

PowerMOS transistor

BUK436W-200A/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.

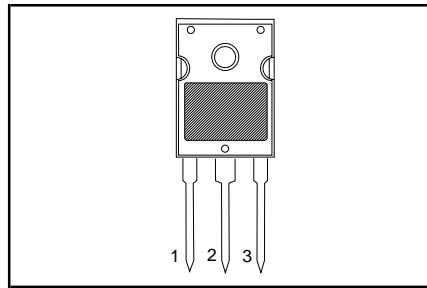
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BUK436			
V_{DS}	Drain-source voltage	-200A 200	-200B 200	V
I_D	Drain current (DC)	19	17	A
P_{tot}	Total power dissipation	125	125	W
$R_{DS(ON)}$	Drain-source on-state resistance	0.16	0.2	Ω

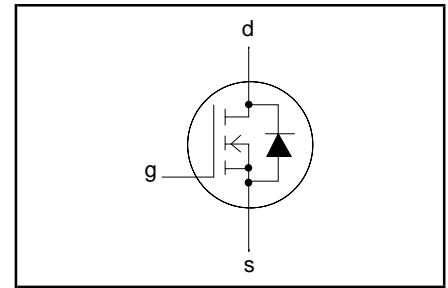
PINNING - SOT429 (TO247)

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	-	-	200	V
V_{DGR}	Drain-gate voltage	$R_{GS} = 20\text{ k}\Omega$	-	200	V
$\pm V_{GS}$	Gate-source voltage	-	-	30	V
I_D	Drain current (DC)	$T_{mb} = 25\text{ }^\circ\text{C}$	-	-200A 19	A
I_D	Drain current (DC)	$T_{mb} = 100\text{ }^\circ\text{C}$	-	17	A
I_{DM}	Drain current (pulse peak value)	$T_{mb} = 25\text{ }^\circ\text{C}$	-	-200B 12	A
P_{tot}	Total power dissipation	$T_{mb} = 25\text{ }^\circ\text{C}$	-	76	A
T_{stg}	Storage temperature	-	- 55	125	W
T_j	Junction Temperature	-	-	150	$^\circ\text{C}$

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		-	45	-	K/W

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STATIC CHARACTERISTICST_{mb} = 25 °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	200	-	-	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} = 200 V; V _{GS} = 0 V; T _j = 25 °C	-	1	10	μA
I _{DSS}	Zero gate voltage drain current	V _{DS} = 200 V; V _{GS} = 0 V; T _j = 125 °C	-	0.1	1.0	mA
I _{GSS}	Gate source leakage current	V _{GS} = ±30 V; V _{DS} = 0 V	-	10	100	nA
R _{DS(ON)}	Drain-source on-state resistance	V _{GS} = 10 V; I _D = 10 A	-	0.15	0.16	Ω
		BUK436-200A	-	0.17	0.20	Ω
		BUK436-200B	-			

