chanhvinh.com

BSD 223P

OptiMOS®-P Small-Signal-Transistor

Feature

- Dual P-Channel
- Enhancement mode
- Super Logic Level (2.5 V rated)
- 150°C operating temperature
- Avalanche rated
- d*v*/d*t* rated
- Pb-free lead plating; RoHS compliant
- Qualified according to AEC Q101
- Halogen-free according to IEC61249-2-21

Halogen-Free

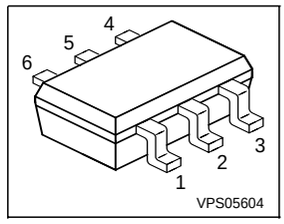
AEC Qualified

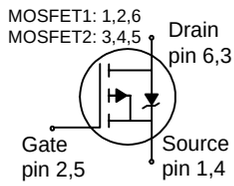
RoHS

Product Summary

V_{DS}	-20	V
$R_{DS(on)}$	1.2	Ω
I_D	-0.39	A

PG-SOT-363





Type	Package	Tape & Reel	Marking
BSD 223P	PG-SOT-363	H6327: 3000pcs/r	X1s

Maximum Ratings, at T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current	I_D		A
T_A=25°C		-0.39	
T_A=70°C		-0.31	
Pulsed drain current	$I_{D\ puls}$	-1.56	
T_A=25°C			
Avalanche energy, single pulse	E_{AS}	1.4	mJ
I_D=-0.39 A , V_{DD}=-10V, R_{GS}=25Ω			
Reverse diode d*v*/d*t*	d*v*/d*t*	-6	kV/µs
I_S=-0.39A, V_{DS}=-16V, d*i*/d*t*=200A/µs, T_{jmax}=150°C			
Gate source voltage	V_{GS}	±12	V
Power dissipation	P_{tot}	0.25	W
T_A=25°C			
Operating and storage temperature	T_j , T_{stg}	-55... +150	°C
IEC climatic category; DIN IEC 68-1		55/150/56	
ESD Class JESD22-A114-HBM		Class 0	

Downloaded from Arrow.com.

chanhvinh.com

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - soldering point	R_{thJS}	-	-	180	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	500	

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, I_D=-250µA	$V_{(BR)DSS}$	-20	-	-	V
Gate threshold voltage, V_{GS} = V_{DS} I_D=-1.5µA	$V_{GS(th)}$	-0.6	-0.9	-1.2	
Zero gate voltage drain current	I_{DSS}				µA
V_{DS}=-20V, V_{GS}=0, T_j=25°C		-	-0.1	-1	
V_{DS}=-20V, V_{GS}=0, T_j=150°C		-	-10	-100	
Gate-source leakage current V_{GS}=-12V, V_{DS}=0	I_{GSS}	-	-10	-100	nA
Drain-source on-state resistance V_{GS}=-2.5V, I_D=-0.29A	$R_{DS(on)}$	-	1.27	2.1	Ω
Drain-source on-state resistance V_{GS}=-4.5, I_D=-0.39A	$R_{DS(on)}$	-	0.7	1.2	

Downloaded from Arrow.com.

