

BRD7N45

Rev.A Jul.-2025

/ Descriptions

TO-252 N MOS

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

/ Features

$V_{DS}=450V$ $I_D=7A$

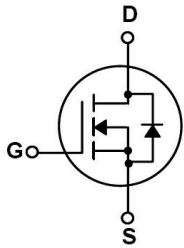
$R_{DS(ON)}@10V \leq 1.2\Omega$ (Typ. 1.0Ω)

HF Product.

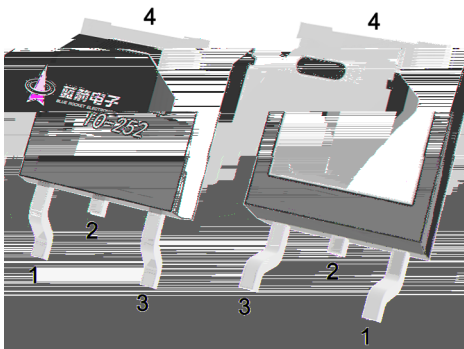
/ Applications

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

/ Equivalent Circuit



/ Pinning



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}	450	V
Drain Current	$I_D(T_c=25^\circ\text{C})$	7	A
Drain Current - Pulsed	I_{DM}	28	A
Gate-Source Voltage	V_{GS}	± 30	V
Single Pulsed Avalanche Energy	E_{AS}	308	mJ
Avalanche Current	I_{AS}	7.4	A
Power Dissipation	$P_D(T_c=25^\circ\text{C})$	50	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	
Junction to Ambient	$R_{\theta JA}$	110	/W
Junction to Case	$R_{\theta JC}$	2.5	/W

