TAVAKOL ELECTRONIC
توکل الکترونیک
مرجع تخصصی تأمین قطعات الکترونیکی اورجینال
این دیتاشیت توسط توکل الکترونیک تهیه و ارائه شده است.
جهت مشاهده قیمت، موجودی و ثبت سفارش این قطعه به وب‌سایت توکل الکترونیک مراجعه فرمایید.
مشاهده قیمت و خرید
برای خرید و مشاهده سایر محصولات کلیک کنید
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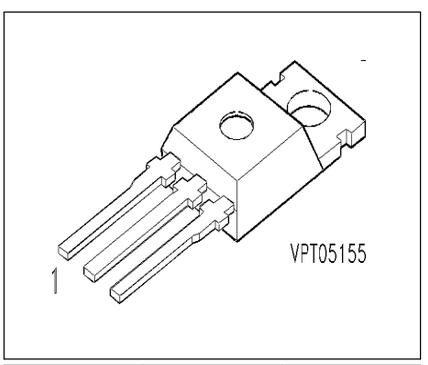
SIEMENS **BUZ 51**

SIPMOS ® Power Transistor

- N channel
- Enhancement mode
- Avalanche-rated



Pin 1	Pin 2	Pin 3
G	D	S

Type	V_{DS}	I_D	$R_{DS(on)}$	Package	Ordering Code
BUZ 51	1000 V	3.4 A	4 Ω	TO-220 AB	C67078-S1344-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Continuous drain current T_C = 29 °C	I_D	3.4	A
Pulsed drain current T_C = 25 °C	I_{Dpuls}	13.5	
Avalanche current,limited by T_{jmax}	I_{AR}	3.4	
Avalanche energy,periodic limited by T_{jmax}	E_{AR}	12	mJ
Avalanche energy, single pulse I_D = 3.4 A, V_{DD} = 50 V, R_{GS} = 25 Ω L = 67 mH, T_j = 25 °C	E_{AS}	410	
Gate source voltage	V_{GS}	± 20	V
Power dissipation T_C = 25 °C	P_{tot}	125	W
Operating temperature	T_j	-55 ... + 150	°C
Storage temperature	T_{stg}	-55 ... + 150	
Thermal resistance, chip case	R_{thJC}	≤ 1	K/W
Thermal resistance, chip to ambient	R_{thJA}	75	
DIN humidity category, DIN 40 040		E	
IEC climatic category, DIN IEC 68-1		55 / 150 / 56	

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Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain- source breakdown voltage V_{GS} = 0 V, I_D = 0.25 mA, T_j = 25 °C	$V_{(BR)DSS}$	1000	-	-	V
Gate threshold voltage V_{GS}=V_{DS}, I_D = 1 mA	$V_{GS(th)}$	2.1	3	4	
Zero gate voltage drain current V_{DS} = 1000 V, V_{GS} = 0 V, T_j = 25 °C V_{DS} = 1000 V, V_{GS} = 0 V, T_j = 125 °C	I_{DSS}	- -	0.1 10	1 100	µA
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0 V	I_{GSS}	-	10	100	nA
Drain-Source on-resistance V_{GS} = 10 V, I_D = 2.2 A	$R_{DS(on)}$	-	3.6	4	Ω

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Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}$, I_D = 2.2 A	g_{fs}	1	3	-	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	980	1300	pF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	-	85	130	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	-	45	70	
Turn-on delay time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.1 A R_{GS} = 50 Ω	$t_{d(on)}$	-	15	25	ns
Rise time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.1 A R_{GS} = 50 Ω	t_r	-	70	105	
Turn-off delay time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.1 A R_{GS} = 50 Ω	$t_{d(off)}$	-	175	235	
Fall time V_{DD} = 30 V, V_{GS} = 10 V, I_D = 2.1 A R_{GS} = 50 Ω	t_f	-	70	95	

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Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse Diode					
Inverse diode continuous forward current T_C = 25 °C	I_S	-	-	3.4	A
Inverse diode direct current,pulsed T_C = 25 °C	I_{SM}	-	-	13.5	
Inverse diode forward voltage V_{GS} = 0 V, I_F = 6.8 A	V_{SD}	-	0.95	1.4	V
Reverse recovery time V_R = 100 V, I_F=I_S, di_F/dt = 100 A/µs	t_{rr}	-	0.3	-	µs
Reverse recovery charge V_R = 100 V, I_F=I_S, di_F/dt = 100 A/µs	Q_{rr}	-	2.5	-	µC

