

BRCS060N04DP

Rev.A Aug.-2023

/ Descriptions

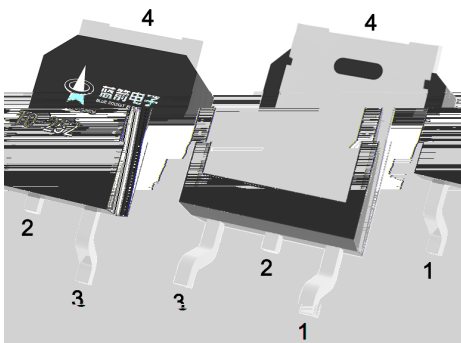
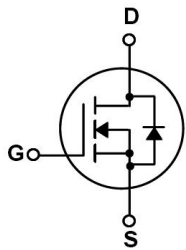
TO-252 N
N-CHANNEL MOSFET in a TO-252 Plastic Package.

/ Features

$V_{DS}(V)=40V$ $I_D=70A$
 $R_{DS(ON)}@10V<6m$ (Typ. 5.6mR)
 $R_{DS(ON)}@4.5V<12m$ (Typ. 10.8mR)
HF Product.

/ Applications

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.



PIN1 G PIN 2 D PIN 3 S PIN 4 D

/ Marking

See Marking Instructions.

/ Absolute Maximum Ratings(Ta=25)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Drain Current		$I_D(T_c=25^{\circ}\text{C})$	70	A
Drain Current - Pulsed		I_{DM}	159	A
Gate-Source Voltage		V_{GS}	± 20	V
Avalanche Current		I_{AS}	24.5	A
Single Pulsed Avalanche Energy(L=0.5mH)		E_{AS}	192	mJ
Power Dissipation		$P_D(T_c=25^{\circ}\text{C})$	50	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	
Thermal Resistance-Junction to Ambient	$t \leq 10s$	$R_{\theta JA}$	20	$^{\circ}\text{C/W}$
	Steady-State		50	
Thermal Resistance-Junction to Case	Steady-State	$R_{\theta JC}$	2.5	