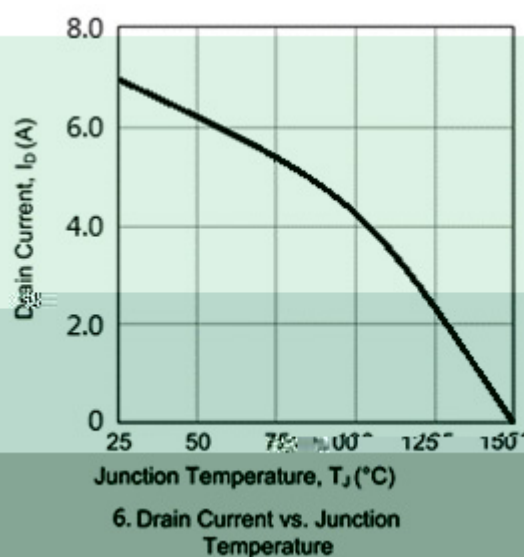
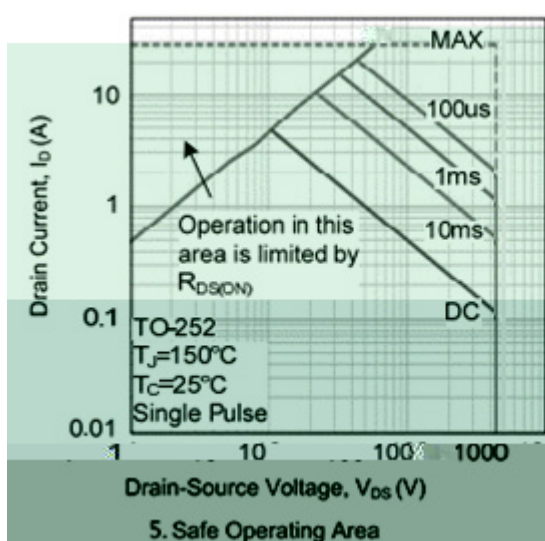
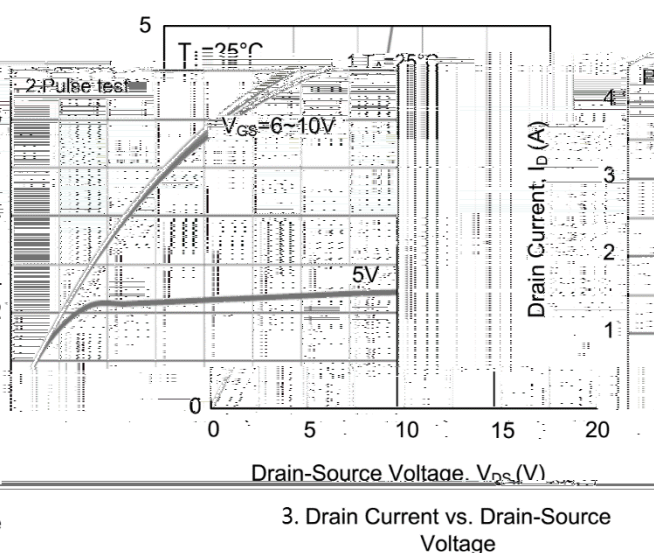
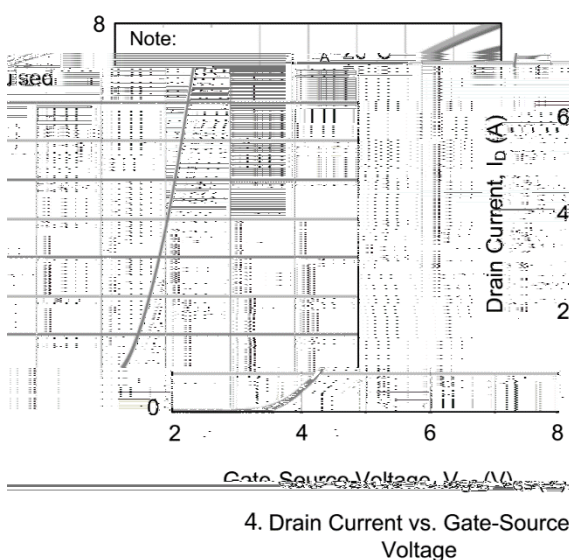
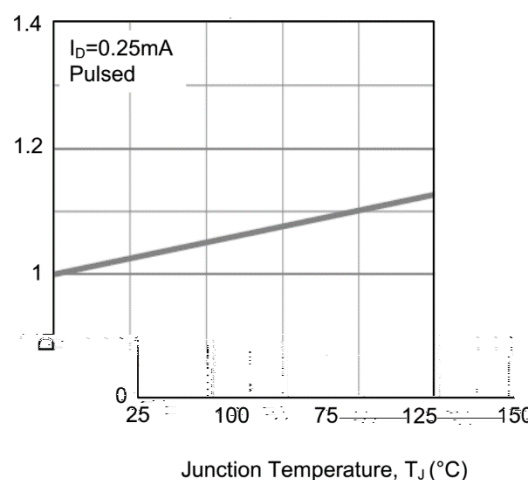
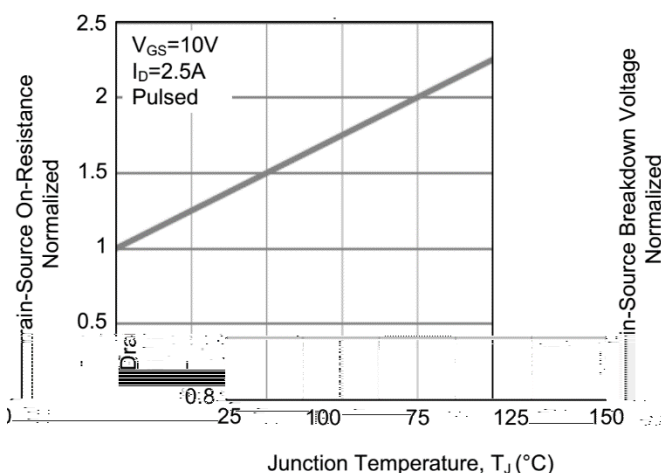
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V$ $I_D=250\mu A$	450			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=450V$ $V_{GS}=0V$			1	μA
Gate-Body Leakage Current Forward	I_{GSS}	$V_{GS}=\pm 30V$ $V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	2.0	3.1	4.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V$ $I_D=3.5A$		1.0	1.2	Ω
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V$ $I_S=1.0A$			1.2	V
Gate resistance	R_g	$V_{DS}=0V$ $V_{GS}=0V$ $f=1.0MHz$		2.6		Ω
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$		640		pF
Output Capacitance	C_{oss}			54		
Reverse Transfer Capacitance	C_{rss}			0.9		
Total Gate Charge	Q_G	$V_{DS}=400V$ $I_D=7.0A$ $V_{GS}=10V$		13.2		nC
Gate-Source Charge	Q_{GS}			4.4		
Gate-Drain Charge	Q_{GD}			2.0		

