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[BSS84P H6327](#)

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BSS84P

SIPMOS[®] Small-Signal-Transistor Feature

- P-Channel
- Enhancement mode
- Logic Level
- Avalanche rated
- dv/dt rated
- Pb-free lead plating; RoHS compliant
- Qualified according to AEC Q101
- Halogen-free according to IEC61249-2-21

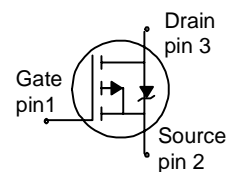
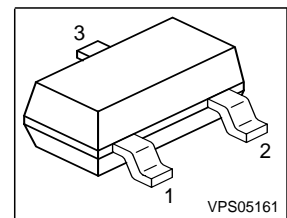


Halogen-Free

Product Summary

V_{DS}	-60	V
$R_{DS(on)}$	8	Ω
I_D	-0.17	A

PG-SOT-23



Type	Package	Tape and Reel	Marking
BSS84P	PG-SOT-23	H6327:3000pcs/r.	YBs
BSS84P	PG-SOT-23	H6433:10000pcs/r.	YBs

Maximum Ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current $T_A=25^\circ\text{C}$ $T_A=70^\circ\text{C}$	I_D	-0.17 -0.14	A
Pulsed drain current $T_A=25^\circ\text{C}$	$I_{D\text{ puls}}$	-0.68	
Avalanche energy, single pulse $I_D=-0.17\text{ A}$, $V_{DD}=-25\text{V}$, $R_{GS}=25\Omega$	E_{AS}	2.6	mJ
Avalanche energy, periodic limited by T_{jmax}	E_{AR}	0.036	
Reverse diode dv/dt $I_S=-0.17\text{A}$, $V_{DS}=-48\text{V}$, $di/dt=-200\text{A}/\mu\text{s}$, $T_{jmax}=150^\circ\text{C}$	dv/dt	-6	kV/ μs
Gate source voltage	V_{GS}	± 20	V
Power dissipation $T_A=25^\circ\text{C}$	P_{tot}	0.36	W
Operating and storage temperature	T_j, T_{stg}	-55... +150	$^\circ\text{C}$
IEC climatic category; DIN IEC 68-1		55/150/56	
ESD Class JESD22-A114-HBM		Class 0	


BSS84P
Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Characteristics

Thermal resistance, junction - soldering point (Pin 3)	R_{thJS}	-	-	200	K/W
SMD version, device on PCB: @ min. footprint	R_{thJA}	-	-	350	
@ 6 cm ² cooling area ¹⁾		-	-	300	

Electrical Characteristics, at $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

Static Characteristics

Drain-source breakdown voltage $V_{GS}=0$, $I_D=-250\mu\text{A}$	$V_{(BR)DSS}$	-60	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D=-20\mu\text{A}$	$V_{GS(th)}$	-1	-1.5	-2	
Zero gate voltage drain current $V_{DS}=-60\text{V}$, $V_{GS}=0$, $T_A=25\text{ }^\circ\text{C}$ $V_{DS}=-60\text{V}$, $V_{GS}=0$, $T_A=125\text{ }^\circ\text{C}$	I_{DSS}	-	-0.1	-1	μA
Gate-source leakage current $V_{GS}=-20\text{V}$, $V_{DS}=0$	I_{GSS}	-	-10	-100	
Drain-source on-state resistance $V_{GS}=-4.5\text{V}$, $I_D=-0.14\text{A}$	$R_{DS(on)}$	-	8	12	Ω
Drain-source on-state resistance $V_{GS}=-10\text{V}$, $I_D=-0.17\text{A}$	$R_{DS(on)}$	-	5.8	8	

¹⁾Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical without blown air.


BSS84P
Electrical Characteristics, at $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Dynamic Characteristics

Transconductance	g_{fs}	$V_{DS} \leq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = -0.14\text{A}$	0.065	0.13	-	S
Input capacitance	C_{iss}	$V_{GS} = 0$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$	-	15	19	pF
Output capacitance	C_{oss}		-	6	8	
Reverse transfer capacitance	C_{rss}		-	2	3	
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -30\text{V}$, $V_{GS} = -4.5\text{V}$, $I_D = -0.14\text{A}$, $R_G = 25\Omega$	-	6.7	10	ns
Rise time	t_r		-	16.2	24.3	
Turn-off delay time	$t_{d(off)}$		-	8.6	12.9	
Fall time	t_f		-	20.5	30.8	