chanhvinh.com

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

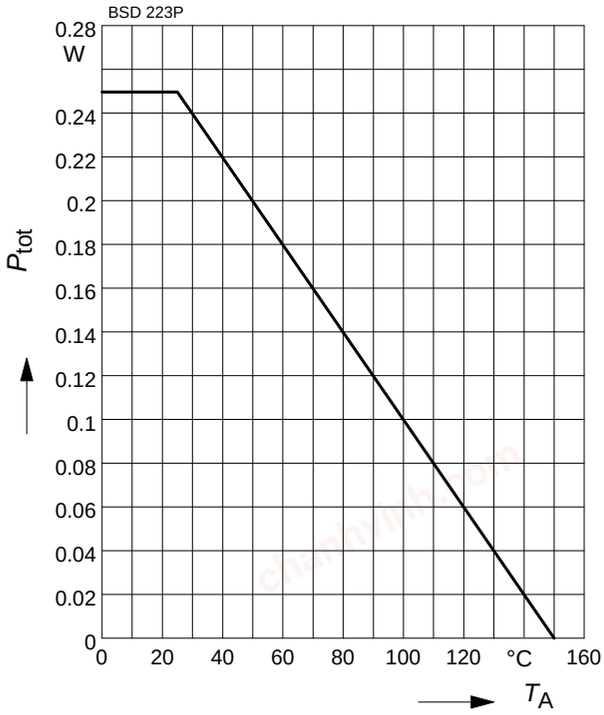
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Transconductance	g_{fs}	$\lvert V_{DS}\rvert \geq 2 * \lvert I_D\rvert * R_{DS(on)max}$, I_D=-0.31A	0.35	0.7	-	S
Input capacitance	C_{iss}	V_{GS}=0, V_{DS}=-15V, f=1MHz	-	45	56	pF
Output capacitance	C_{oss}		-	21	26	
Reverse transfer capacitance	C_{rss}		-	17	22	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-10V, V_{GS}=-4.5V, I_D=-0.39A, R_G=6Ω	-	3.8	5.7	ns
Rise time	t_r		-	5	7.5	
Turn-off delay time	$t_{d(off)}$		-	5.1	7.6	
Fall time	t_f		-	3.2	4.8	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=-10V, I_D=-0.39A	-	-0.04	-0.05	nC
Gate to drain charge	Q_{gd}		-	-0.4	-0.5	
Gate charge total	Q_g	V_{DD}=-10V, I_D=-0.39A, V_{GS}=0 to -4.5V	-	-0.5	-0.62	
Gate plateau voltage	$V_{(plateau)}$	V_{DD}=-10V, I_D=-0.39A	-	-2.2	-2.7	V
Reverse Diode						
Inverse diode continuous forward current	I_S	T_A=25°C	-	-	-0.39	A
Inv. diode direct current, pulsed	I_{SM}		-	-	-1.56	
Inverse diode forward voltage	V_{SD}	V_{GS}=0, I_F=-0.39	-	-1	-1.33	V
Reverse recovery time	t_{rr}	V_R=-10V, $\lvert I_F\rvert = \lvert I_D\rvert$, di_F/dt=100A/µs	-	7.6	9.5	ns
Reverse recovery charge	Q_{rr}		-	1.1	1.4	nC

Downloaded from Arrow.com.