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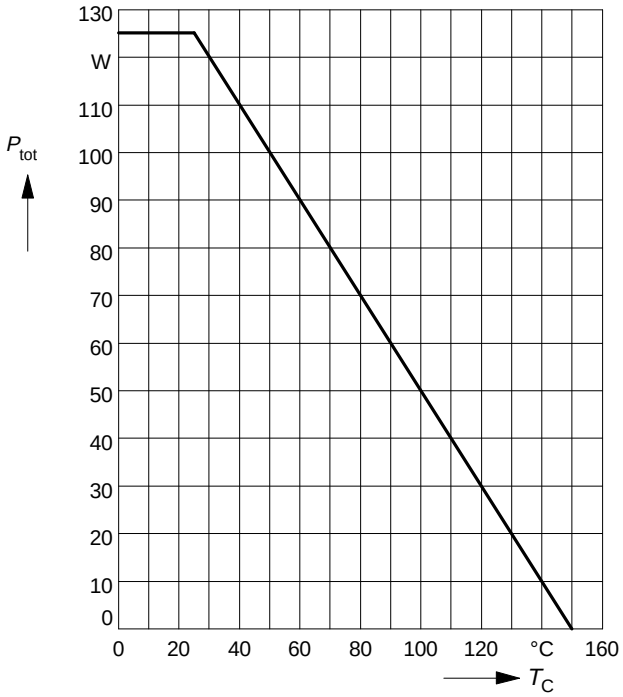
Power dissipation