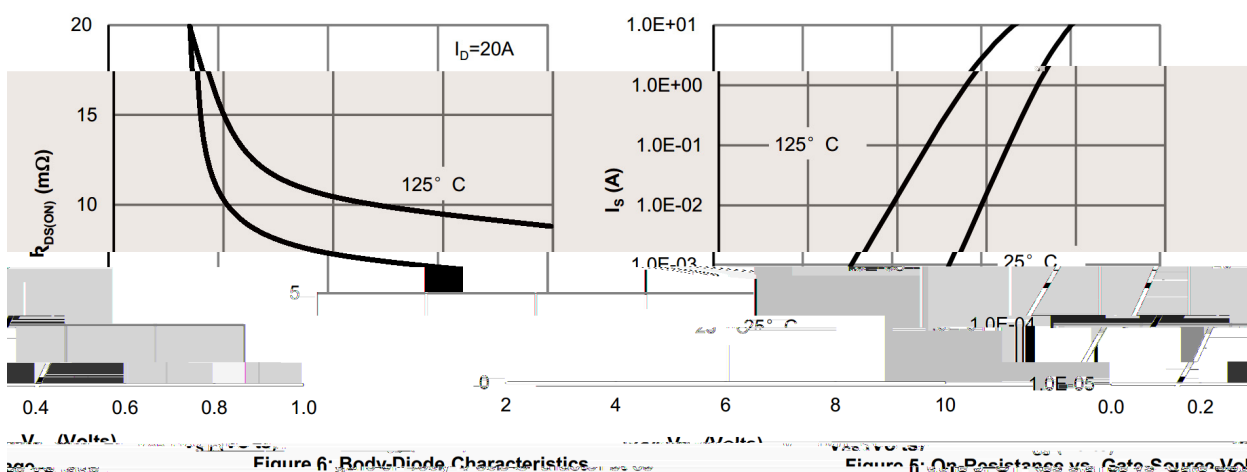
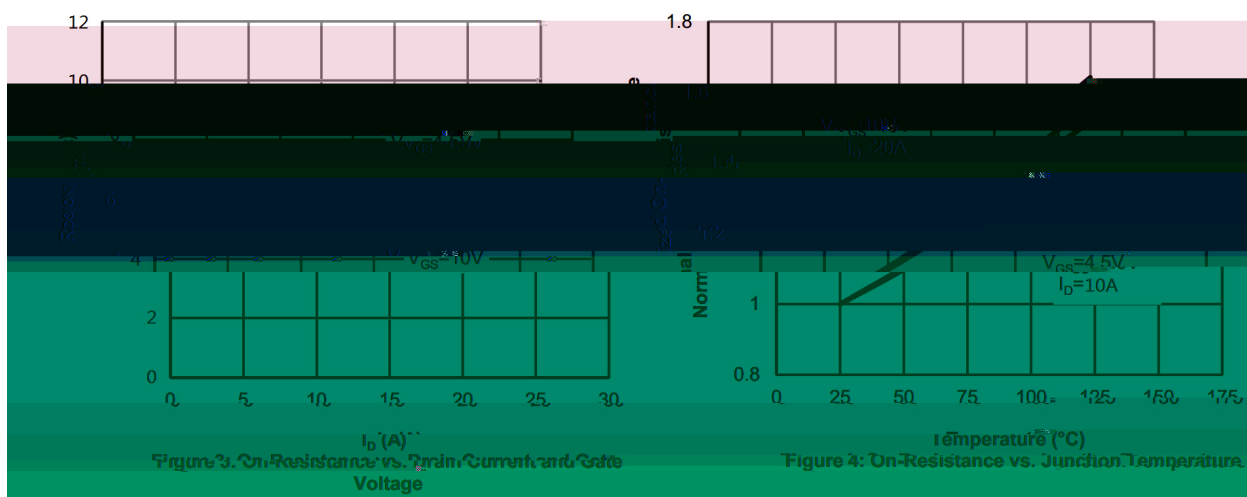
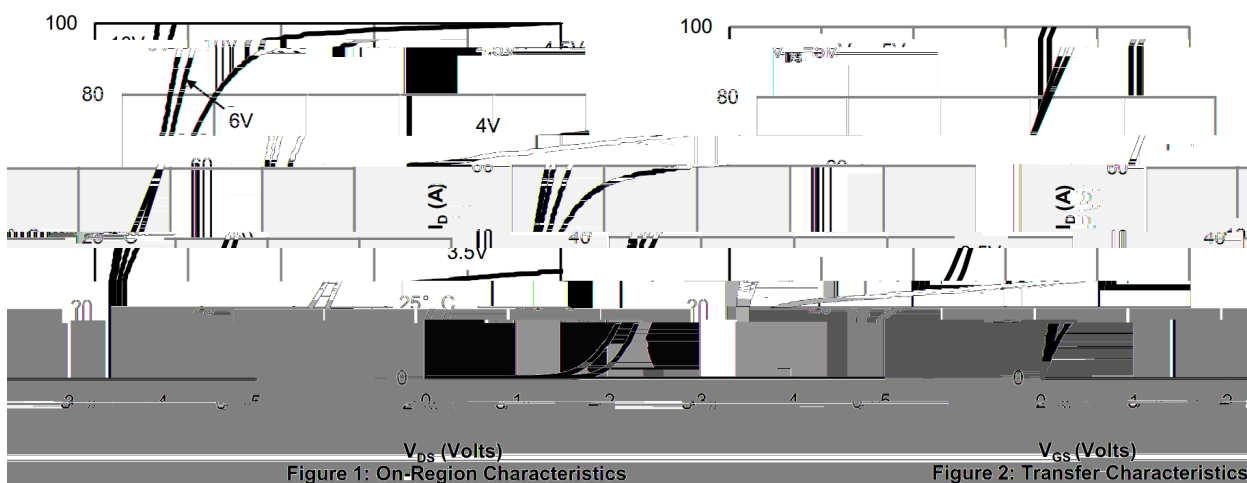
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V \quad I_D=250 \text{ A}$	40	46		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=40V \quad V_{GS}=0V$			1.0	A
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 20V \quad V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS} \quad I_D=250 \text{ A}$	1.0	1.6	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V \quad I_D=20A$		5.6	6	m
		$V_{GS}=4.5V \quad I_D=10A$		8.6	12	
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V \quad I_S=1A$			1.4	V
Gate resistance	R_g	$V_{GS}=0V \quad V_{DS}=0V, \quad f=1MHz$		2.1		
Input Capacitance	C_{iss}	$V_{DS}=25V \quad V_{GS}=0V \quad f=1.0MHz$		2200		pF
Output Capacitance	C_{oss}			265		
Reverse Transfer Capacitance	C_{rss}			145		
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V, \quad V_{DS}=20V, \quad I_D=20A$		22		nC
Total Gate Charge	$Q_{g(4.5V)}$			8.9		
Gate Source Charge	Q_{gs}			5.7		
Gate Drain Charge	Q_{gd}			3.1		