chanhvinh.com

1 Power dissipation

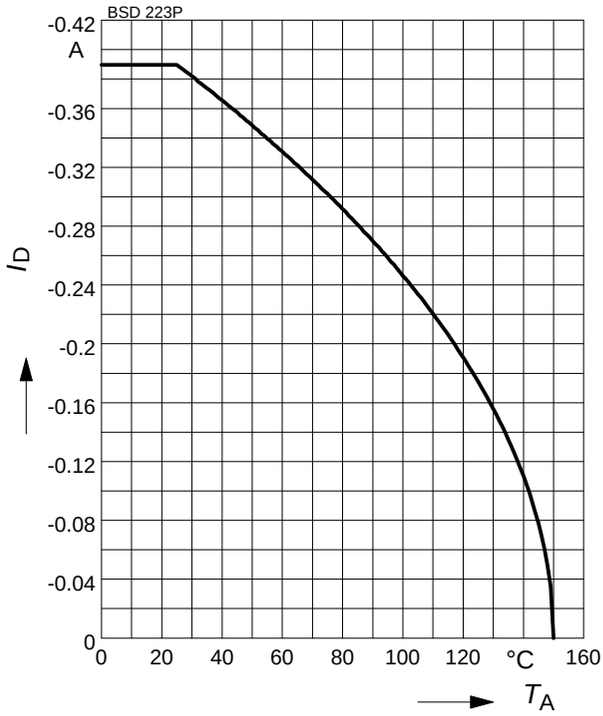
$P_{tot} = f(T_A)$



2 Drain current

$I_D = f(T_A)$

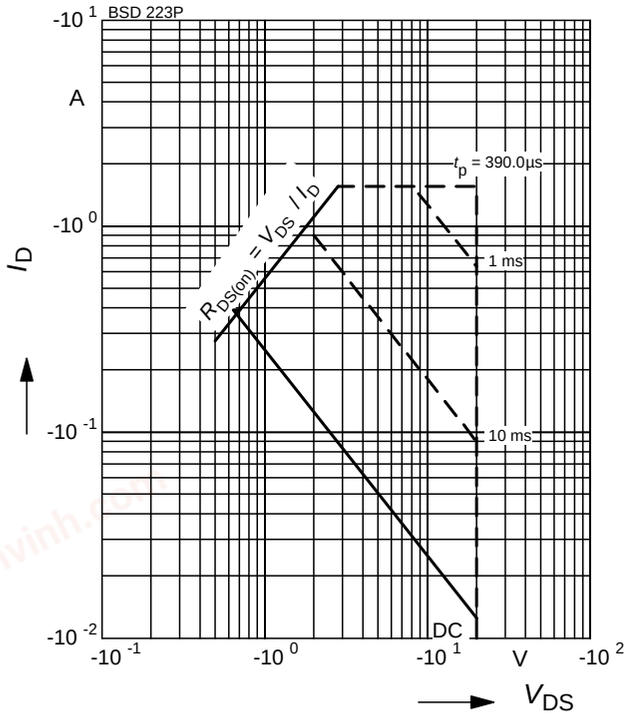
parameter: $|V_{GS}| \geq 4.5$ V



3 Safe operating area

$I_D = f(V_{DS})$

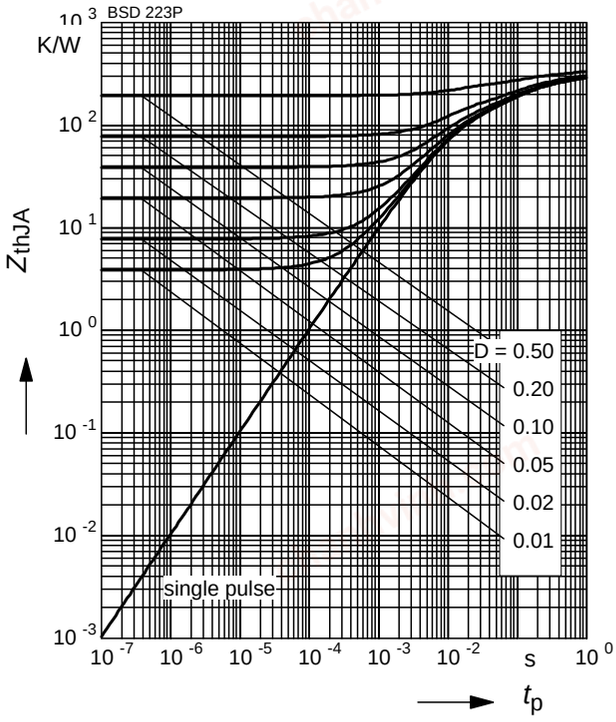
parameter : $D = 0$, $T_A = 25$ °C



4 Transient thermal impedance

$Z_{thJA} = f(t_p)$

parameter : $D = t_p/T$



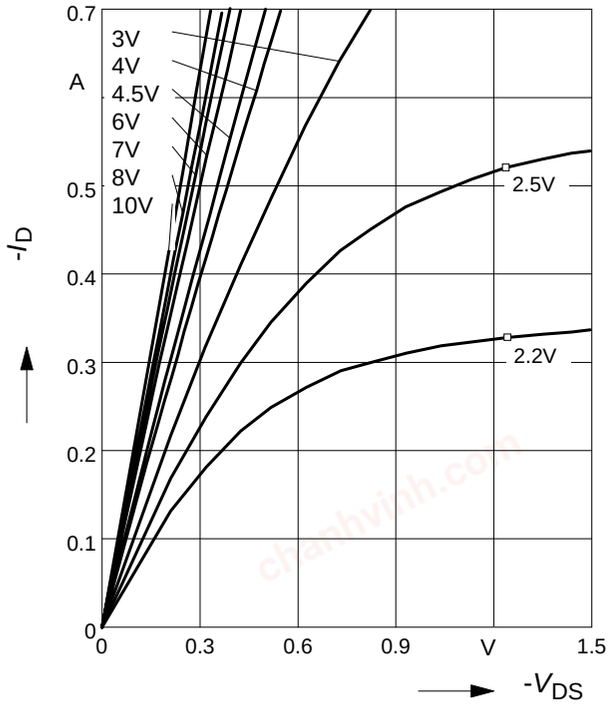
Downloaded from Arrow.com.