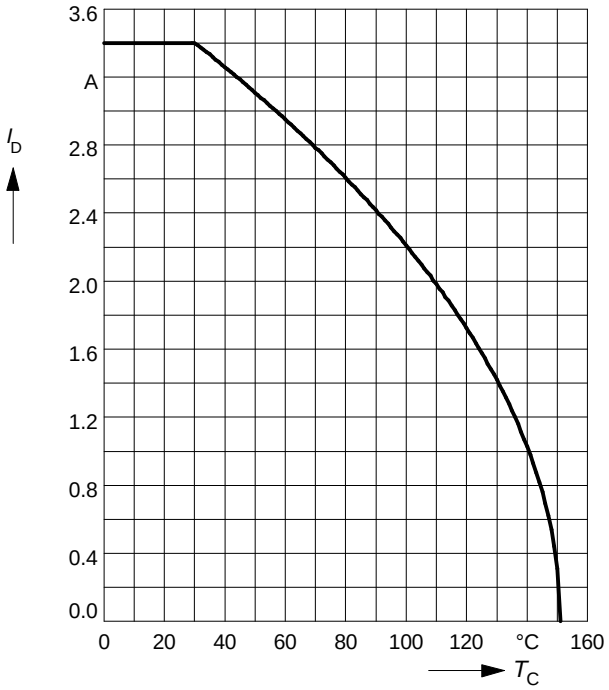
$P_{tot} = f(T_C)$



Drain current

$I_D = f(T_C)$

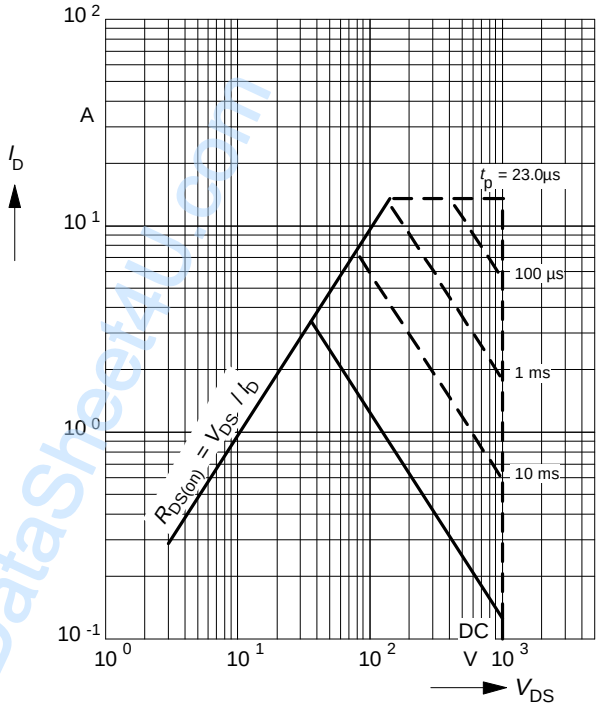
parameter: $V_{GS} \geq 10$ V



Safe operating area

$I_D = f(V_{DS})$

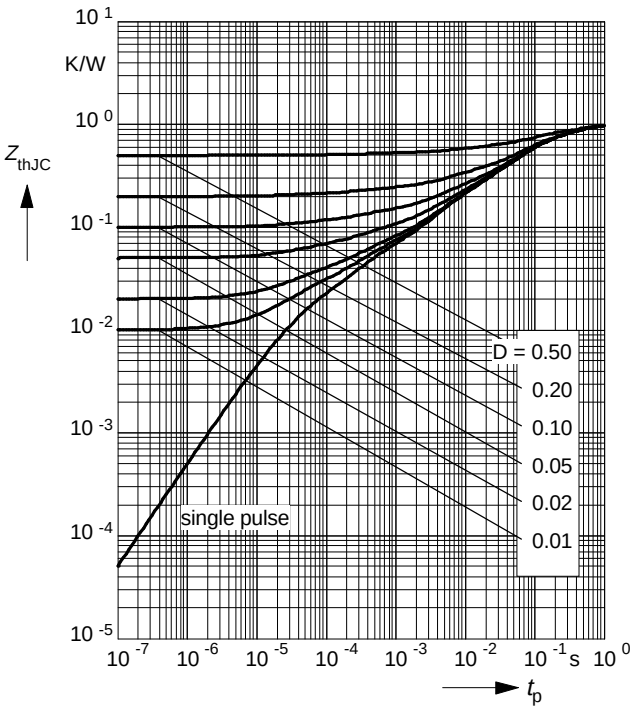
parameter: $D = 0.01$, $T_C = 25$°C



Transient thermal impedance

$Z_{th\,JC} = f(t_p)$

parameter: $D = t_p / T$



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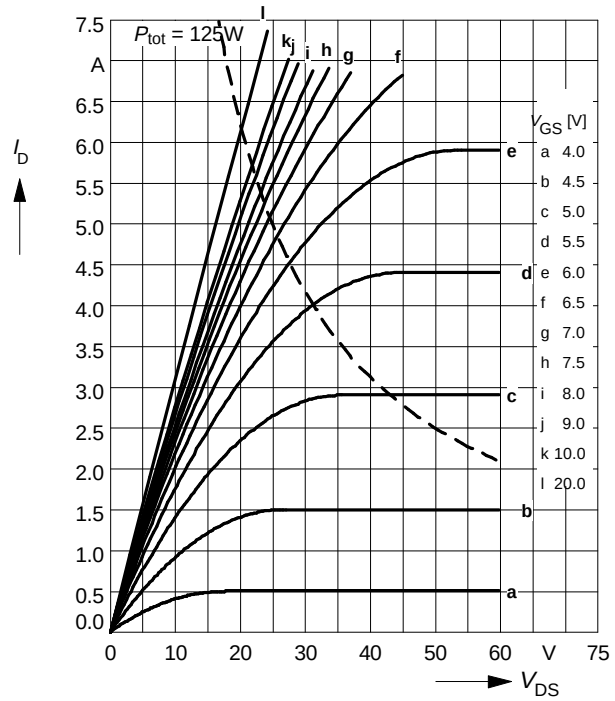
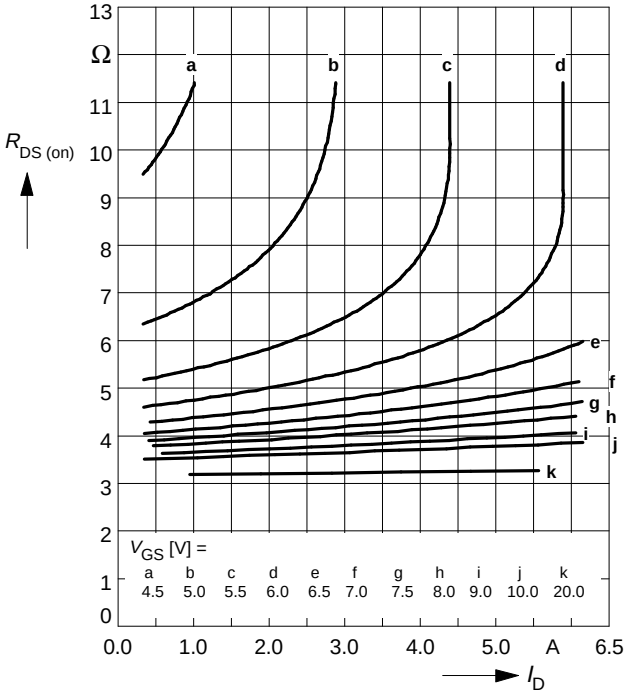
