltage		V_{GSS}	±20	V
Single Pulsed Avalanche Energy		E_{AS}	706	mJ
Avalanche Current		I_{AS}	42	A
Power Dissipation		P_D(Tc=25)	90	W
Operating and Storage Temperature Range		T_J,T_{stg}	-55 to 150	℃
Junction-to-Ambient	t ≤ 10	R_{JA}	20	/W
Junction-to-Ambient	Steady-State		50	
Junction-to-Case	Steady-State	R_{JC}	1.39	

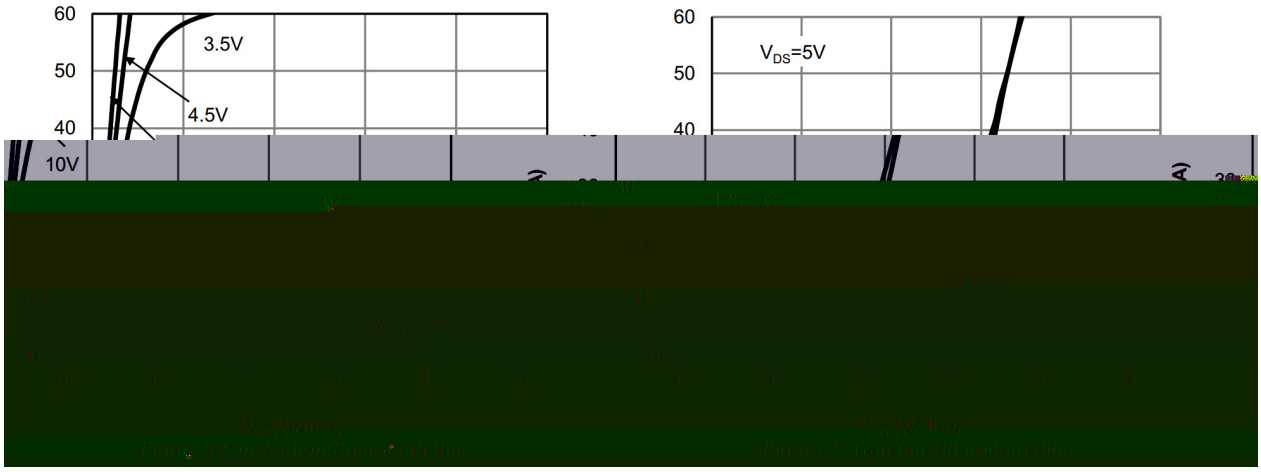
/ Electrical Characteristics(Ta=25)