chanhvinh.com

5 Typ. output characteristic

$I_D = f(V_{DS})$

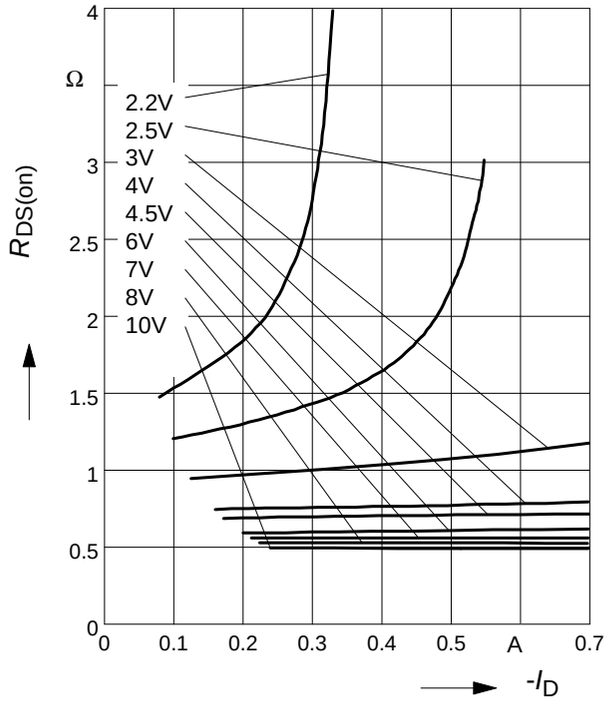
parameter: T_j =25°C



6 Typ. drain-source on resistance

$R_{DS(on)} = f(I_D)$

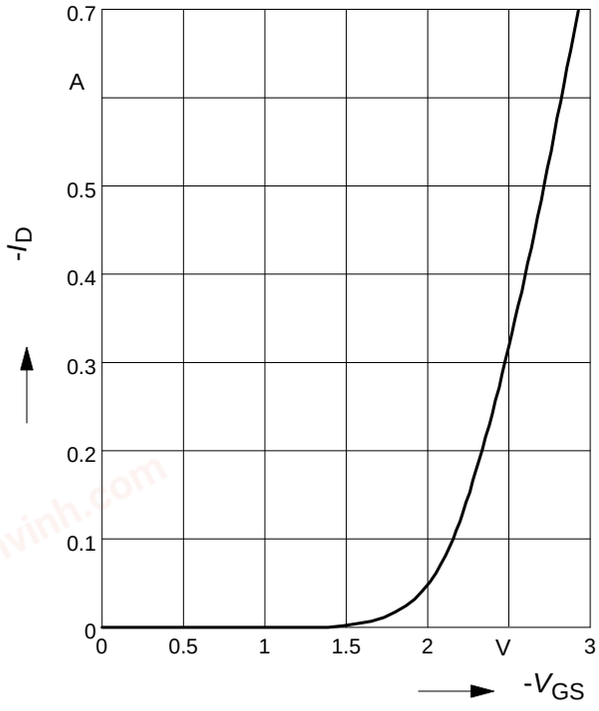
parameter: V_{GS}



7 Typ. transfer characteristics