DYNAMIC CHARACTERISTICST_{mb} = 25 °C unless otherwise specified

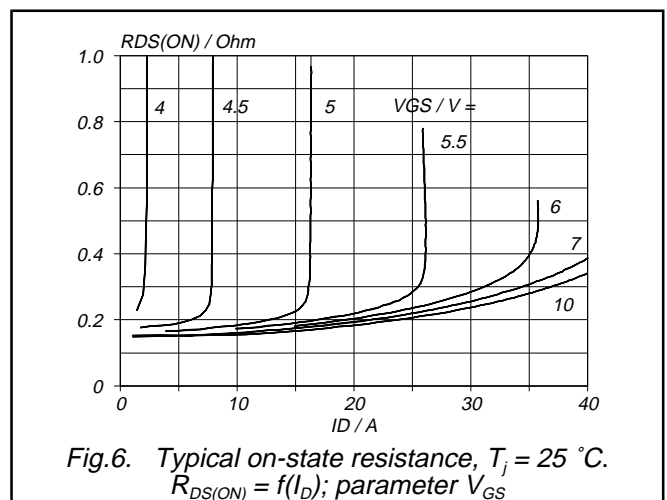
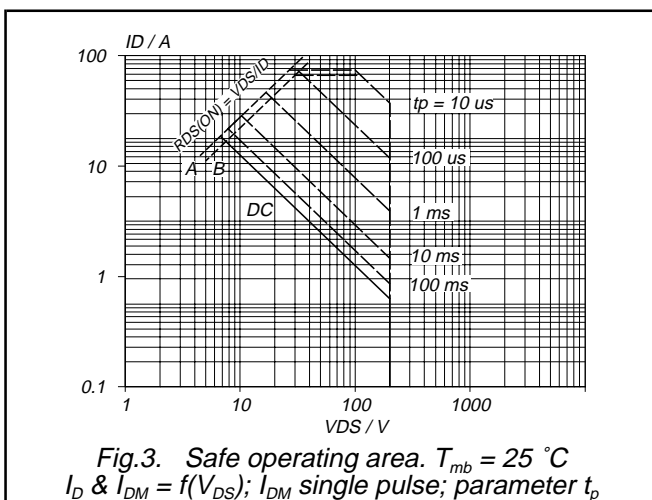
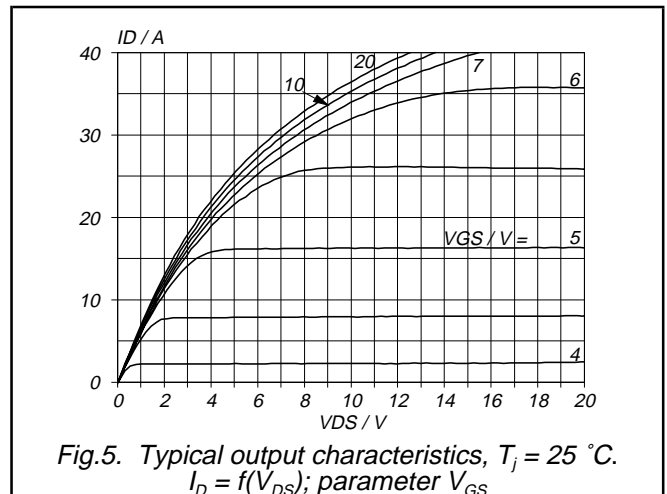
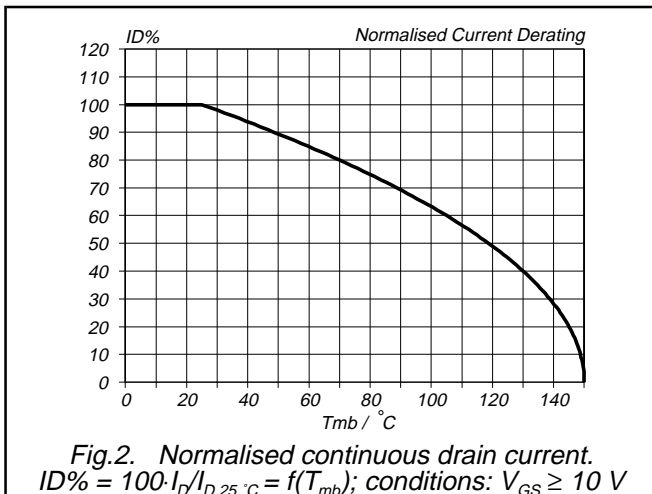
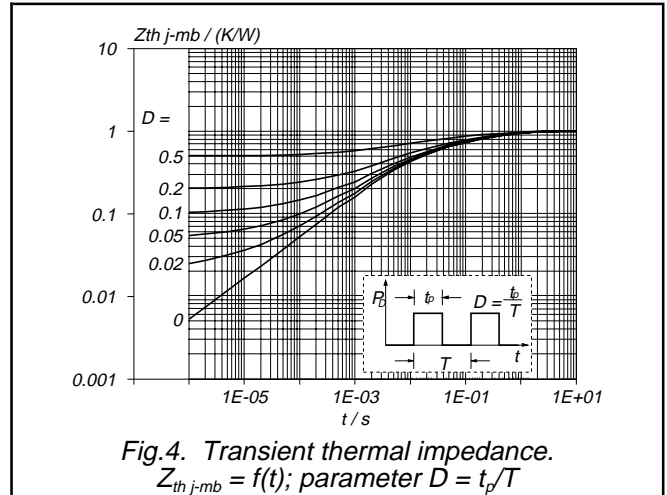
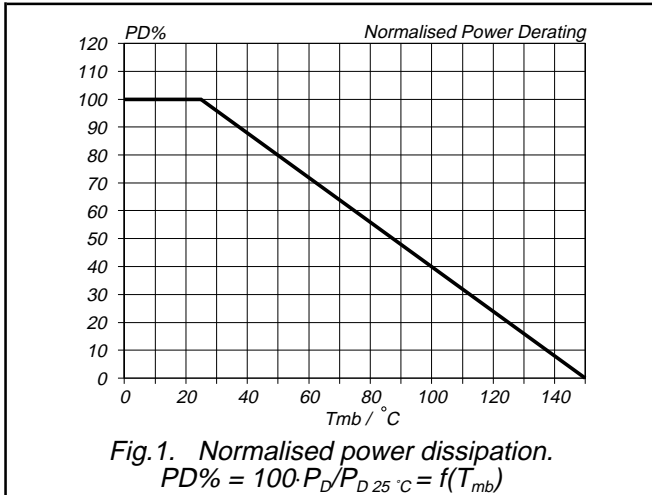
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
g _{fs}	Forward transconductance	V _{DS} = 25 V; I _D = 10 A	8.5	16	-	S
C _{iss}	Input capacitance	V _{GS} = 0 V; V _{DS} = 25 V; f = 1 MHz	-	1500	2000	pF
C _{oss}	Output capacitance		-	300	400	pF
C _{rss}	Feedback capacitance		-	60	100	pF
t _{d on}	Turn-on delay time	V _{DD} = 30 V; I _D = 3 A; V _{GS} = 10 V; R _{gen} = 50 Ω; R _{GS} = 50 Ω	-	20	30	ns
t _r	Turn-on rise time		-	40	60	ns
t _{d off}	Turn-off delay time		-	145	185	ns
t _f	Turn-off fall time		-	50	70	ns
L _d	Internal drain inductance	Measured from contact screw on tab to centre of die	-	5	-	nH
L _d	Internal drain inductance	Measured from drain lead 6 mm from package to centre of die	-	5	-	nH
L _s	Internal source inductance	Measured from source lead 6 mm from package to source bond pad	-	12.5	-	nH