Gate Charge Characteristics

Gate to source charge	Q_{gs}	$V_{DD} = -48\text{V}$, $I_D = -0.17\text{A}$	-	0.25	0.37	nC
Gate to drain charge	Q_{gd}		-	0.3	0.45	
Gate charge total	Q_g	$V_{DD} = -48\text{V}$, $I_D = -0.17\text{A}$, $V_{GS} = 0$ to -10V	-	1	1.5	
Gate plateau voltage	$V_{(plateau)}$	$V_{DD} = -48\text{V}$, $I_D = -0.17\text{A}$	-	-3.42	-	V

Reverse Diode

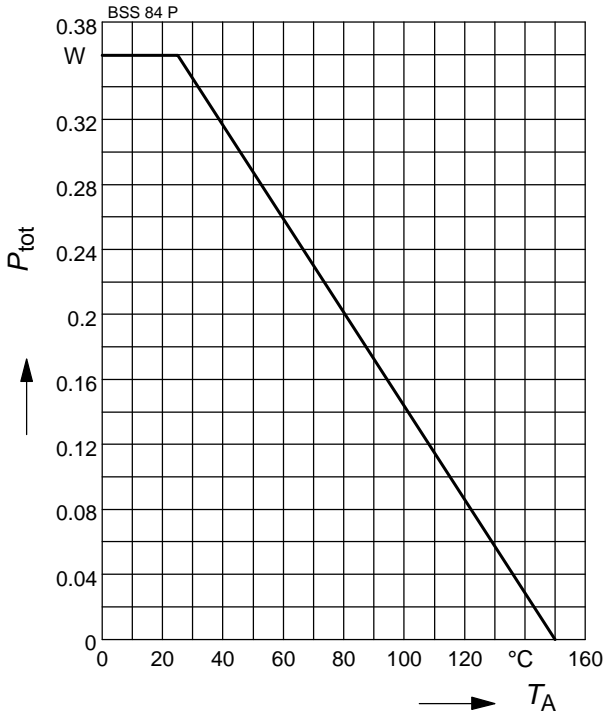
Inverse diode continuous forward current	I_S	$T_A = 25\text{ }^\circ\text{C}$	-	-	-0.17	A
Inv. diode direct current, pulsed	I_{SM}		-	-	-0.68	
Inverse diode forward voltage	V_{SD}	$V_{GS} = 0$, $I_F = -0.17\text{A}$	-	-0.93	-1.24	V
Reverse recovery time	t_{rr}	$V_R = -30\text{V}$, $I_F = I_S$, $di_F/dt = 100\text{A}/\mu\text{s}$	-	23	34	ns
Reverse recovery charge	Q_{rr}		-	10	15	nC