$I_D = f(V_{GS})$; $|V_{DS}| \geq 2 \times |I_D| \times R_{DS(on)max}$

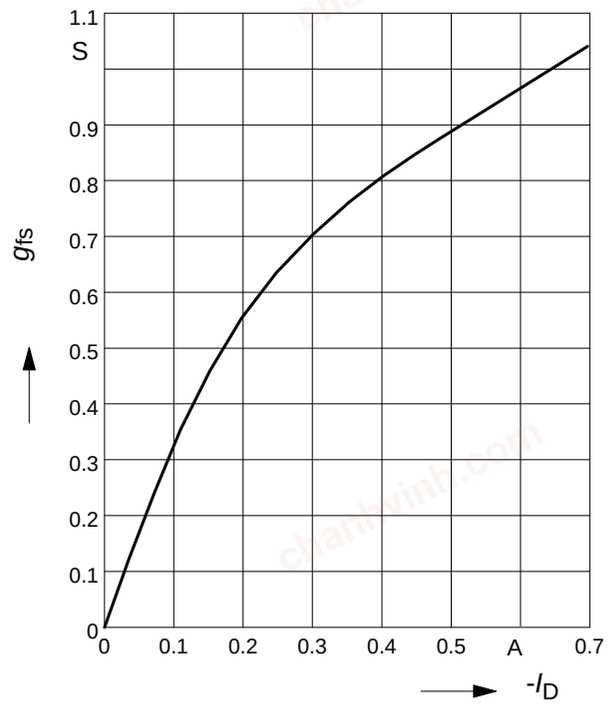
parameter: T_j = 25 °C



8 Typ. forward transconductance

$g_{fs} = f(I_D)$

parameter: T_j = 25 °C



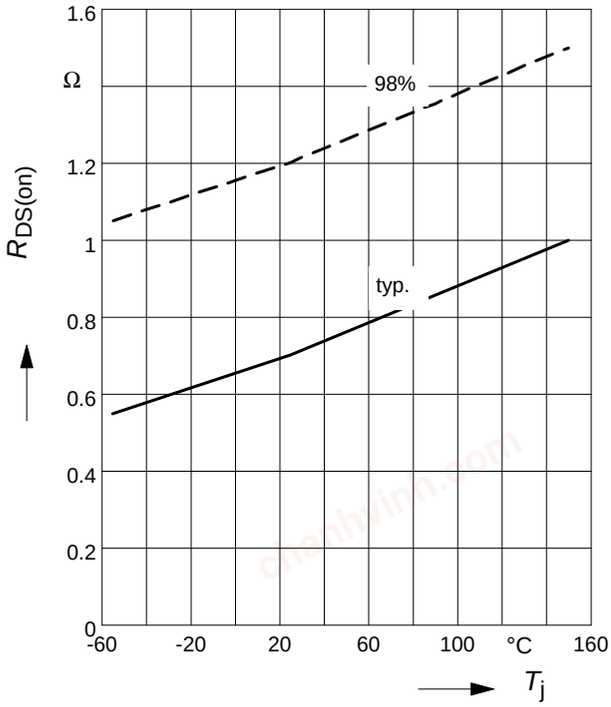
Downloaded from Arrow.com.

