

PowerMOS transistor Logic level FET

BUK553-60A/B

GENERAL DESCRIPTION

N-channel enhancement mode logic level 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 automotive and general purpose switching applications.

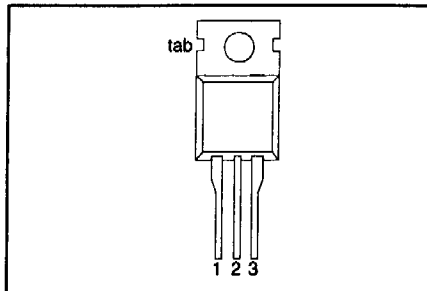
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BUK553	-60A	-60B	
V_{DS}	Drain-source voltage	60	60	V
I_D	Drain current (DC)	21	20	A
P_{tot}	Total power dissipation	75	75	W
T_j	Junction temperature	175	175	°C
$R_{DS(ON)}$	Drain-source on-state resistance; $V_{GS} = 5V$	0.085	0.10	Ω

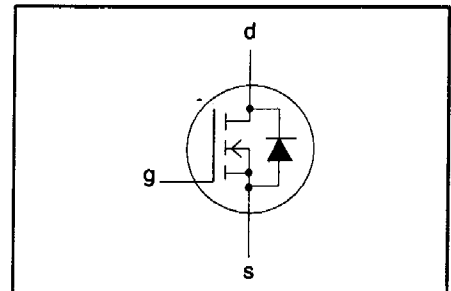
PINNING - TO220AB

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	-	-	60	V
V_{DGR}	Drain-gate voltage	$R_{GS} = 20\text{ k}\Omega$	-	60	V
$\pm V_{GS}$	Gate-source voltage	-	-	15	V
$\pm V_{GSM}$	Non-repetitive gate-source voltage	$t_p \leq 50\ \mu\text{s}$	-	20	V
I_D	Drain current (DC)	$T_{mb} = 25\text{ }^\circ\text{C}$	-	-60A 21	A
I_D	Drain current (DC)	$T_{mb} = 100\text{ }^\circ\text{C}$	-	15	A
I_{DM}	Drain current (pulse peak value)	$T_{mb} = 25\text{ }^\circ\text{C}$	-	84	A
P_{tot}	Total power dissipation	$T_{mb} = 25\text{ }^\circ\text{C}$	-	75	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		-	-	2.0	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient		-	60	-	K/W

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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	$V_{GS} = 0\text{ V}; I_D = 0.25\text{ mA}$	60	-	-	V
$V_{GS(TO)}$	Gate threshold voltage	$V_{DS} = V_{GS}; I_D = 1\text{ mA}$	1.0	1.5	2.0	V
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 60\text{ V}; V_{GS} = 0\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$	-	1	10	μA
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 60\text{ V}; V_{GS} = 0\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$	-	0.1	1.0	mA
I_{GSS}	Gate source leakage current	$V_{GS} = \pm 15\text{ V}; V_{DS} = 0\text{ V}$	-	10	100	nA
$R_{DS(ON)}$	Drain-source on-state resistance	$V_{GS} = 5\text{ V}; I_D = 10\text{ A}$	-	0.075	0.085	Ω
		BUK553-60A	-	0.08	0.10	Ω
		BUK553-60B	-			

DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g_{fs}	Forward transconductance	$V_{DS} = 25\text{ V}; I_D = 10\text{ A}$	7	10	-	S
C_{iss}	Input capacitance	$V_{GS} = 0\text{ V}; V_{DS} = 25\text{ V}; f = 1\text{ MHz}$	-	700	825	pF
C_{oss}	Output capacitance		-	240	350	pF
C_{rss}	Feedback capacitance		-	130	160	pF
$t_{d\text{ on}}$	Turn-on delay time	$V_{DD} = 30\text{ V}; I_D = 3\text{ A};$	-	20	30	ns
t_r	Turn-on rise time	$V_{GS} = 5\text{ V}; R_{GS} = 50\text{ }\Omega;$	-	95	120	ns
$t_{d\text{ off}}$	Turn-off delay time	$R_{gen} = 50\text{ }\Omega$	-	80	110	ns
t_f	Turn-off fall time		-	65	85	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

