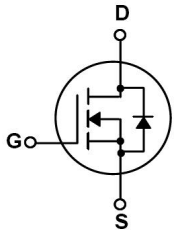
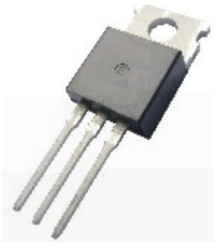
TO-220 N MOS N-CHANNEL MOSFET in a TO-220 Plastic Package.

Low gate charge, Fast switching capability, Avalanche energy specified, Improved dv/dt capability.

Designed for high voltage, high speed power switching applications such as high efficiency switched mode power supplies, active power factor correction.



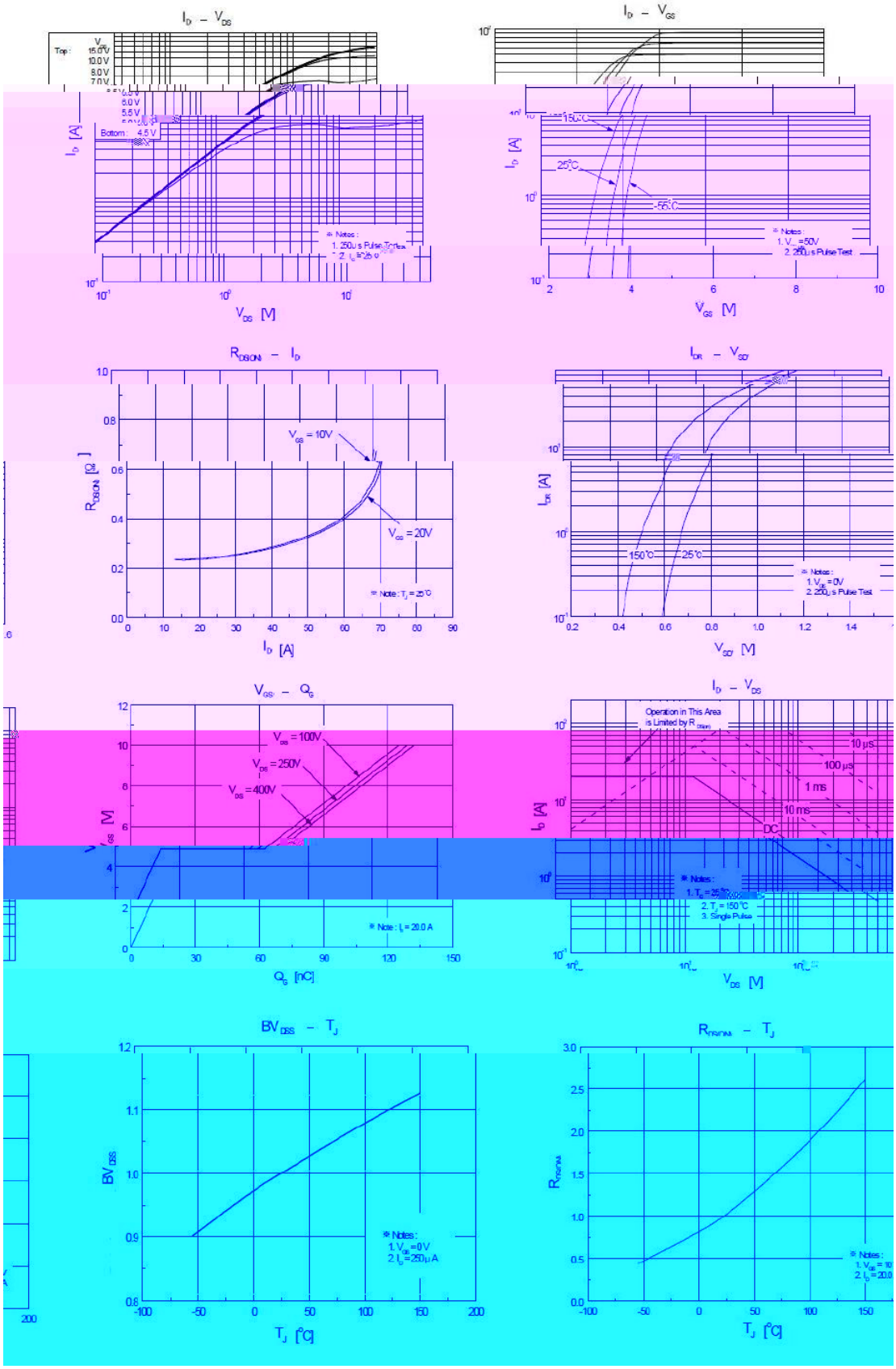


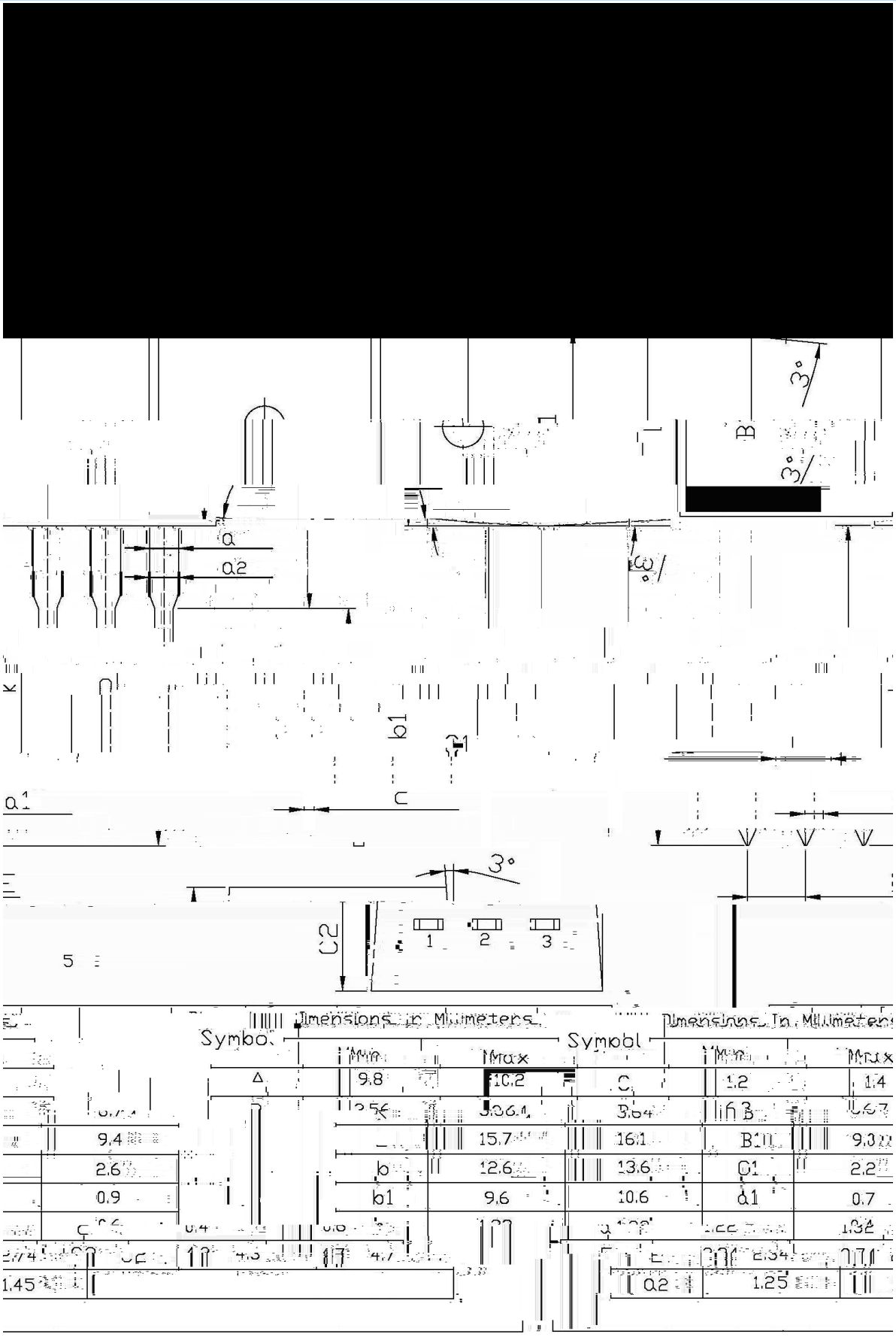
PIN1 G PIN 2 D PIN 3 S

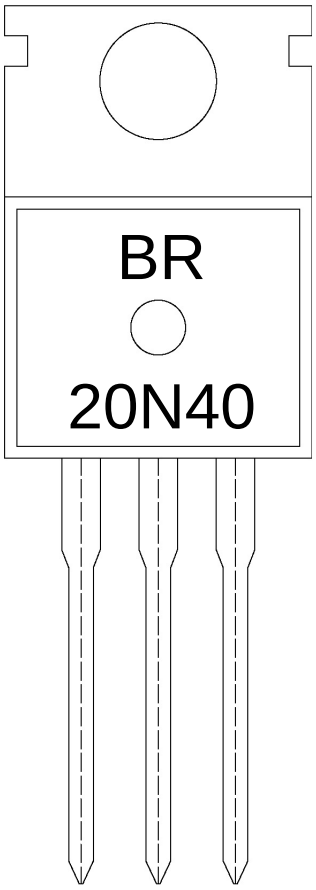
See Marking Instructions.

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	400	V
Drain Current	I_D(Tc=25)	20	A
Drain Current	I_D(Tc=100)	13	A
Drain Current - Pulsed	I_{DP}	80	A
Gate-Source Voltage	V_{GSS}	±20	V
Single Pulsed Avalanche Energy	E_{AR}	28	mJ
Repetitive Avalanche Energy	E_{AS}	1110	mJ
Peak Diode Recovery dv/dt	dv/dt	4.5	V/ns
Power Dissipation	P_D(Tc=25)	280	W
Junction Temperature Range	T_j	150	℃
Storage Temperature Range	T_{stg}	-55 150	℃