chanhvinh.com

9 Drain-source on-resistance

$R_{DS(on)} = f(T_j)$

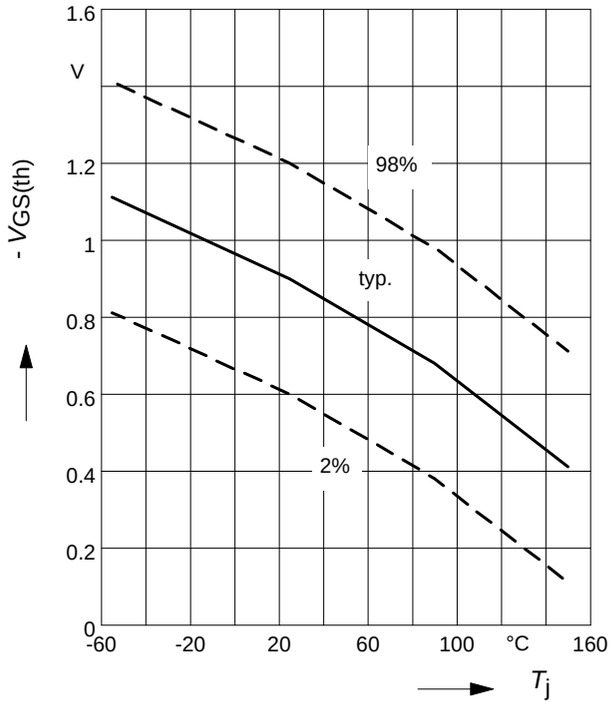
parameter: I_D = -0.39 A, V_{GS} = -4.5 V



