

/ Descriptions

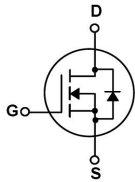
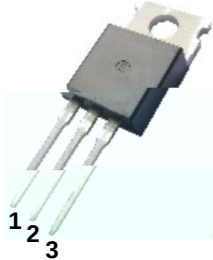
TO-220 N MOS N-CHANNEL MOSFET in a TO-220 Plastic Package.

/ Features

Low gate charge, Low Crss , Fast switching.

/ Applications

It is very suitable for various AC/DC power conversion in switching mode operation for system miniaturization and higher efficiency.

/ Equivalent Circuit**/ Pinning**

PIN1 G

PIN 2 D

PIN 3 S

/ h_{FE} Classifications & Marking

See Marking Instructions.

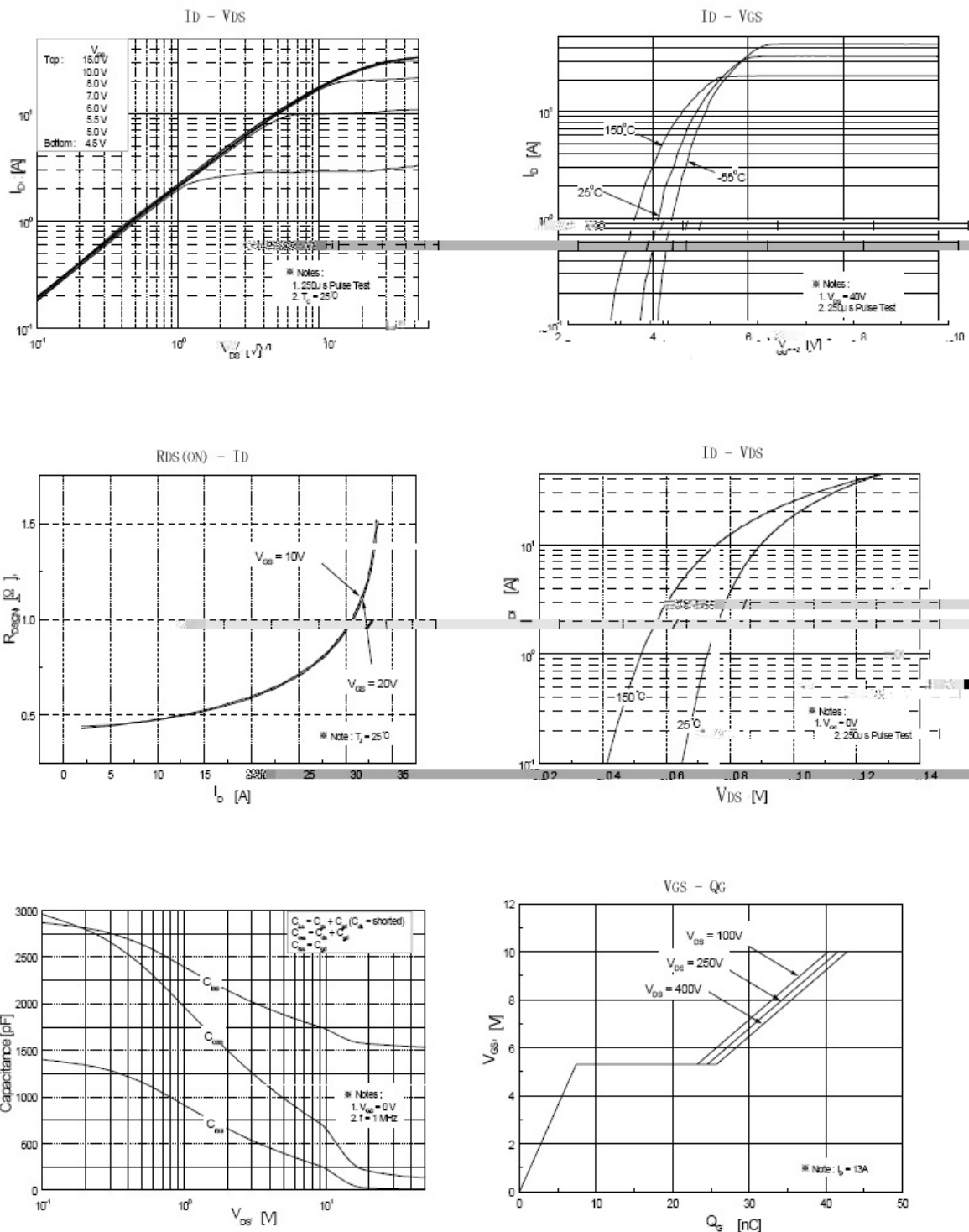
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	500	V
Drain Current	$I_D(T_C=25)$	13	A
Drain Current	$I_D(T_C=100)$	8	A
Drain Current - Pulsed	I_{DM}	52	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	860	mJ
Repetitive Avalanche Energy	E_{AR}	19.5	mJ
Avalanche Current	I_{AR}	13	A
Power Dissipation	$P_D(T_C=25)$	195	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$