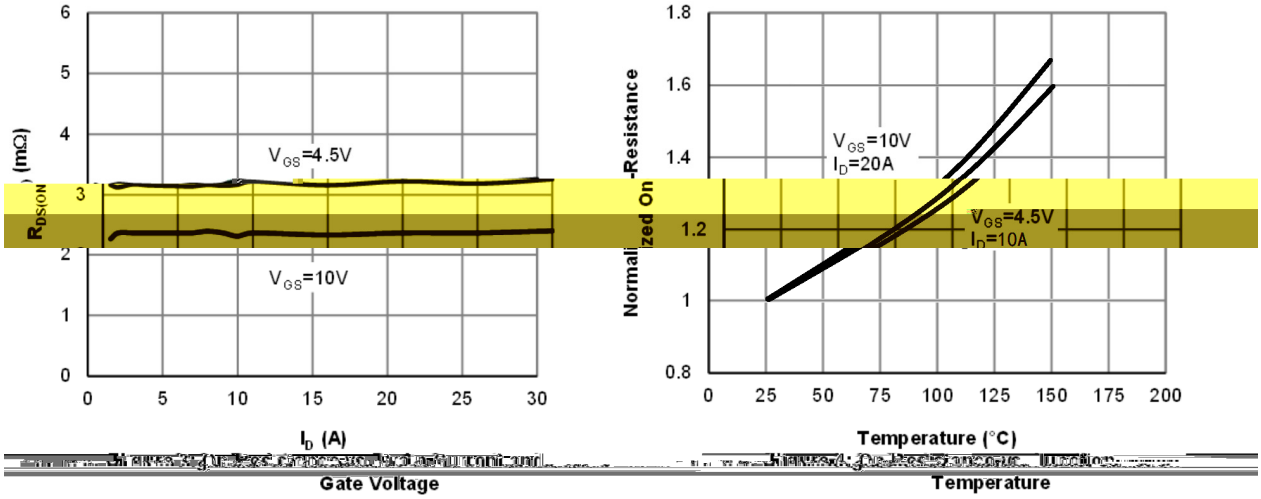
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250 A	30	35		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V V_{GS}=0V			1	A
Gate-Body Leakage Current Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±0.1	A
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250 A	1.0	1.6	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)1}$	V_{GS}=10V I_D=20A		2.3	3	m
	$R_{DS(on)2}$	V_{GS}=4.5V I_D=10A		3.1	5	m
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=1A			1.2	V
Input Capacitance	C_{iss}	VDS=25V VGS=0V f=1MHz		4650		pF
Output Capacitance	C_{oss}			650		
Reverse Transfer Capacitance	C_{rss}			480		
Gate resistance	R_g	V_{GS}=0V V_{DS}=0V f=1MHz		1.5		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Gate Charge	$Q_{g(10V)}$	V_{GS}=10V V_{DS}=15V I_D=20A		32		nC
Total Gate Charge	$Q_{g(4.5V)}$			15		
Gate Source Charge	Q_{gs}			5.2		
Gate Drain Charge	Q_{gd}			6.5		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V V_{DS}=15V R_L=0.75Ω R_{GEN}=3Ω		8.5		ns
Turn-On Rise Time	t_r			4.2		
Turn-Off Delay Time	$t_{d(off)}$			30		
Turn-Off Fall Time	t_f			5.7		