10 Typ. gate threshold voltage

$V_{GS(th)} = f(T_j)$

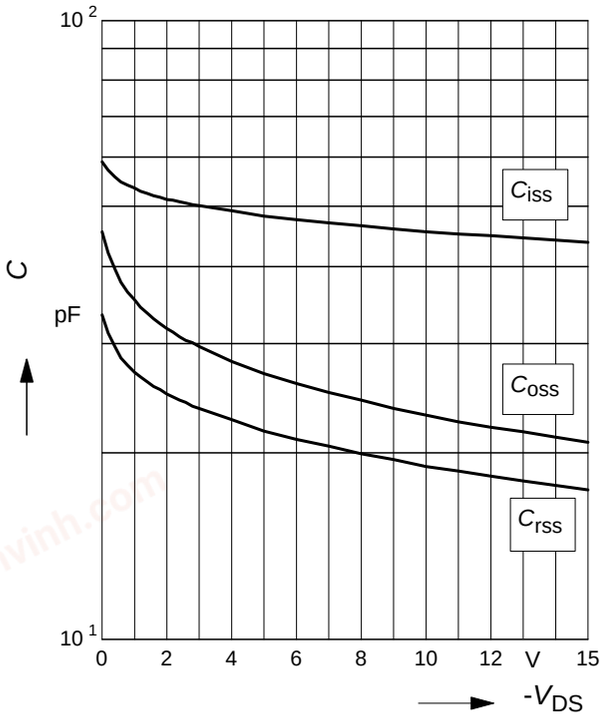
parameter: $V_{GS} = V_{DS}$



11 Typ. capacitances

$C = f(V_{DS})$

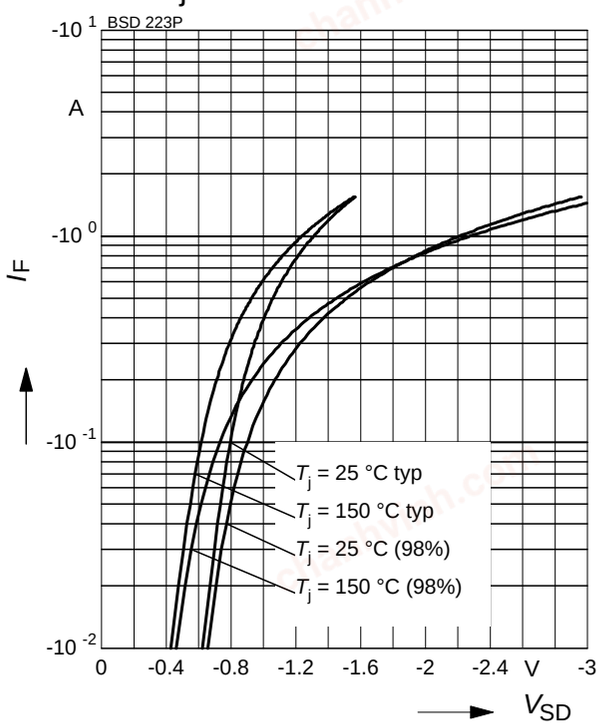
parameter: V_{GS}=0, f=1 MHz



12 Forward character. of reverse diode

$I_F = f(V_{SD})$

parameter: T_j



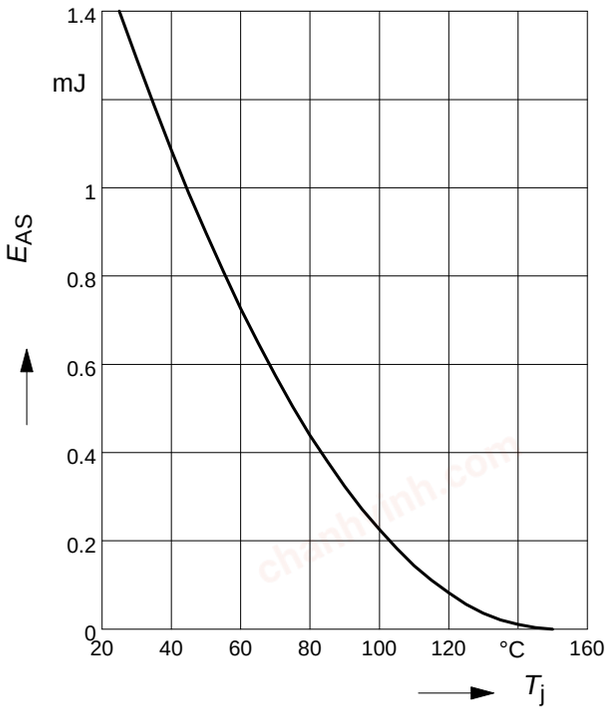
Downloaded from Arrow.com.