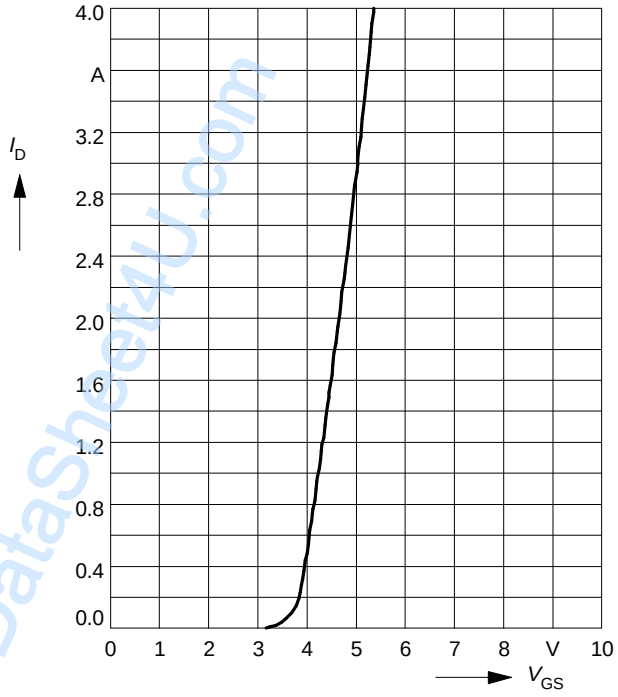
Typ. output characteristics
$I_D = f(V_{DS})$
parameter: t_p = 80 µs



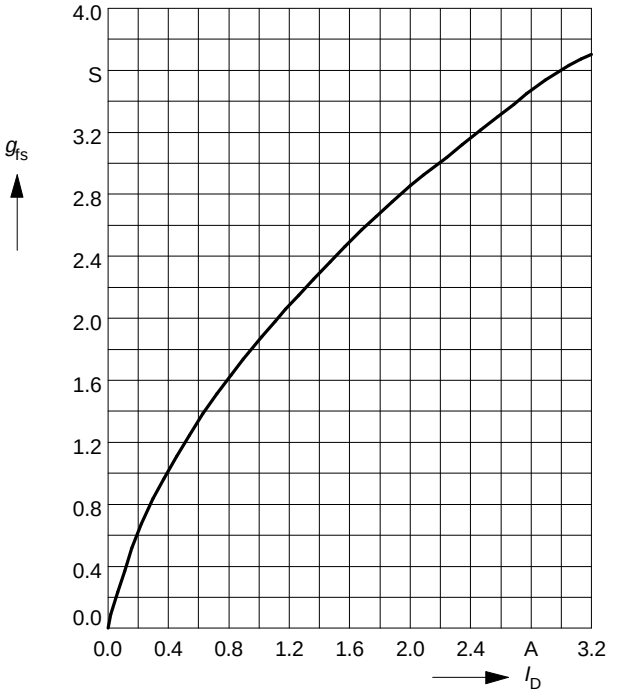
Typ. drain-source on-resistance
$R_{DS\ (on)} = f(I_D)$
parameter: V_{GS}



Typ. transfer characteristics $I_D = f(V_{GS})$
parameter: t_p = 80 µs
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



Typ. forward transconductance $g_{fs} = f(I_D)$
parameter: t_p = 80 µs,
$V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$



