

PowerMOS transistor**BUK456-800A/B****GENERAL DESCRIPTION**

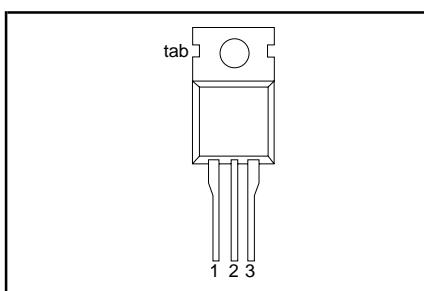
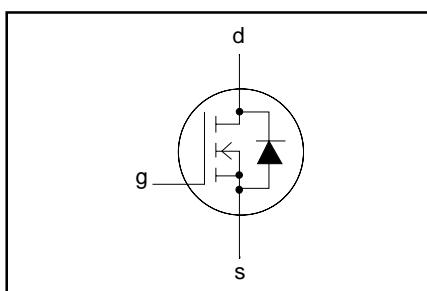
N-channel enhancement mode field-effect power transistor in a plastic envelope.
The device is intended for use in Switched Mode Power Supplies (SMPS), motor control, welding, DC/DC and AC/DC converters, and in general purpose switching applications.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
V_{DS}	BUK456	-800A	-800B	V
I_D	Drain-source voltage	800	800	
P_{tot}	Drain current (DC)	4	3.5	A
$R_{DS(ON)}$	Total power dissipation	125	125	W
	Drain-source on-state resistance	3	4	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	$R_{GS} = 20 \text{ k}\Omega$	-	800		V
V_{DGR}	Drain-gate voltage		-	800		V
$\pm V_{GS}$	Gate-source voltage		-	30		V
I_D	Drain current (DC)	$T_{mb} = 25^\circ\text{C}$	-	4.0	3.5	A
I_D	Drain current (DC)		-	2.5	2.2	A
I_{DM}	Drain current (pulse peak value)		-	16	14	A
P_{tot}	Total power dissipation	$T_{mb} = 25^\circ\text{C}$	-	125		W
T_{stg}	Storage temperature		-55	150		°C
T_j	Junction Temperature		-	150		°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th j-mb}$	Thermal resistance junction to mounting base		-	-	1.0	K/W
$R_{th j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0 V; I_D = 0.25 mA$	800	-	-	V
$V_{GS(TO)}$	Gate threshold voltage	$V_{DS} = V_{GS}; I_D = 1 mA$	2.1	3.0	4.0	V
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 800 V; V_{GS} = 0 V; T_j = 25^\circ C$	-	2	20	μA
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 800 V; V_{GS} = 0 V; T_j = 125^\circ C$	-	0.1	1.0	mA
I_{GSS}	Gate source leakage current	$V_{GS} = \pm 30 V; V_{DS} = 0 V$	-	10	100	nA
$R_{DS(ON)}$	Drain-source on-state resistance	$V_{GS} = 10 V; I_D = 1.5 A$ BUK456-800A	-	2.7	3.0	Ω
		$V_{GS} = 10 V; I_D = 1.5 A$ BUK456-800B	-	3.5	4.0	Ω

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g_{fs}	Forward transconductance	$V_{DS} = 25 V; I_D = 1.5 A$	3.0	4.3	-	S
C_{iss}	Input capacitance	$V_{GS} = 0 V; V_{DS} = 25 V; f = 1 MHz$	-	1000	1250	pF
C_{oss}	Output capacitance		-	80	120	pF
C_{rss}	Feedback capacitance		-	30	50	pF
$t_{d(on)}$	Turn-on delay time	$V_{DD} = 30 V; I_D = 2.3 A;$	-	10	25	ns
t_r	Turn-on rise time	$V_{GS} = 10 V; R_{GS} = 50 \Omega;$	-	50	70	ns
$t_{d(off)}$	Turn-off delay time	$R_{gen} = 50 \Omega$	-	130	150	ns
t_f	Turn-off fall time		-	40	60	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 $T_{mb} = 25^\circ C$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{DR}	Continuous reverse drain current	-	-	-	4.0	A
I_{DRM}	Pulsed reverse drain current	-	-	-	16	A
V_{SD}	Diode forward voltage	$I_F = 4.0 A; V_{GS} = 0 V$	-	1.0	1.3	V
t_{rr}	Reverse recovery time	$I_F = 4.0 A; -dI_F/dt = 100 A/\mu s;$	-	1800	-	ns
Q_{rr}	Reverse recovery charge	$V_{GS} = 0 V; V_R = 100 V$	-	12	-	μC