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1 Power dissipation

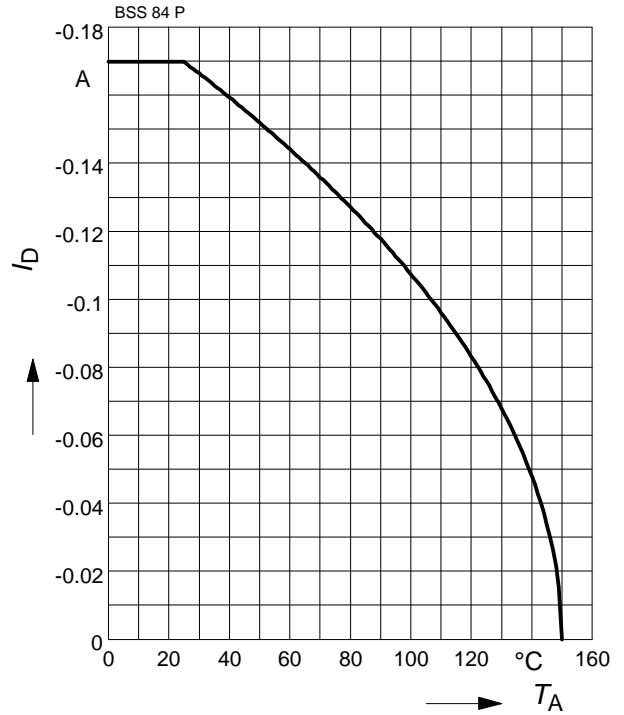
$P_{tot} = f(T_A)$



2 Drain current

$I_D = f(T_A)$

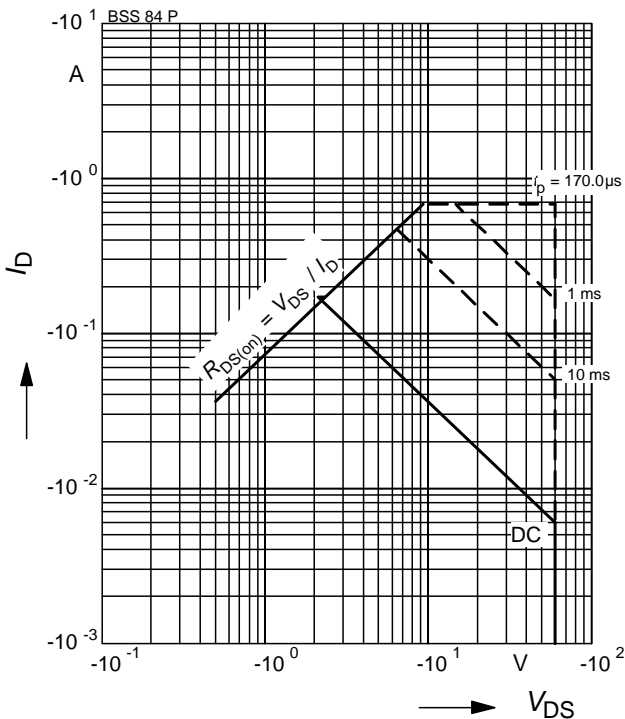
parameter: $V_{GS} \geq 10\text{ V}$



3 Safe operating area

$I_D = f(V_{DS})$

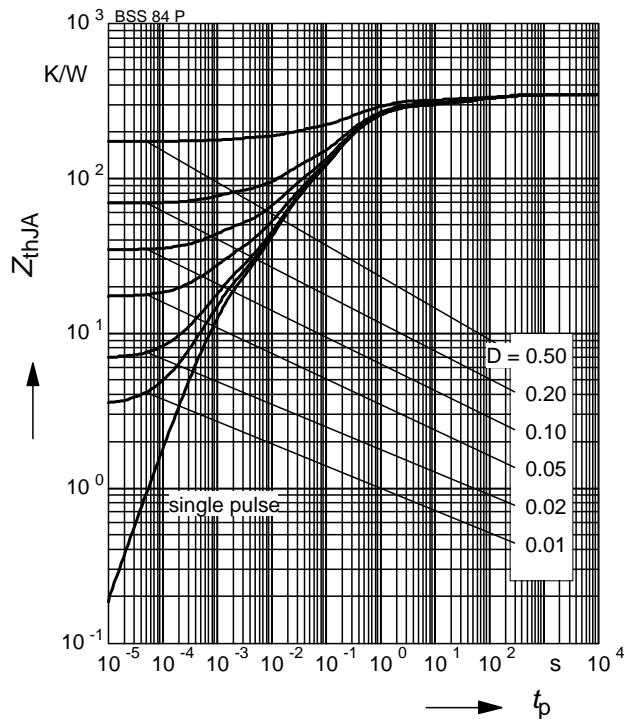
parameter : $D = 0$, $T_A = 25\text{ °C}$



4 Transient thermal impedance

$Z_{thJA} = f(t_p)$

parameter : $D = t_p/T$



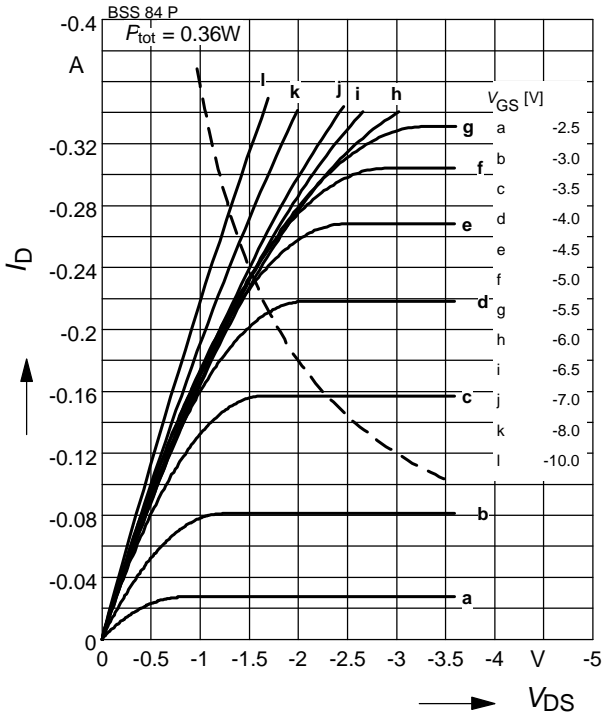


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5 Typ. output characteristic

