

## BUK455-100A/B

### GENERAL DESCRIPTION

N-channel enhancement mode field-effect power transistor in a plastic envelope.  
 The device is intended for use in Switched Mode Power Supplies (SMPS), motor control, welding, DC/DC and AC/DC converters, and in general purpose switching applications.

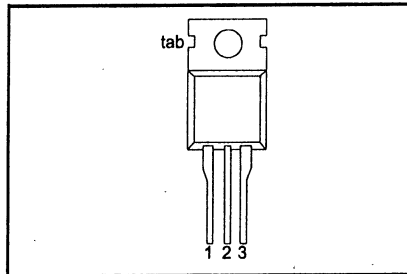
### QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	<b>BUK455</b>	<b>-100A</b>	<b>-100B</b>	
$V_{DS}$	Drain-source voltage	100	100	V
$I_D$	Drain current (DC)	26	23	A
$P_{tot}$	Total power dissipation	125	125	W
$T_j$	Junction temperature	175	175	°C
$R_{DS(ON)}$	Drain-source on-state resistance	0.08	0.1	Ω

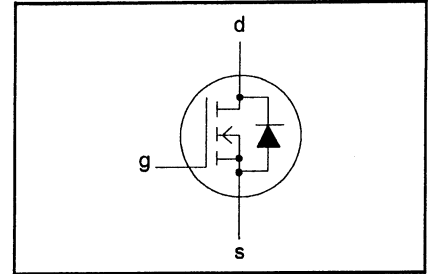
### PINNING - TO220AB

PIN	DESCRIPTION
1	gate
2	drain
3	source
tab	drain

### PIN CONFIGURATION



### SYMBOL



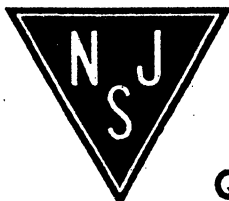
### LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{DS}$	Drain-source voltage	-	-	100	V
$V_{DGR}$	Drain-gate voltage	$R_{GS} = 20 \text{ k}\Omega$	-	100	V
$\pm V_{GS}$	Gate-source voltage	-	-	30	V
$I_D$	Drain current (DC)	$T_{mb} = 25 \text{ }^\circ\text{C}$	-	<b>-100A</b> 26	A
$I_D$	Drain current (DC)	$T_{mb} = 100 \text{ }^\circ\text{C}$	-	18	A
$I_{DM}$	Drain current (pulse peak value)	$T_{mb} = 25 \text{ }^\circ\text{C}$	-	104	A
$P_{tot}$	Total power dissipation	$T_{mb} = 25 \text{ }^\circ\text{C}$	-	125	W
$T_{stg}$	Storage temperature	-	-55	175	°C
$T_j$	Junction Temperature	-	-	175	°C

### THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base		-	-	1.2	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W



## STATIC CHARACTERISTICS

$T_{mb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 0.25\text{ mA}$	100	-	-	V
$V_{GS(TO)}$	Gate threshold voltage	$V_{DS} = V_{GS}; I_D = 1\text{ mA}$	2.1	3.0	4.0	V
$I_{DSS}$	Zero gate voltage drain current	$V_{DS} = 100\text{ V}; V_{GS} = 0\text{ V}; T_J = 25\text{ }^{\circ}\text{C}$	-	1	10	$\mu\text{A}$
$I_{DSS}$	Zero gate voltage drain current	$V_{DS} = 100\text{ V}; V_{GS} = 0\text{ V}; T_J = 125\text{ }^{\circ}\text{C}$	-	0.1	1.0	mA
$I_{GSS}$	Gate source leakage current	$V_{GS} = \pm 30\text{ V}; V_{DS} = 0\text{ V}$	-	10	100	nA
$R_{DS(ON)}$	Drain-source on-state resistance	$V_{GS} = 10\text{ V}; I_D = 13\text{ A}$	-	0.07	0.08	$\Omega$
		<b>BUK455-100A</b>	-	0.08	0.1	$\Omega$
		<b>BUK455-100B</b>	-			

