

PowerMOS transistor

Isolated version of BUK455-200A/B

BUK475-200A/B

GENERAL DESCRIPTION

N-channel enhancement mode field-effect power transistor in a plastic full-pack 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.

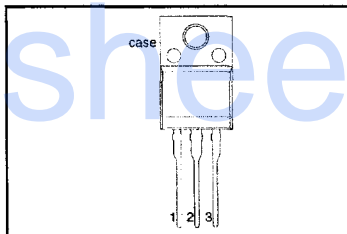
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BUK475	-200A	-200B	
V_{DS}	Drain-source voltage	200	200	V
I_D	Drain current (DC)	7.6	7	A
P_{tot}	Total power dissipation	30	30	W
T_j	Junction temperature	150	150	°C
$R_{DS(ON)}$	Drain-source on-state resistance	0.23	0.28	Ω

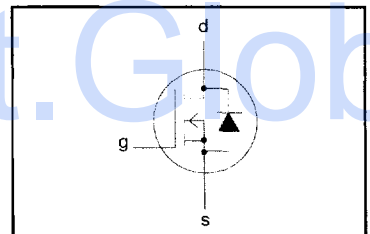
PINNING - SOT186A

PIN	DESCRIPTION
1	gate
2	drain
3	source
case	isolated

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	-	-	200	V
V_{DGR}	Drain-gate voltage	$R_{GS} = 20 \text{ k}\Omega$	-	200	V
$\pm V_{GS}$	Gate-source voltage	-	-	30	V
				-200A	-200B
I_D	Drain current (DC)	$T_{hs} = 25 \text{ }^\circ\text{C}$	-	7.6	7
I_D	Drain current (DC)	$T_{hs} = 100 \text{ }^\circ\text{C}$	-	4.8	4.4
I_{DM}	Drain current (pulse peak value)	$T_{hs} = 25 \text{ }^\circ\text{C}$	-	30	28
P_{tot}	Total power dissipation	$T_{hs} = 25 \text{ }^\circ\text{C}$	-	30	W
T_{stg}	Storage temperature	-	-55	150	°C
T_j	Junction temperature	-	-	150	°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th j-hs}$	Thermal resistance junction to heatsink	with heatsink compound	-	-	4.17	K/W
$R_{th j-a}$	Thermal resistance junction to ambient		-	55	-	K/W

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STATIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0\text{ V}; I_D = 0.25\text{ mA}$	200	-	-	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	$V_{DS} = 200\text{ V}; V_{GS} = 0\text{ V}; T_J = 25\text{ }^{\circ}\text{C}$	-	1	10	μA
I_{DSS}	Zero gate voltage drain current	$V_{DS} = 200\text{ V}; V_{GS} = 0\text{ V}; T_J = 125\text{ }^{\circ}\text{C}$	-	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	$V_{GS} = 10\text{ V}; I_D = 7\text{ A}$	-	0.2	0.23	Ω
		BUK475-200A	-	0.22	0.28	Ω
		BUK475-200B	-	0.22	0.28	Ω

DYNAMIC CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g_{fs}	Forward transconductance	$V_{DS} = 25\text{ V}; I_D = 7\text{ A}$	6	8.4	-	S
C_{iss}	Input capacitance	$V_{GS} = 0\text{ V}; V_{DS} = 25\text{ V}; f = 1\text{ MHz}$	-	1400	1750	pF
C_{oss}	Output capacitance		-	190	250	pF
C_{rss}	Feedback capacitance		-	55	80	pF
$t_{d\ on}$	Turn-on delay time	$V_{DD} = 30\text{ V}; I_D = 3\text{ A}; V_{GS} = 10\text{ V}; R_{GS} = 50\text{ }\Omega;$	-	18	30	ns
t_r	Turn-on rise time	$R_{gen} = 50\text{ }\Omega$	-	35	60	ns
$t_{d\ off}$	Turn-off delay time		-	85	120	ns
t_f	Turn-off fall time		-	35	50	ns
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

ISOLATION LIMITING VALUE & CHARACTERISTIC

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{isol}	R.M.S. isolation voltage from all three terminals to external heatsink	$f = 50\text{-}60\text{ Hz};$ sinusoidal waveform; $R.H. \leq 65\%;$ clean and dustfree	-		2500	V
C_{isol}	Capacitance from T2 to external heatsink	$f = 1\text{ MHz}$	-	10	-	pF