REVERSE DIODE LIMITING VALUES AND CHARACTERISTICST_{mb} = 25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{DR}	Continuous reverse drain current	-	-	-	19	A
I _{DRM}	Pulsed reverse drain current	-	-	-	76	A
V _{SD}	Diode forward voltage	I _F = 19 A; V _{GS} = 0 V	-	1.0	1.7	V
t _{rr}	Reverse recovery time	I _F = 19 A; -di _F /dt = 100 A/μs;	-	180	-	ns
Q _{rr}	Reverse recovery charge	V _{GS} = 0 V; V _R = 30 V	-	2.5	-	μC

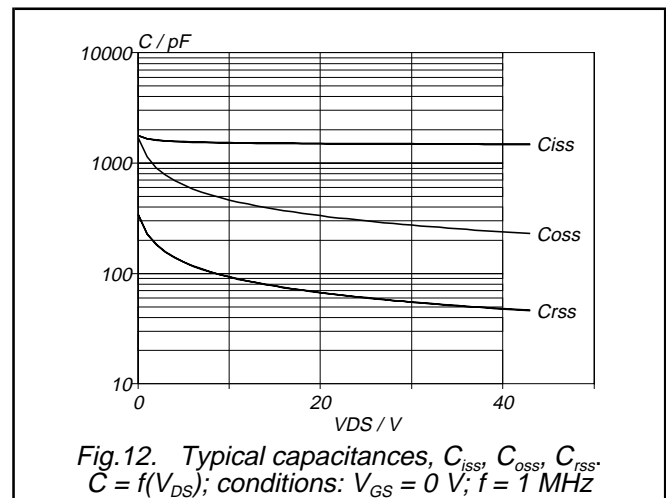
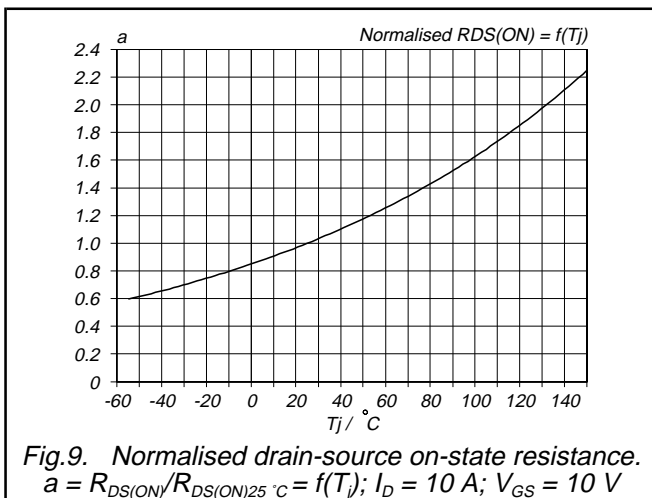
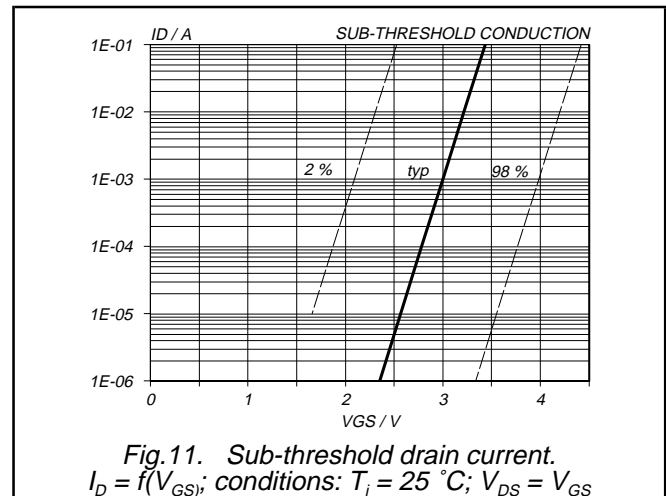
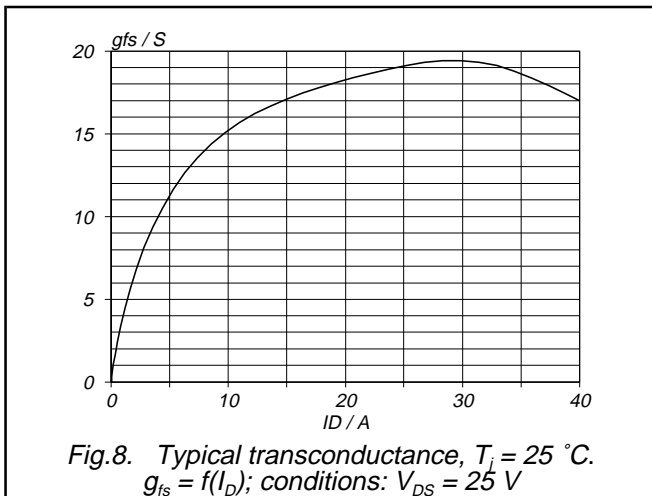
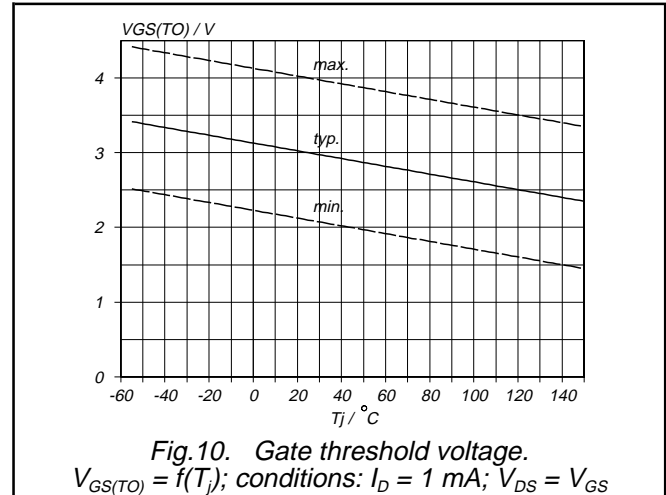
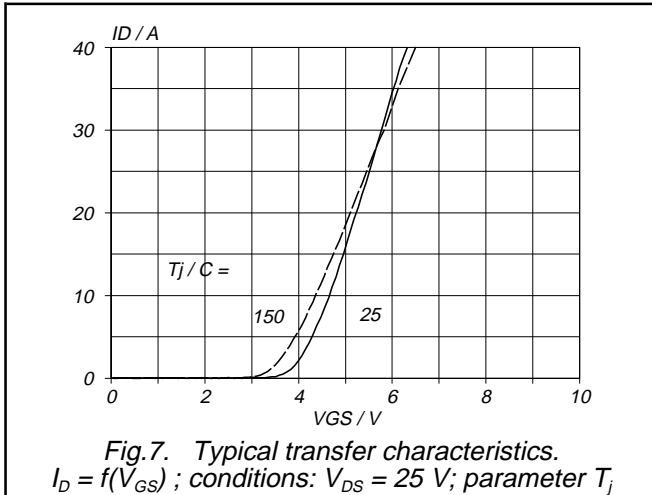
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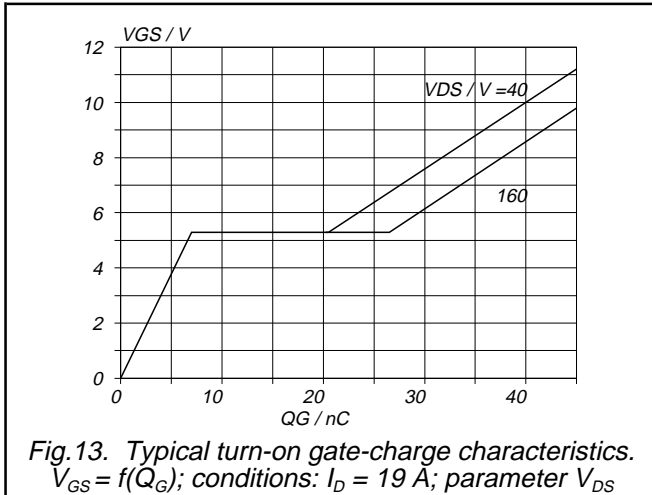