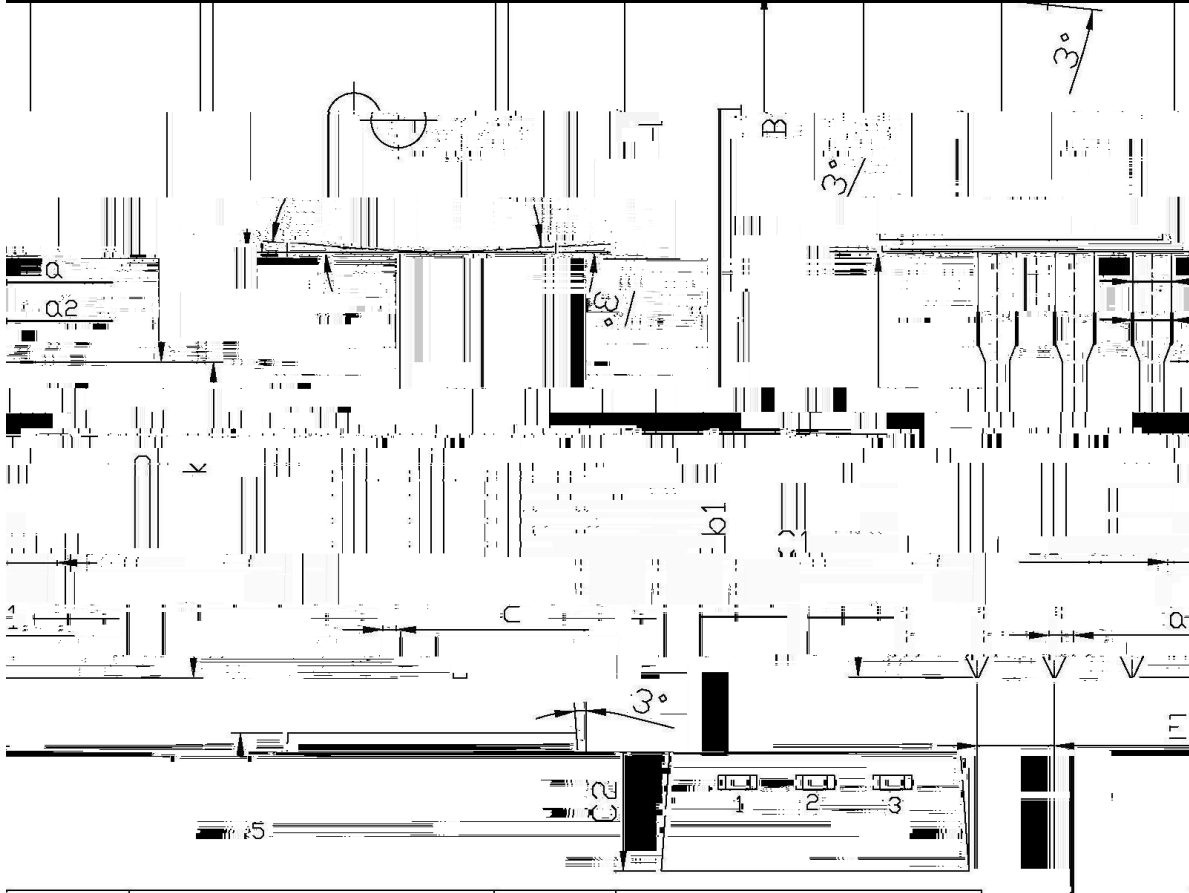
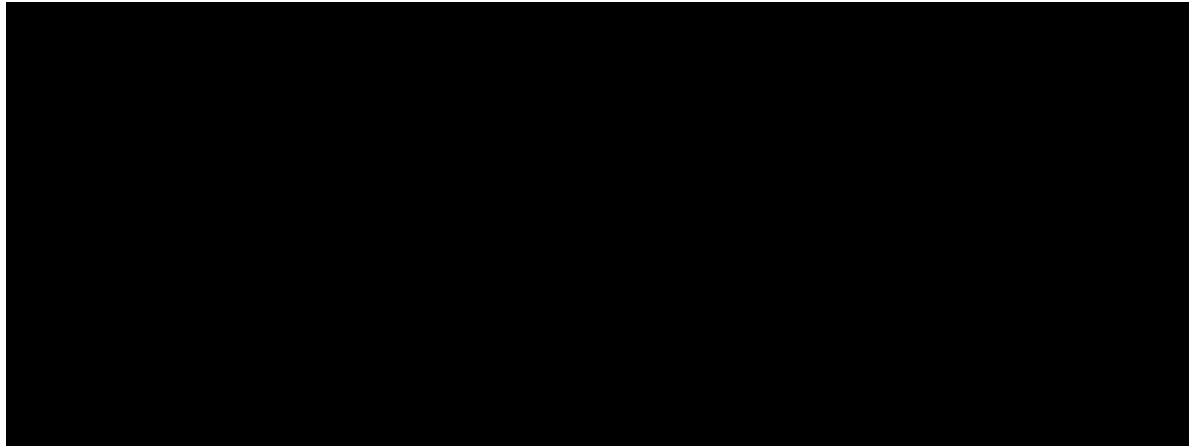
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$ $I_D=250\mu A$	500			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=500V$ $V_{GS}=0V$			1.0	μA
		$V_{DS}=400V$ $T_C=125$			10	μA
Gate-Body Leakage Current, Forward	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=6.5A$		0.39	0.48	Ω
Forward Transconductance	g_{FS}	$V_{DS}=40V$ $I_D=6.5A$		15		S
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=13A$			1.4	V
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		1580	2055	pF
Output Capacitance	C_{oss}			180	235	pF
Reverse Transfer Capacitance	C_{rss}			20	25	pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=300V$ $I_D=13A$ $R_G=25\Omega$		25	60	ns
Turn-On Rise Time	t_r			100	210	ns
Turn-Off Delay Time	$t_{d(off)}$			130	270	ns
Turn-Off Fall Time	t_f			100	210	ns