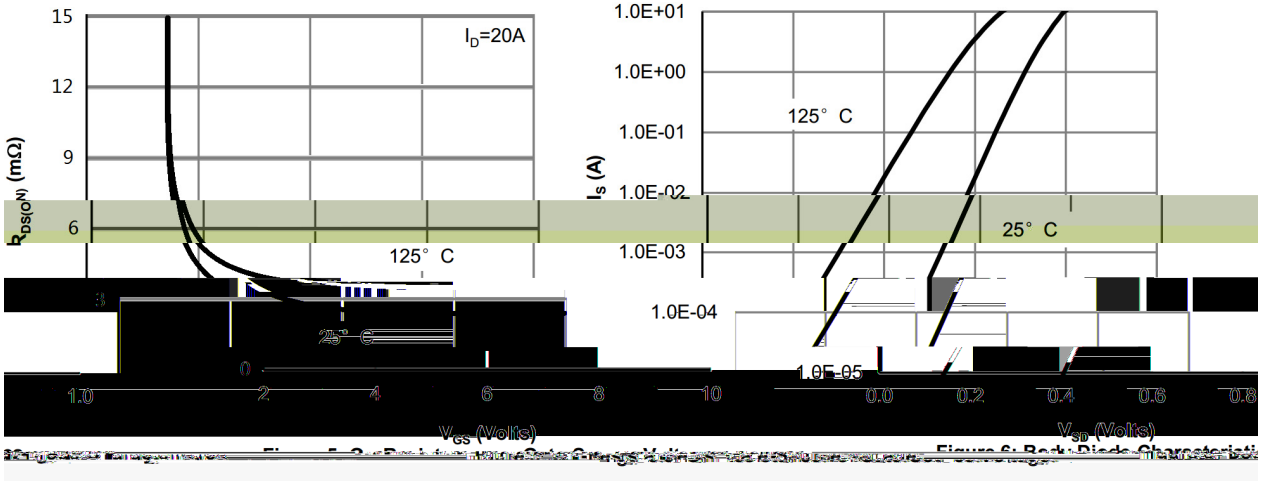
/ Electrical Characteristic Curve





Gate Voltage

Temperature



/ Electrical Characteristic Curve

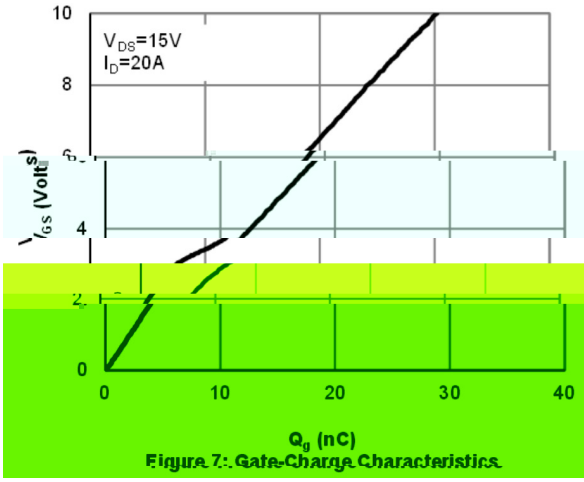


Figure 7: Gate-Charge Characteristics