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=20V$ $R_L=1.0\ \Omega$ $R_{GEN}=3\ \Omega$		7.8		ns
Turn-On Rise Time	t_r			2.1		
Turn-Off Delay Time	$t_{d(off)}$			25		
Turn-Off Fall Time	t_f			3.2		

/ Electrical Characteristic Curve





Electrical Characteristic Curve

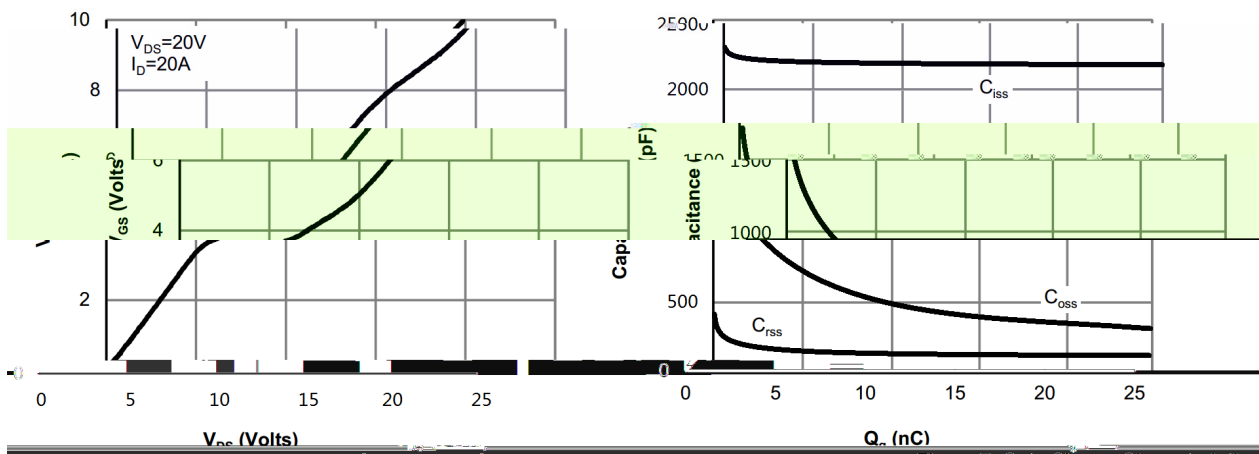


Figure 8: Capacitance Characteristics Figure 9: Gate-Charge Characteristic

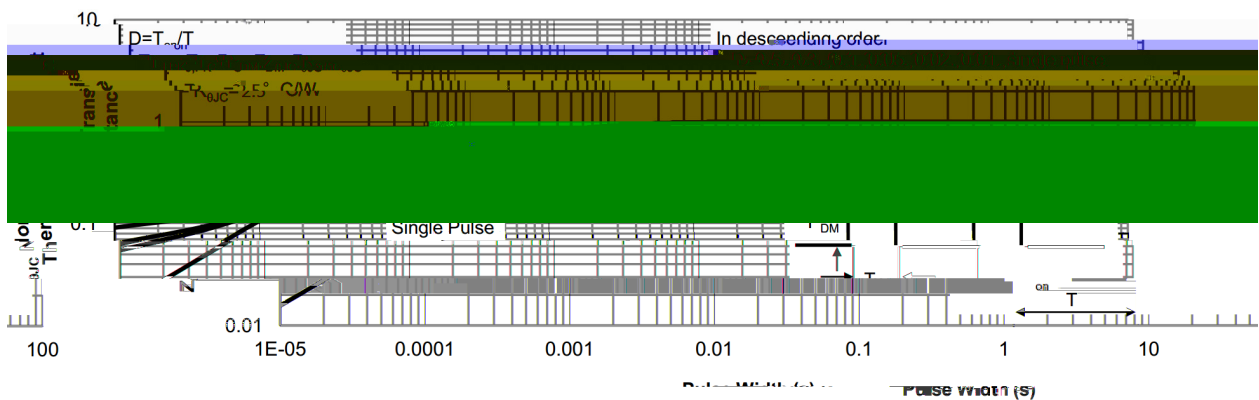
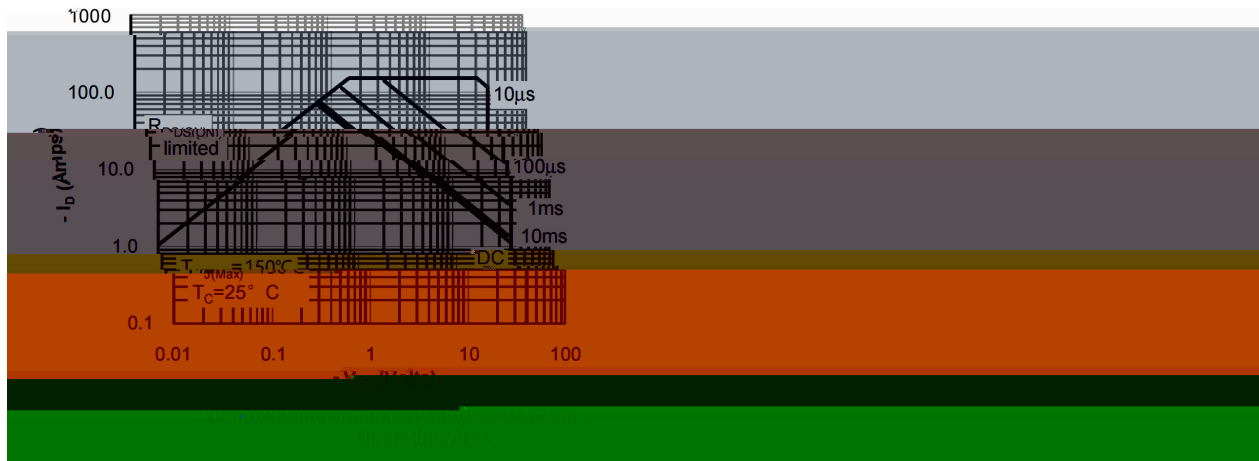
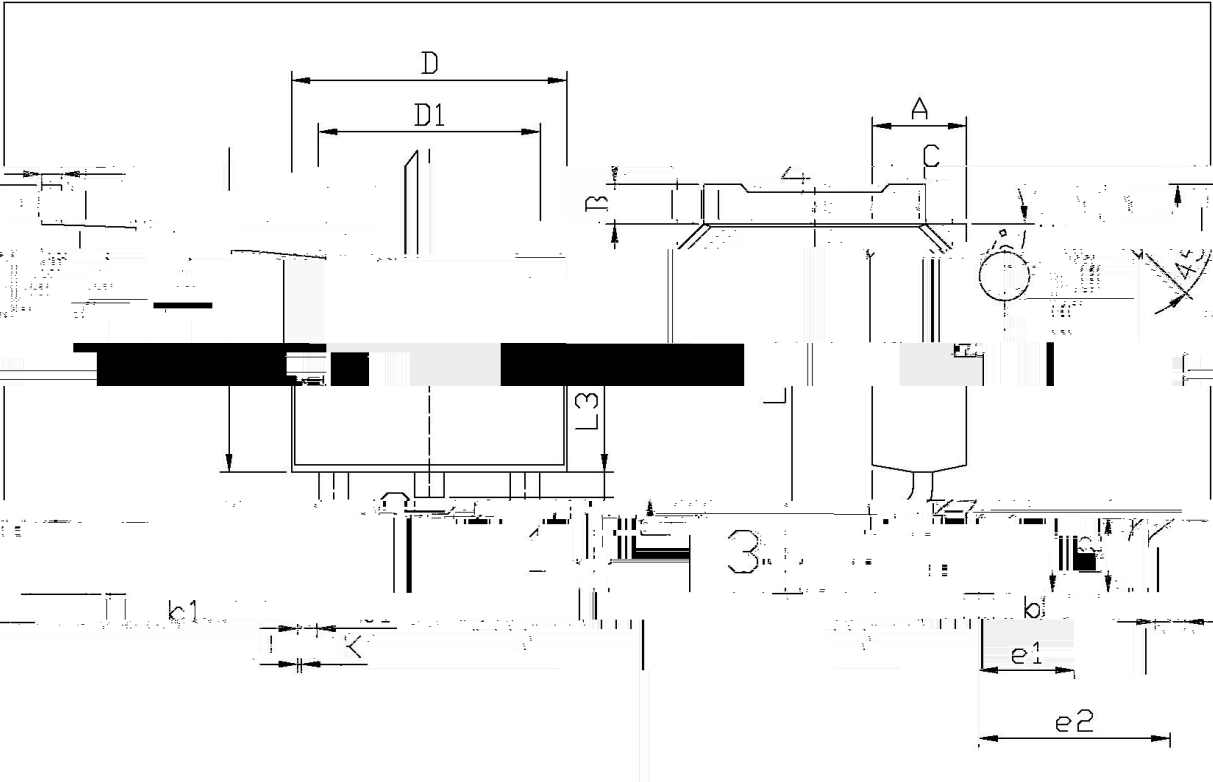