Thermal Resistance Junction-Ambient	R_{thJA}	40	℃/W
Thermal Resistance Junction-Case	R_{thJC}	0.44	℃/W

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}=0V I_D=250μA	400			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=400V V_{GS}=0V			1.0	μA
		V_{DS}=400V T_C=125			10	
Gate-Body Leakage Current, Forward	I_{GSS}	V_{GS}=±20V V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V I_D=10A		0.23	0.40	Ω
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V I_S=20A			1.5	V
Input Capacitance	C_{iss}	V_{DS}=25V V_{GS}=0V f=1.0MHz		2700		pF
Output Capacitance	C_{oss}			400		
Reverse Transfer Capacitance	C_{rss}			40		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=250V I_D=20A R_G=2.5Ω		100		ns
Turn-On Rise Time	t_r			400		
Turn-Off Delay Time	$t_{d(off)}$			100		
Turn-Off Fall Time	t_f			100		
Total Gate Charge	Q_g	V_{DS}=400V I_D=20A V_{GS}=10V		70		nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			35		


I_D – V_DS
I_D [A]
V_DS [V]
Top :
Bottom : 4.5 V
* Notes :
1. 250μs Pulse Test
I_D – V_GS
150°C
25°C
-55°C
* Notes :
1. V_DS = 50V
2. 250μs Pulse Test
V_GS [V]
R_DS(ON) – I_D
R_DS(ON) [Ω]
V_GS = 10V
V_GS = 20V
* Note : T_J = 25°C
I_D [A]
I_DR – V_SD
I_DR [A]
150°C
25°C
* Notes :
1. V_GS = 0V
2. 250μs Pulse Test
V_SD [V]
V_GS – Q_G
V_GS [V]
V_DS = 100V
V_DS = 250V
V_DS = 400V
* Note : I_D = 20.0 A
Q_G [nC]
I_D – V_DS
Operation in This Area is Limited by R_DS(on)
10 μs
100 μs
1 ms
10 ms
DC
* Notes :
1. T_C = 25°C
2. T_J = 150°C
3. Single Pulse
I_D [A]
V_DS [V]
BV_DSS – T_J
BV_DSS
* Notes :
1. V_GS = 0V
2. I_D = 250μA
T_J [°C]
R_DS(ON) – T_J
R_DS(ON)
* Notes :
T_J [°C]


3°
3°
a
a2
k
b1
a1
c
3°
c2
1
2
3
5
Dimensions in Millimeters
Symbol
Min
Max
A
9.8
10.2
9.4
2.6
0.9
1.45
Dimensions In Millimeters
Symbol
Min
Max
c
1.2
1.4
B1
9.0
c1
2.2
a1
0.7
a2
1.25



BR

Note:

BR:	Company Code
20N40:	Product Type.
****:	Lot No. Code, code change with Lot No.

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

270 5 10 1 sec.	Temp.:270±5℃	-