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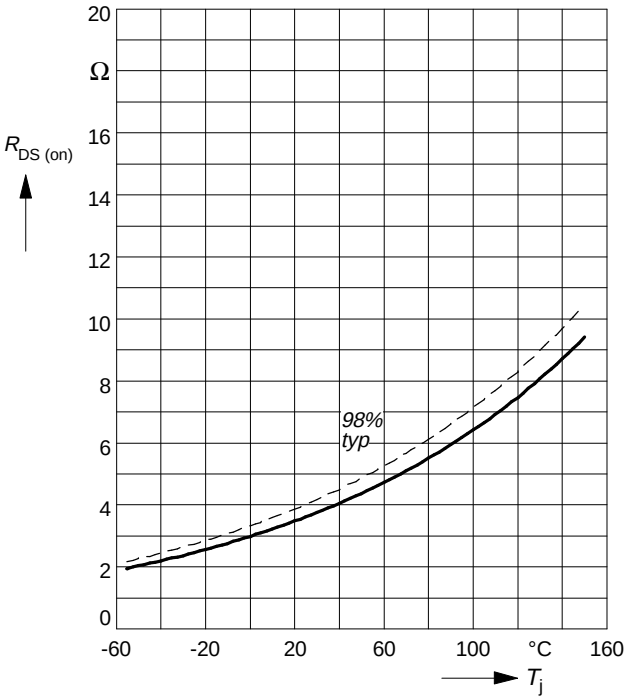
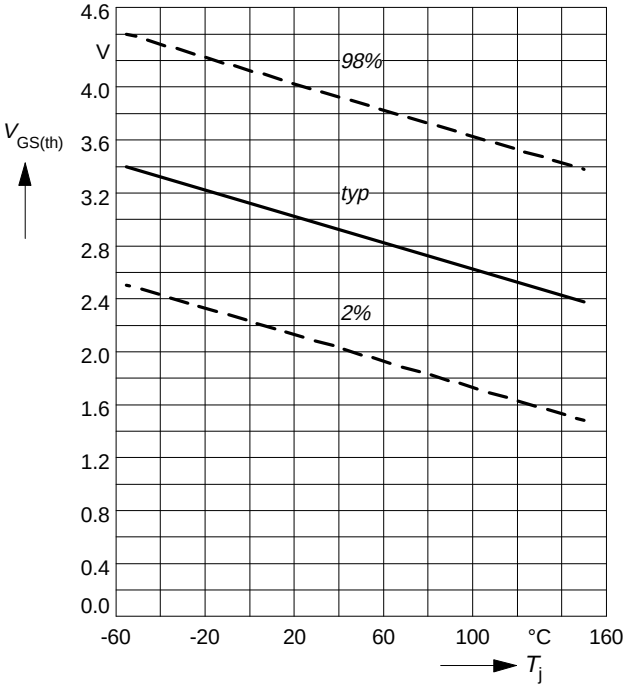
Drain-source on-resistance