## DYNAMIC CHARACTERISTICS

$T_{mb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$g_{fs}$	Forward transconductance	$V_{DS} = 25\text{ V}; I_D = 13\text{ A}$	7.0	13.5	-	S
$C_{iss}$	Input capacitance	$V_{GS} = 0\text{ V}; V_{DS} = 25\text{ V}; f = 1\text{ MHz}$	-	1650	2000	pF
$C_{oss}$	Output capacitance		-	350	500	pF
$C_{rss}$	Feedback capacitance		-	100	150	pF
$t_{don}$	Turn-on delay time	$V_{DD} = 30\text{ V}; I_D = 3\text{ A};$	-	15	30	ns
$t_r$	Turn-on rise time	$V_{GS} = 10\text{ V}; R_{GS} = 50\text{ }\Omega;$	-	25	40	ns
$t_{doff}$	Turn-off delay time	$R_{gen} = 50\text{ }\Omega$	-	100	160	ns
$t_f$	Turn-off fall time		-	50	80	ns
$L_d$	Internal drain inductance	Measured from contact screw on tab to centre of die	-	3.5	-	nH
$L_d$	Internal drain inductance	Measured from drain lead 6 mm from package to centre of die	-	4.5	-	nH
$L_s$	Internal source inductance	Measured from source lead 6 mm from package to source bond pad	-	7.5	-	nH

## REVERSE DIODE LIMITING VALUES AND CHARACTERISTICS

$T_{mb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{DR}$	Continuous reverse drain current	-	-	-	26	A
$I_{DRM}$	Pulsed reverse drain current	-	-	-	104	A
$V_{SD}$	Diode forward voltage	$I_F = 26\text{ A}; V_{GS} = 0\text{ V}$	-	1.3	1.7	V
$t_{rr}$	Reverse recovery time	$I_F = 26\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s};$	-	90	-	ns
$Q_{rr}$	Reverse recovery charge	$V_{GS} = 0\text{ V}; V_R = 30\text{ V}$	-	0.8	-	$\mu\text{C}$

## AVALANCHE LIMITING VALUE

$T_{mb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$W_{DSS}$	Drain-source non-repetitive unclamped inductive turn-off energy	$I_D = 26\text{ A}; V_{DD} \leq 50\text{ V};$ $V_{GS} = 10\text{ V}; R_{GS} = 50\text{ }\Omega$	-	-	100	mJ

# MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

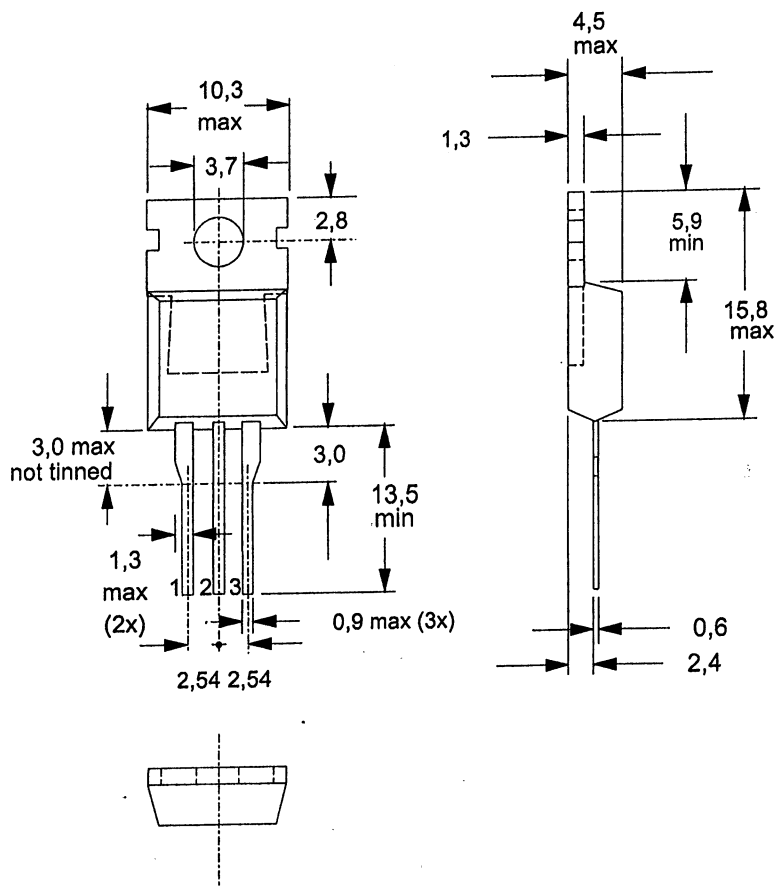


Fig. 17. TO220AB; pin 2 connected to mounting base.

## Notes

1. Observe the general handling precautions for electrostatic-discharge sensitive devices (ESDs) to prevent damage to MOS gate oxide.
2. Refer to mounting instructions for TO220 envelopes.
3. Epoxy meets UL94 V0 at 1/8".