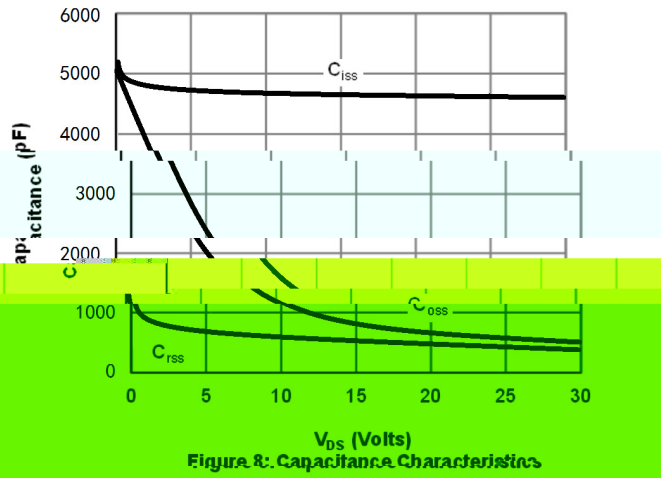


Figure 8: Capacitance Characteristics

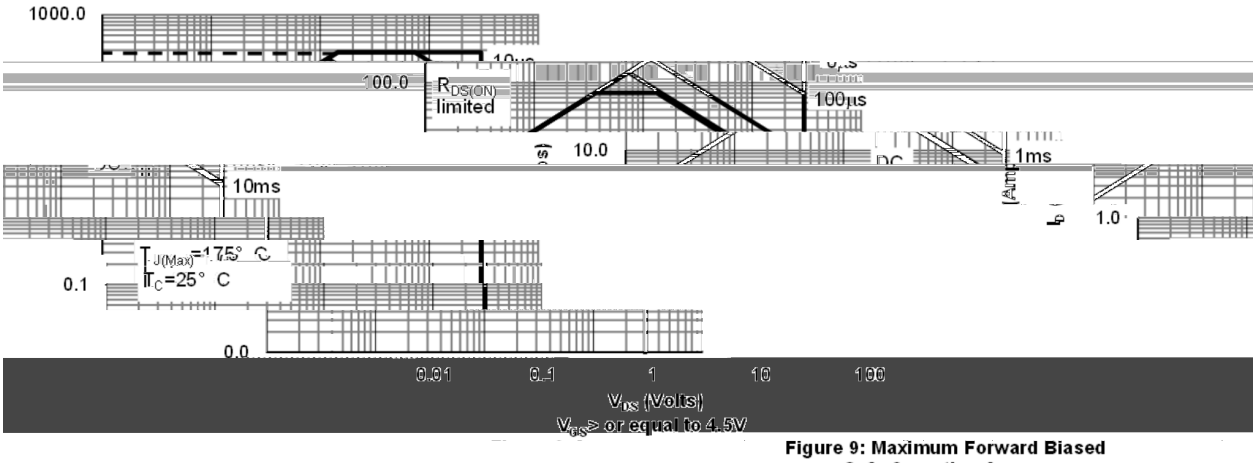


Figure 9: Maximum Forward Biased Safe Operating Area

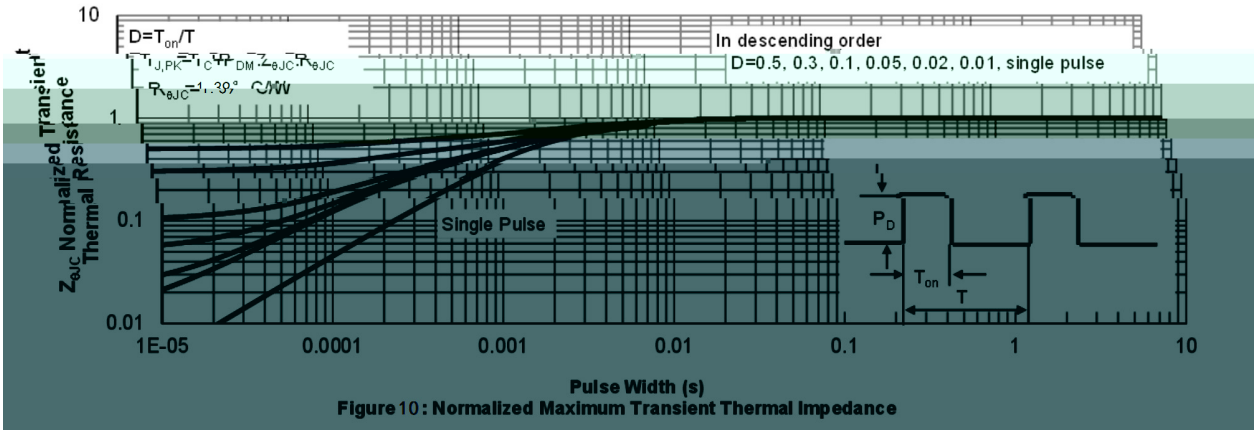
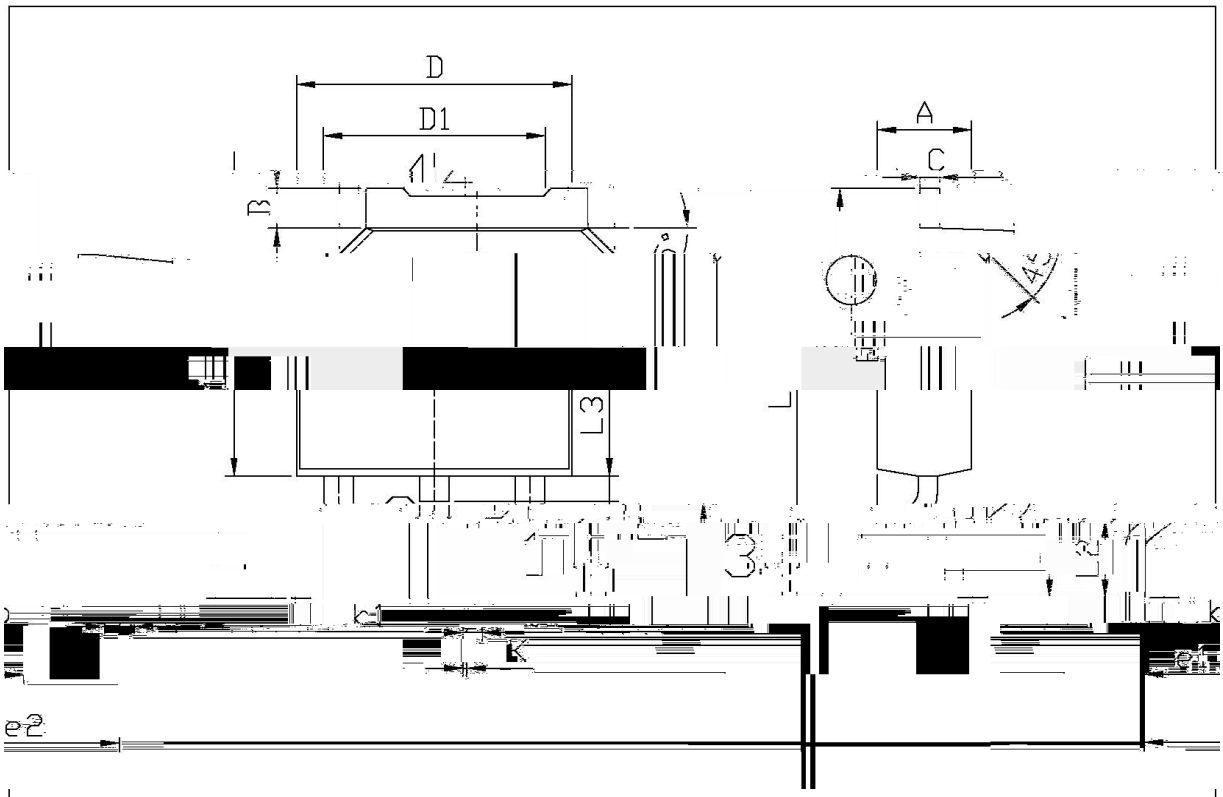