$R_{DS\ (on)} = f(T_j)$
parameter: I_D = 2.2 A, V_{GS} = 10 V



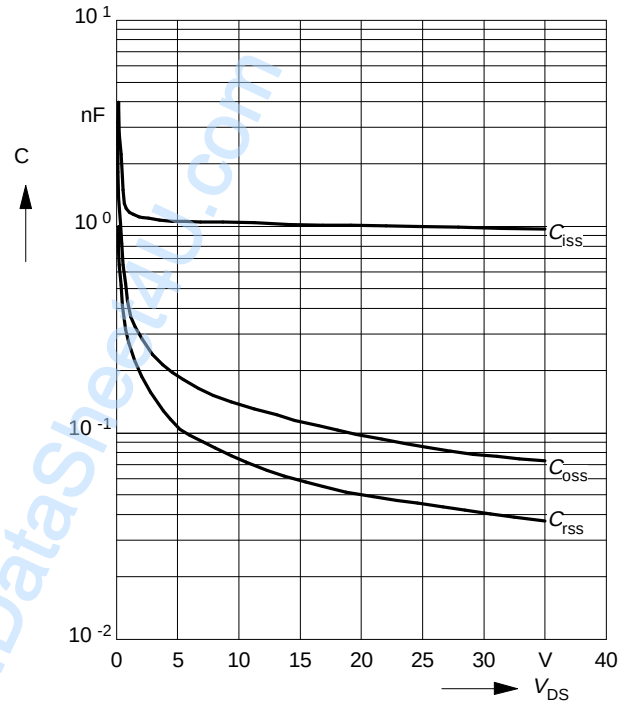
Gate threshold voltage

$V_{GS\ (th)} = f(T_j)$
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA



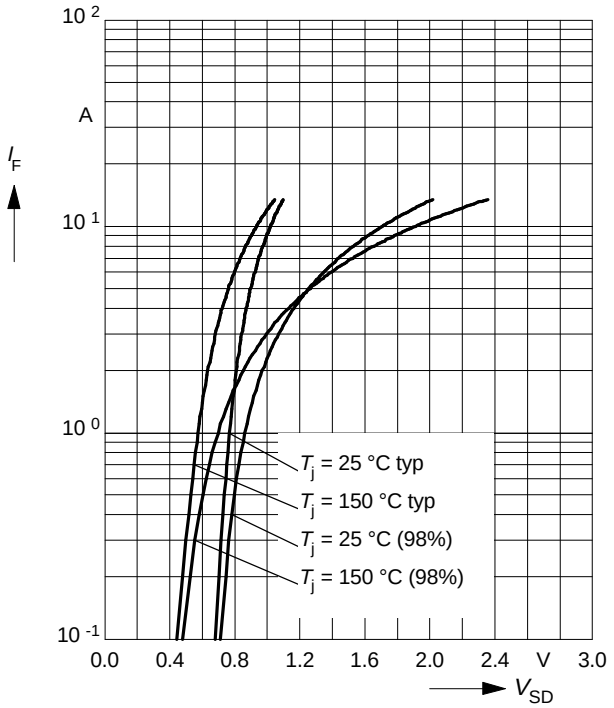
Typ. capacitances

$C = f(V_{DS})$
parameter: V_{GS} = 0V, f = 1MHz



Forward characteristics of reverse diode

$I_F = f(V_{SD})$
parameter: T_j, t_p = 80 µs



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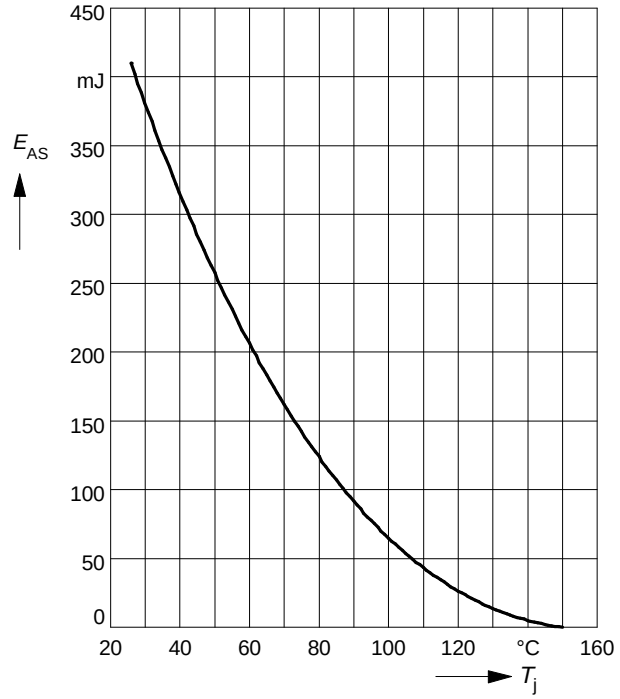
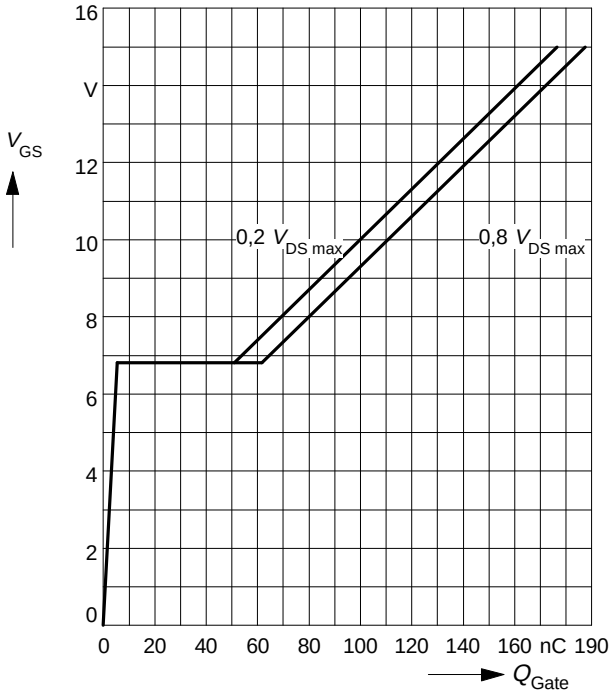