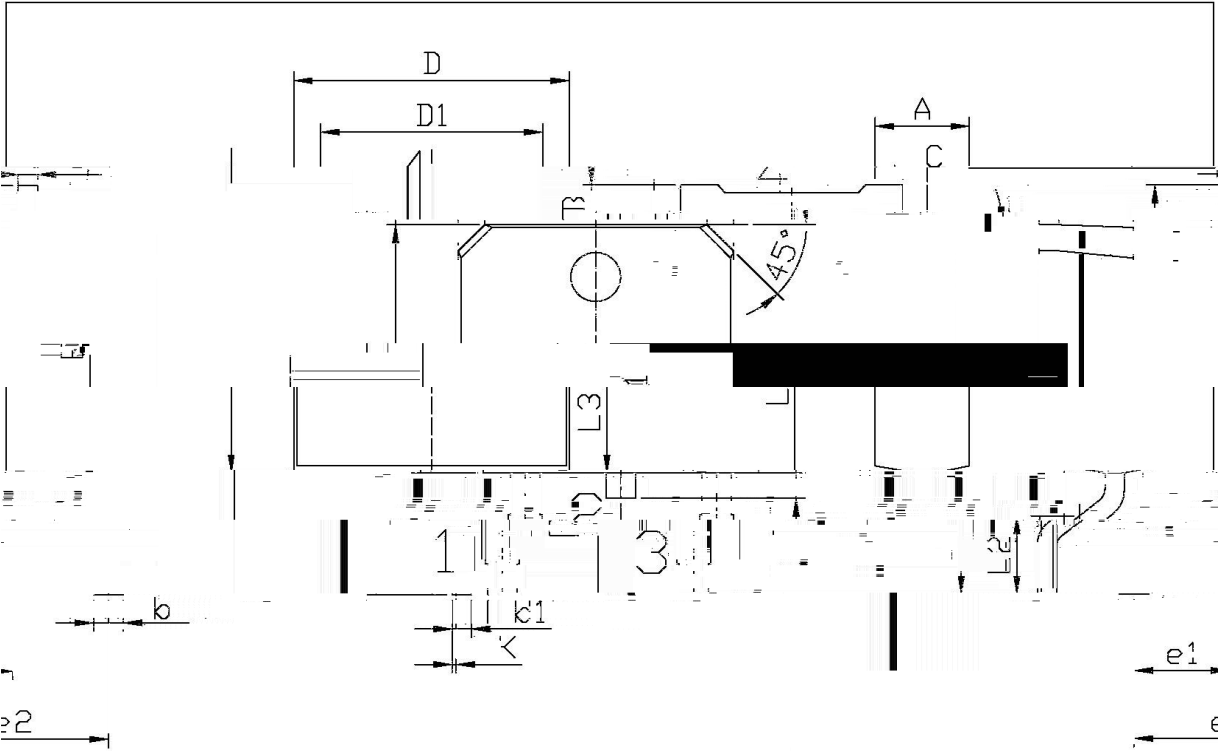
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=250V$ $I_D=7.0A$ $V_{GS}=10V$ $R_G=25\Omega$		42.4		ns
Turn-On Rise Time	t_r			16.9		
Turn-Off Delay Time	$t_{d(off)}$			31.8		
Turn-Off Fall Time	t_f			16.5		
Maximum Continuous Drain-Source Diode Forward Current	I_S				7	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				28	A
Reverse Recovery Time	t_{rr}	$V_{GS}=0V$ $I_S=7.0A$ $dI_F/dt=100 A/\mu s$		220		ns
Reverse Recovery Charge	Q_{rr}			1600		nC