REVERSE DIODE LIMITING VALUES AND CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{DR}	Continuous reverse drain current	-	-	-	7.6	A
I_{DRM}	Pulsed reverse drain current	-	-	-	30	A
V_{SD}	Diode forward voltage	$I_F = 7.6\text{ A}; V_{GS} = 0\text{ V}$	-	1.0	1.5	V
t_{rr}	Reverse recovery time	$I_F = 7.6\text{ A}; -di_F/dt = 100\text{ A}/\mu\text{s};$	-	150	-	ns
Q_{rr}	Reverse recovery charge	$V_{GS} = 0\text{ V}; V_R = 30\text{ V}$	-	1.3	-	μC

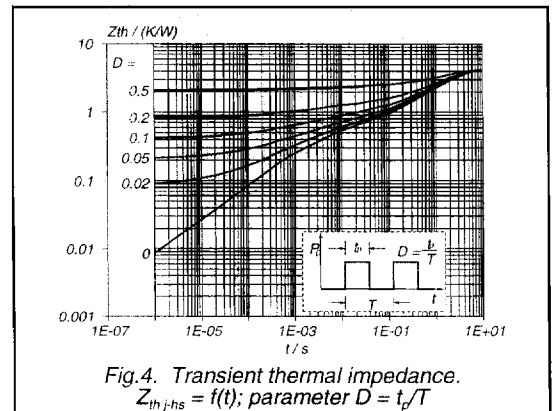
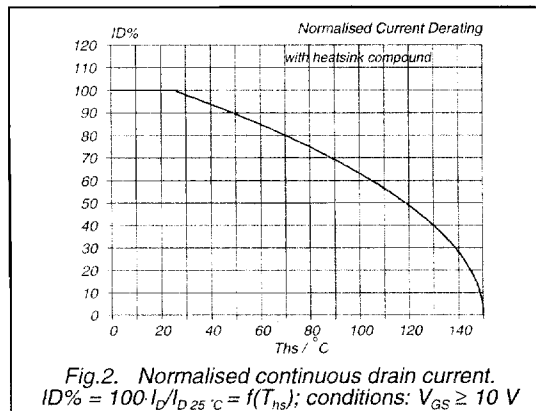
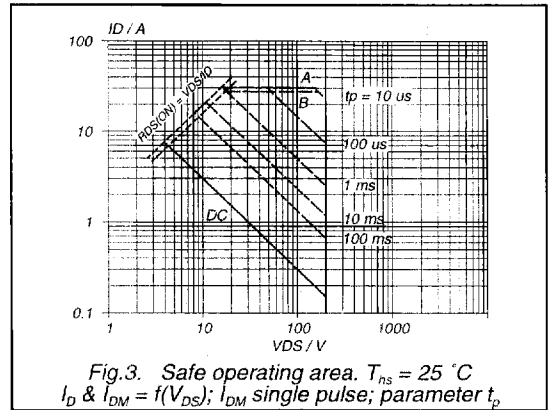
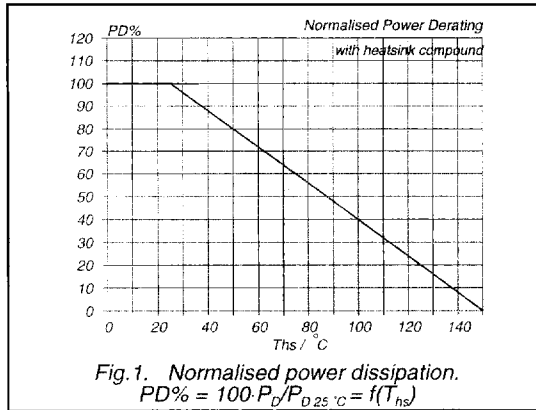
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AVALANCHE LIMITING VALUE