/ Electrical Characteristic Curve

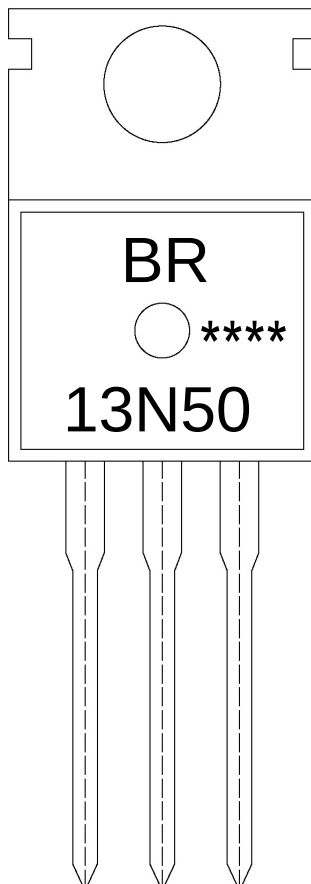


/ Package Dimensions



Dimensions in Millimeters			Dimensions in Millimeters		
Symbol	Min	Max	Symbol	Min	Max
A	9.8	10.2	C	1.2	1.4
A2	2.56	3.04	C1	1.63	1.67
B	15.7	16.1	B10	9.02	9.4
b	12.6	13.6	C1	2.27	2.6
b1	9.6	10.6	d1	0.7	0.9
C	1.2	1.4	E	2.34	2.74
D	1.32	1.36	F	2.34	2.74
E	2.34	2.74	G	1.25	1.45
F	2.34	2.74	H	1.25	1.45
G	1.25	1.45	I	1.25	1.45
H	1.25	1.45	J	1.25	1.45
I	1.25	1.45	K	1.25	1.45
J	1.25	1.45	L	1.25	1.45
K	1.25	1.45	M	1.25	1.45
L	1.25	1.45	N	1.25	1.45
M	1.25	1.45	O	1.25	1.45
N	1.25	1.45	P	1.25	1.45
O	1.25	1.45	Q	1.25	1.45
P	1.25	1.45	R	1.25	1.45
Q	1.25	1.45	S	1.25	1.45
R	1.25	1.45	T	1.25	1.45
S	1.25	1.45	U	1.25	1.45
T	1.25	1.45	V	1.25	1.45
U	1.25	1.45	W	1.25	1.45
V	1.25	1.45	X	1.25	1.45
W	1.25	1.45	Y	1.25	1.45
X	1.25	1.45	Z	1.25	1.45
Y	1.25	1.45			
Z	1.25	1.45			

/ Marking Instructions



BR

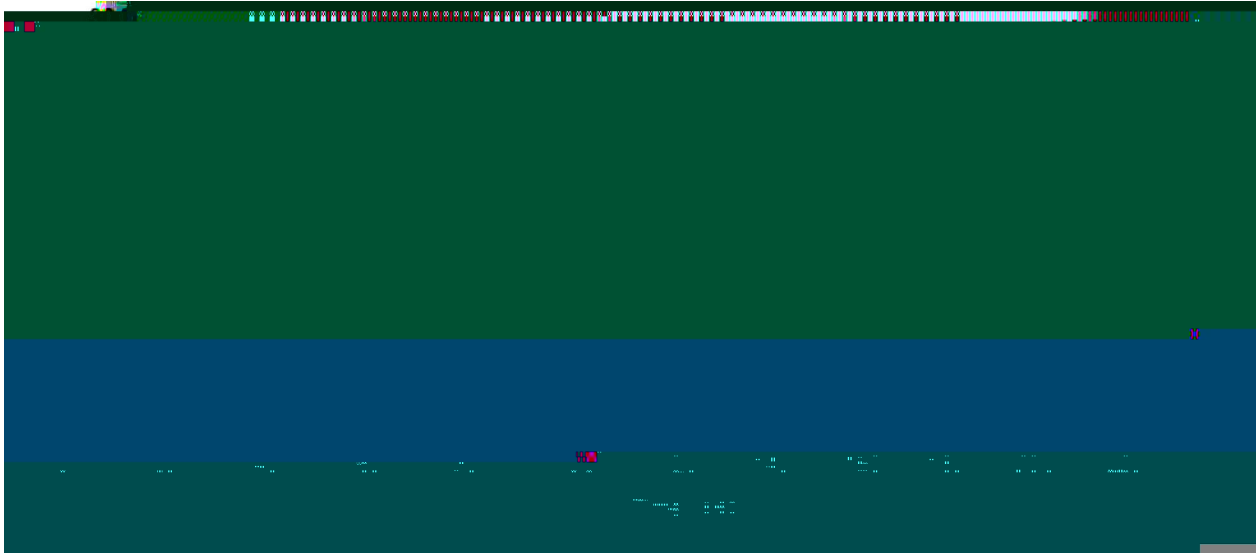
Note:

BR: Company Code

13N50: Product Type.

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

() / Temperature Profile for Dip Soldering(Pb-Free)



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. |

/ Resistance to Soldering Heat Test Conditions

270 5 10 1 sec. Temp.:270±5℃ Time:10±1 sec

/ Packaging SPEC.

/ BULK

Package Type	Units					Dimension (unit mm ³)		
	Units/Bag /	Bags/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Bag	Inner Box	Outer Box
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

/ 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-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

/ Notices