chanhvinh.com

13 Typ. avalanche energy

$E_{AS} = f(T_j)$, par.: I_D = -0.39 A

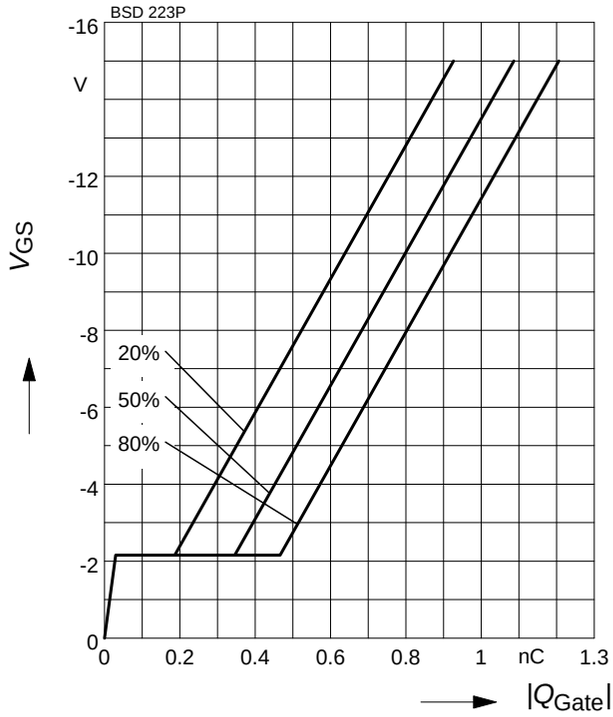
V_{DD} = -10 V, R_{GS} = 25 Ω



14 Typ. gate charge

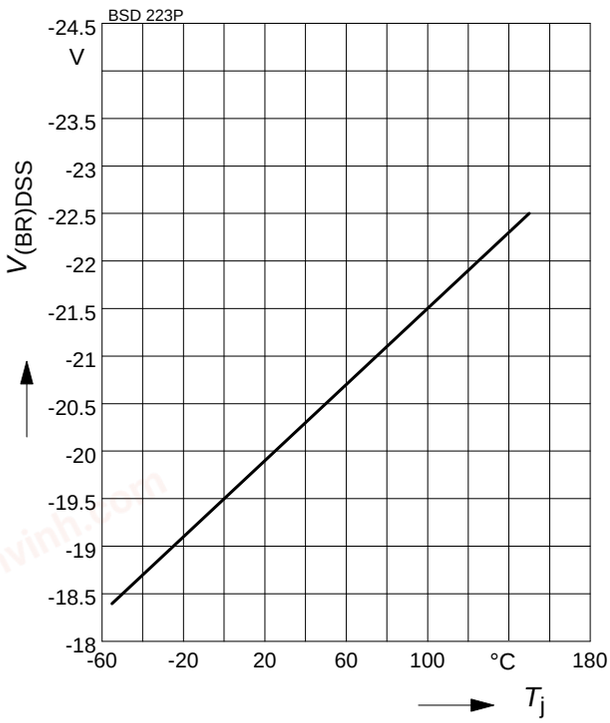
$V_{GS} = f(Q_{Gate})$

parameter: I_D = -0.39 A pulsed; T_j = 25 °C



15 Drain-source breakdown voltage

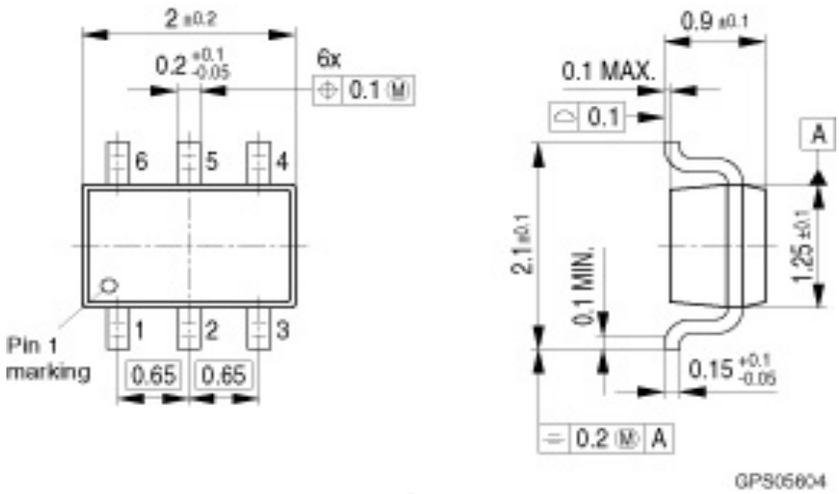
$V_{(BR)DSS} = f(T_j)$



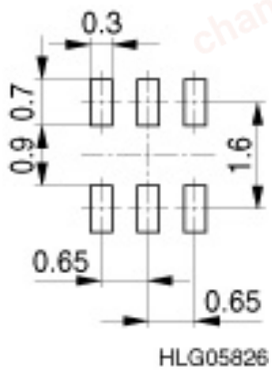
Downloaded from Arrow.com.

chanhvinh.com

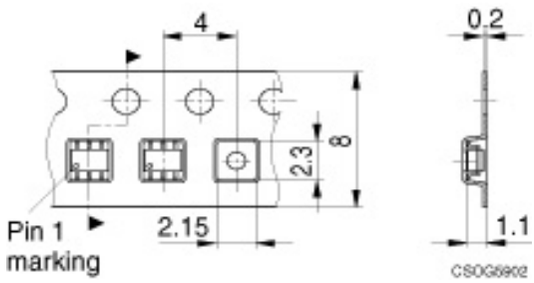
Package Outline:



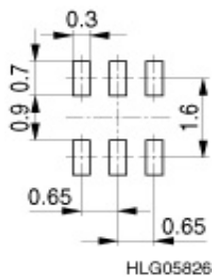
Footprint:



Packaging:



Reflow soldering:



Dimensions in mm

For symmetric types there is no defined Pin 1 orientation in the reel.

Downloaded from Arrow.com.

chanhvinh.com

Published by
Infineon Technologies AG
81726 Munich, Germany
© 2008 Infineon Technologies AG
All Rights Reserved.

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.
Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

Downloaded from Arrow.com.