Electrical Characteristic Curve

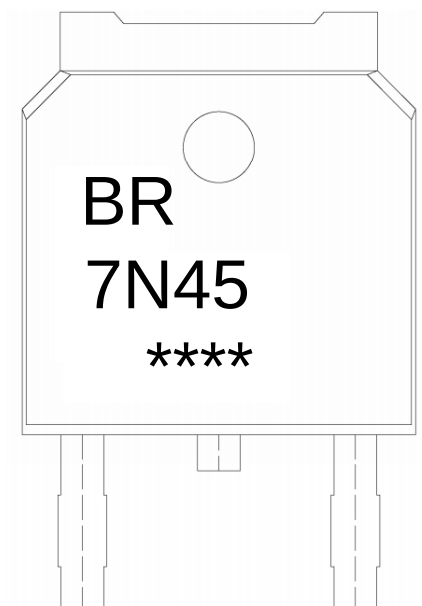


/ Package Dimensions



单位: mm					
Symbol			Dimensions In Millimeters		
			Min	Max	
E			5.95	6.25	
e1			2.24	2.34	
G			9.85	10.35	
H			4.00	4.45	
I			0.60	0.90	
J			0.70	0.10	
K			5.10	5.50	
L			6.45	6.75	
M			1.70	2.00	
N			0.45	0.55	
O			0.30	0.60	
P			0.95	1.25	
Q			2.20	2.40	
R			0.45	0.55	
S			0.30	0.60	
T			0.45	0.55	
U			0.30	0.60	
V			0.45	0.55	
W			0.30	0.60	
X			0.45	0.55	
Y			0.30	0.60	
Z			0.45	0.55	
AA			0.30	0.60	
AB			0.45	0.55	
AC			0.30	0.60	
AD			0.45	0.55	
AE			0.30	0.60	
AF			0.45	0.55	
AG			0.30	0.60	
AH			0.45	0.55	
AI			0.30	0.60	
AJ			0.45	0.55	
AK			0.30	0.60	
AL			0.45	0.55	
AM			0.30	0.60	
AN			0.45	0.55	
AO			0.30	0.60	
AP			0.45	0.55	
AQ			0.30	0.60	
AR			0.45	0.55	
AS			0.30	0.60	
AT			0.45	0.55	
AU			0.30	0.60	
AV			0.45	0.55	
AW			0.30	0.60	
AX			0.45	0.55	
AY			0.30	0.60	
AZ			0.45	0.55	
BA			0.30	0.60	
BB			0.45	0.55	
BC			0.30	0.60	
BD			0.45	0.55	
BE			0.30	0.60	
BF			0.45	0.55	
BG			0.30	0.60	
BH			0.45	0.55	
BI			0.30	0.60	
BJ			0.45	0.55	
BK			0.30	0.60	
BL			0.45	0.55	
BM			0.30	0.60	
BN			0.45	0.55	
BO			0.30	0.60	
BP			0.45	0.55	
BQ			0.30	0.60	
BR			0.45	0.55	
BS			0.30	0.60	
BT			0.45	0.55	
BU			0.30	0.60	
BV			0.45	0.55	
BW			0.30	0.60	
BX			0.45	0.55	
BY			0.30	0.60	
BZ			0.45	0.55	
CA			0.30	0.60	
CB			0.45	0.55	
CC			0.30	0.60	
CD			0.45	0.55	
CE			0.30	0.60	
CF			0.45	0.55	
CG			0.30	0.60	
CH			0.45	0.55	
CI			0.30	0.60	
CJ			0.45	0.55	
CK			0.30	0.60	
CL			0.45	0.55	
CM			0.30	0.60	
CN			0.45	0.55	
CO			0.30	0.60	
CP			0.45	0.55	
CQ			0.30	0.60	
CR			0.45	0.55	
CS			0.30	0.60	
CT			0.45	0.55	
CU			0.30	0.60	
CV			0.45	0.55	
CW			0.30	0.60	
CX			0.45	0.55	
CY			0.30	0.60	
CZ			0.45	0.55	
DA			0.30	0.60	
DB			0.45	0.55	
DC			0.30	0.60	