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions

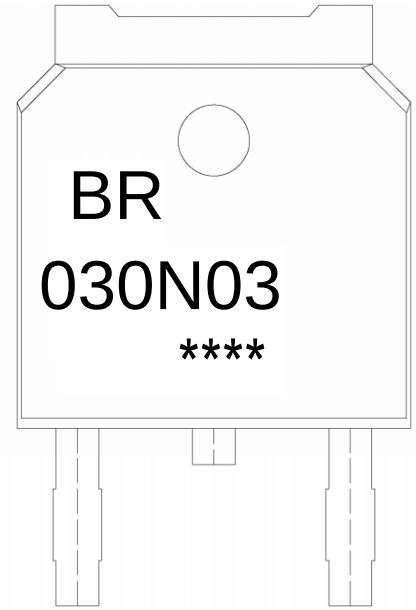


单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max.		Min	Max.
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.42	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
L3	0.60	0.90	D	6.45	6.75
K	0.00	0.10	D1	5.10	5.50

TO-252

/ Marking Instructions



BR

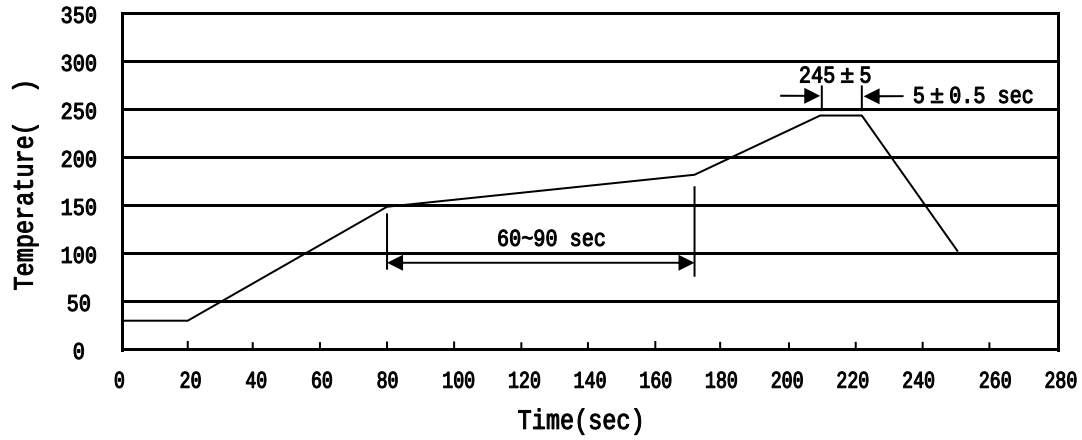
030N03

****

Note:

BR:	Company Code
030N03:	Product Type Code
****:	Lot No. Code, code change with Lot No

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



1		150	180		60	90sec;	
2		245±5				5±0.5sec;	
3				2	10	/sec.	

Note:

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 mm³)
	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 ×16	360×360×50	380×335×366

/ TUBE

Package Type	Units					Dimension		(unit mm³)
	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	526×20.5×5.25	555×164×50	575×290×180

/ Notices