Fig.13. Typical turn-on gate-charge characteristics.
 $V_{GS} = f(Q_G)$; conditions: $I_D = 19\text{ A}$; parameter V_{DS}

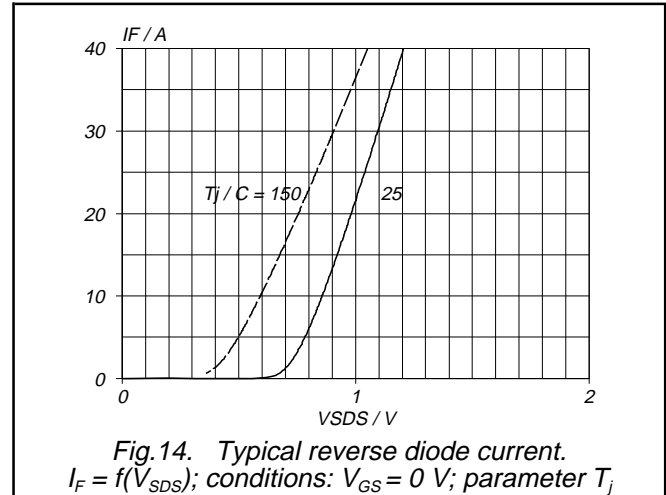
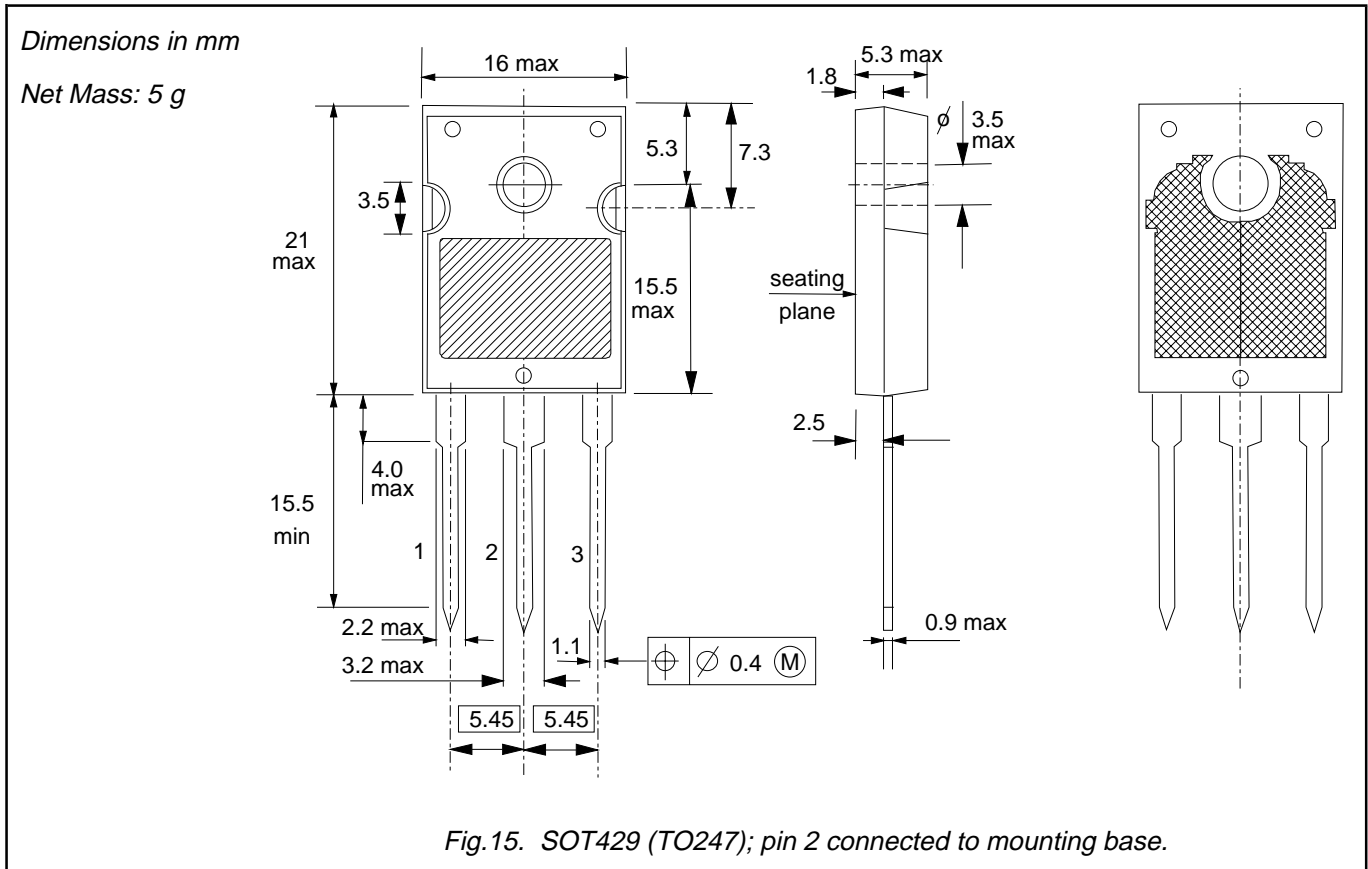


Fig.14. Typical reverse diode current.
 $I_F = f(V_{SDS})$; conditions: $V_{GS} = 0\text{ V}$; parameter T_j

MECHANICAL DATA



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 SOT429 envelopes.
3. Epoxy meets UL94 V0 at 1/8".

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DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	
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