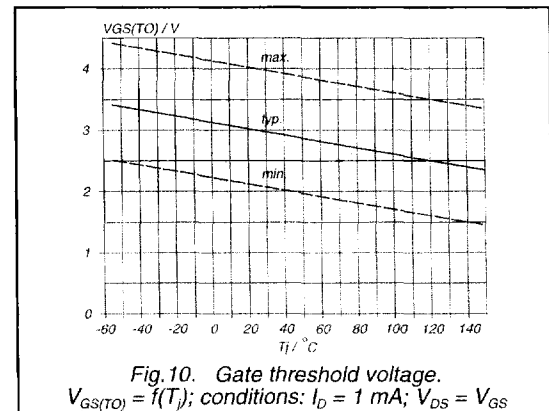
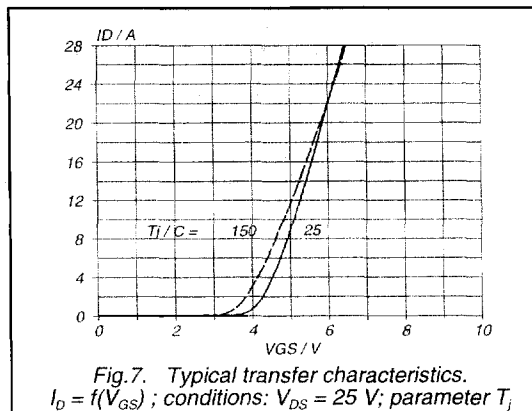
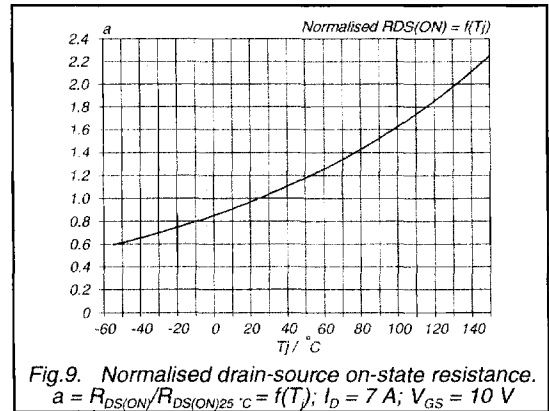
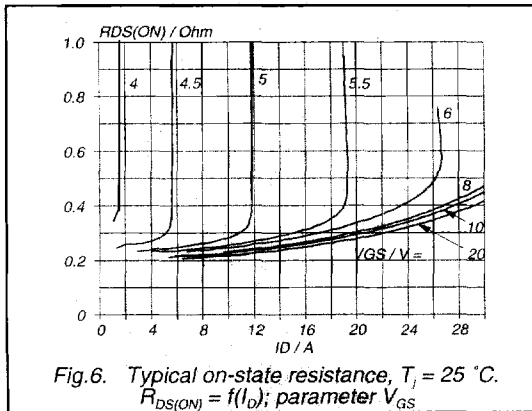
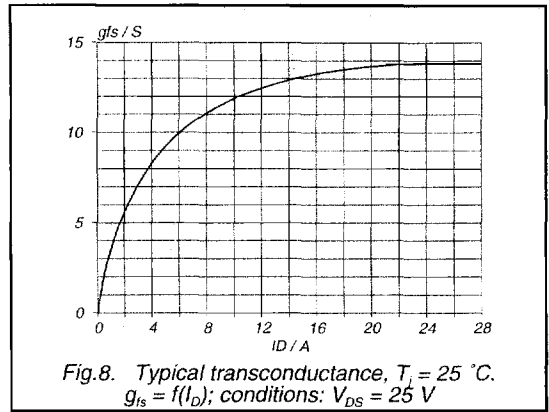
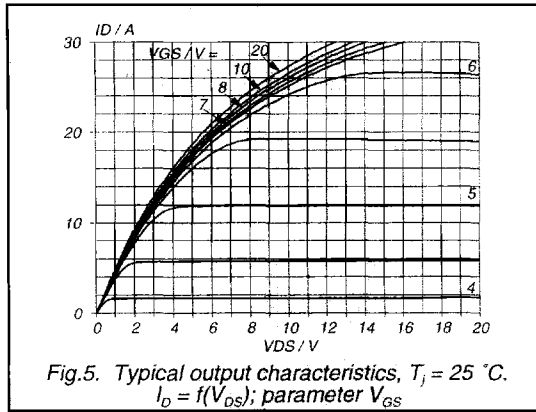
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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
W_{DSS}	Drain-source non-repetitive unclamped inductive turn-off energy	$I_D = 14\text{ A}$; $V_{DD} \leq 100\text{ V}$; $V_{GS} = 10\text{ V}$; $R_{GS} = 50\text{ }\Omega$	-	-	100	mJ



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