Figure 10: Normalized Maximum Transient Thermal Impedance

/ Package Dimensions



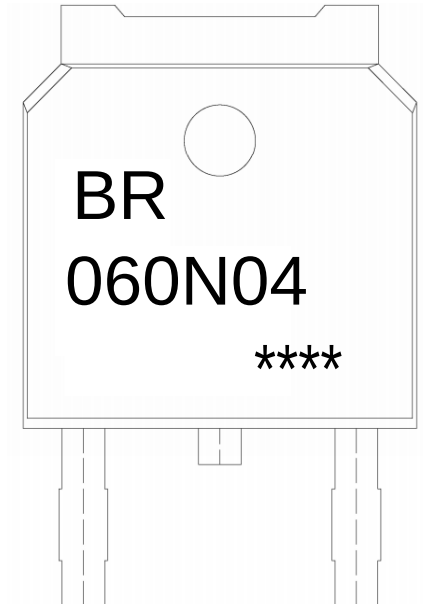
单位: mm

Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
E	5.95	6.25	A	2.20	2.40
e1	2.24	2.34	B	0.95	1.25
L3	0.45	0.55	L2	1.30	1.60
L1	9.85	10.35	L1	1.70	2.00
L3	0.60	0.90	L2	6.45	6.75
K	0.00	0.10	D1	5.10	5.50

52

T0-2

/ Marking Instructions



BR

060N04

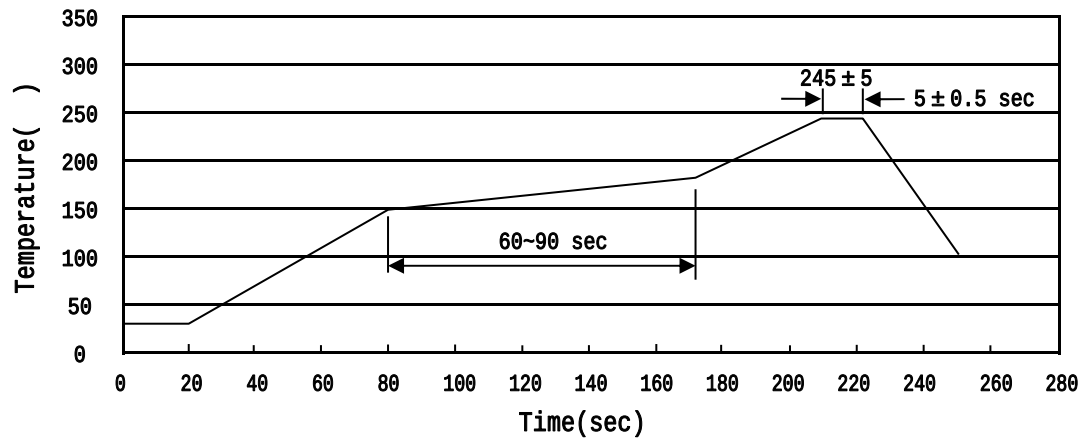
Note:

BR: Company Code

060N04: Product Type Code

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

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



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 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" ×16	360×360×50	380×335×366

/ 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	526×20.5×5.25	555×164×50	575×290×180

/ Notices