DD			0.45	0.55	
DE			0.30	0.60	
DF			0.45	0.55	
DG			0.30	0.60	
DH			0.45	0.55	
DI			0.30	0.60	
DJ			0.45	0.55	
DK			0.30	0.60	
DL			0.45	0.55	
DM			0.30	0.60	
DN			0.45	0.55	
DO			0.30	0.60	
DP			0.45	0.55	
DQ			0.30	0.60	
DR			0.45	0.55	
DS			0.30	0.60	
DT			0.45	0.55	
DU			0.30	0.60	
DV			0.45	0.55	
DW			0.30	0.60	
DX			0.45	0.55	
DY			0.30	0.60	
DZ			0.45	0.55	
EA			0.30	0.60	
EB			0.45	0.55	
EC			0.30	0.60	
ED			0.45	0.55	
EE			0.30	0.60	
EF			0.45	0.55	
EG			0.30	0.60	
EH			0.45	0.55	
EI			0.30	0.60	
EJ			0.45	0.55	
EK			0.30	0.60	
EL			0.45	0.55	
EM			0.30	0.60	
EN			0.45	0.55	
EO			0.30	0.60	
EP			0.45	0.55	
EQ			0.30	0.60	
ER			0.45	0.55	
ES			0.30	0.60	
ET			0.45	0.55	
EU			0.30	0.60	
EV			0.45	0.55	
EW			0.30	0.60	
EX			0.45	0.55	
EY			0.30	0.60	
EZ			0.45	0.55	
FA			0.30	0.60	
FB			0.45	0.55	
FC			0.30	0.60	
FD			0.45	0.55	
FE			0.30	0.60	
FF			0.45	0.55	
FG			0.30	0.60	
FH			0.45	0.55	
FI			0.30	0.60	
FJ			0.45	0.55	
FK			0.30	0.60	
FL			0.45	0.55	
FM			0.30	0.60	
FN			0.45	0.55	
FO			0.30	0.60	
FP			0.45	0.55	
FQ			0.30	0.60	
FR			0.45	0.55	
FS			0.30	0.60	
FT			0.45	0.55	
FU			0.30	0.60	
FV			0.45	0.55	
FW			0.30	0.60	
FX			0.45	0.55	
FY			0.30	0.60	
FZ			0.45	0.55	
GA			0.30	0.60	
GB			0.45	0.55	
GC			0.30	0.60	
GD			0.45	0.55	
GE			0.30	0.60	
GF			0.45	0.55	
GG			0.30	0.60	
GH			0.45	0.55	
GI			0.30	0.60	
GJ			0.45	0.55	
GK			0.30	0.60	
GL			0.45	0.55	
GM			0.30	0.60	
GN			0.45	0.55	
GO			0.30	0.60	
GP			0.45	0.55	
GQ			0.30	0.60	
GR			0.45	0.55	
GS			0.30	0.60	
GT			0.45	0.55	
GU			0.30	0.60	
GV			0.45	0.55	
GW			0.30	0.60	
GX			0.45	0.55	
GY			0.30	0.60	

/ Marking Instructions



BR

Note:

BR: Company Code

7N45: Product Type Code

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

() /

- 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