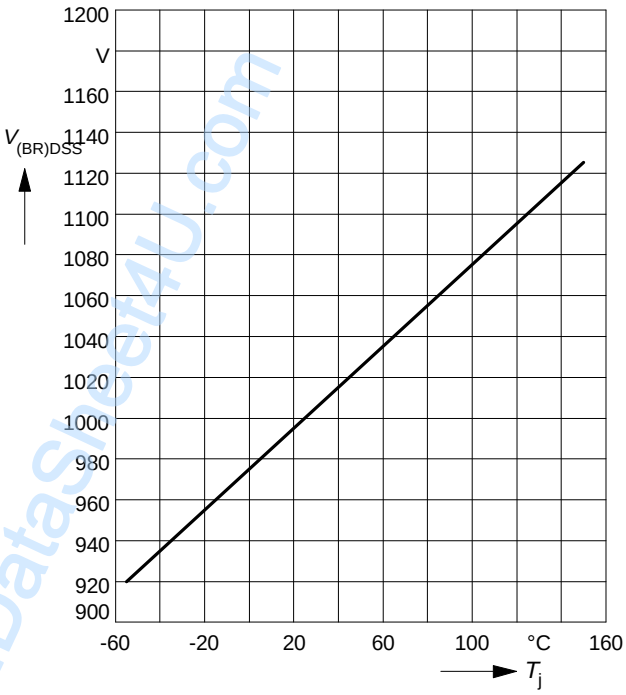
Avalanche energy $E_{AS} = f(T_j)$
parameter: I_D = 3.4 A, V_{DD} = 50 V
R_{GS} = 25 Ω, L = 67 mH



Typ. gate charge
$V_{GS} = f(Q_{Gate})$
parameter: $I_{D\ puls}$ = 5 A



Drain-source breakdown voltage
$V_{(BR)DSS} = f(T_j)$



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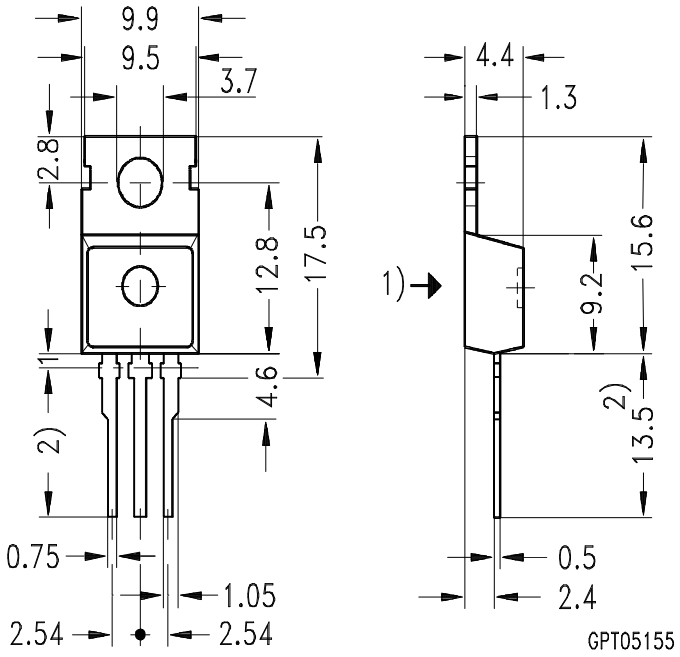
Package Outlines

TO-220 AB

Dimension in mm



1) punch direction, burr max. 0.04

2) dip tinning

3) max. 14.5 by dip tinning press burr max. 0.05

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