$I_D = f(V_{DS})$

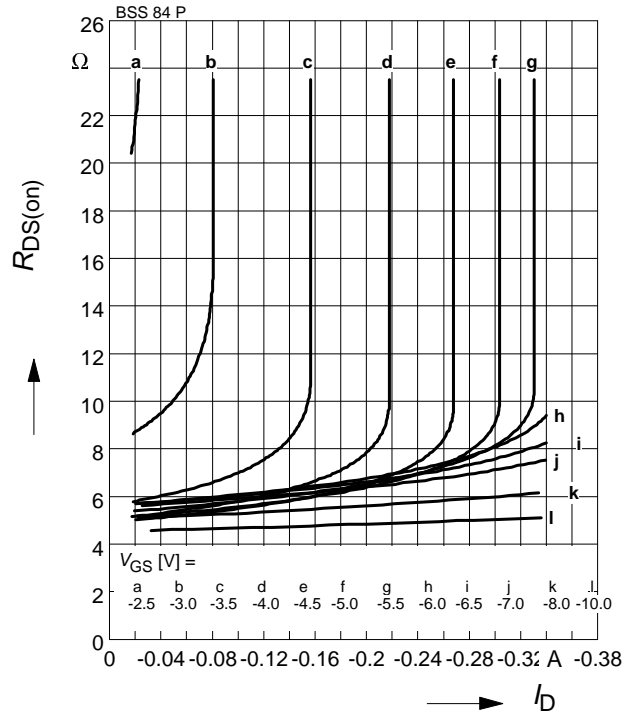
parameter: $T_j = 25\text{ °C}$



6 Typ. drain-source on resistance

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

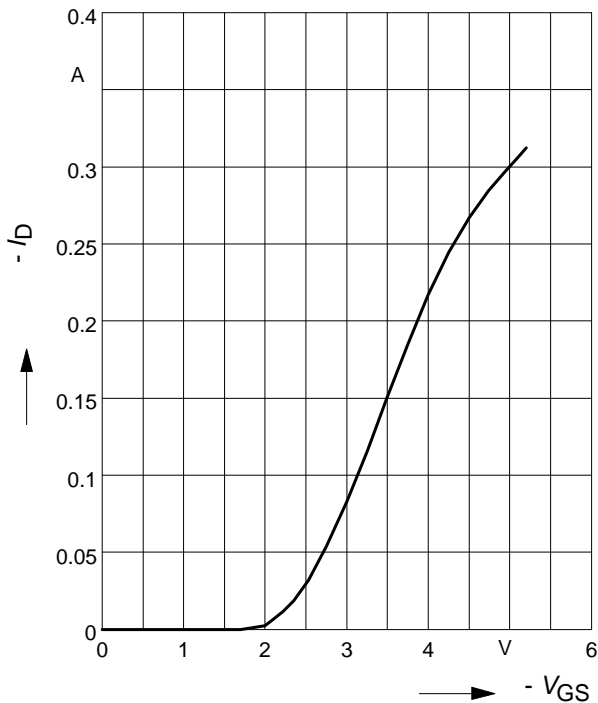
parameter: V_{GS} ; $T_j = 25\text{ °C}$



7 Typ. transfer characteristics

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

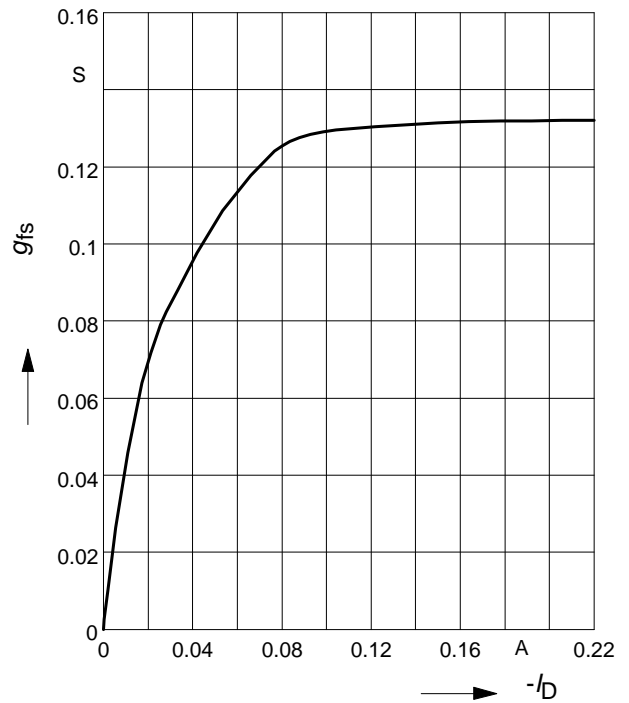
parameter: $T_j = 25\text{ °C}$



8 Typ. forward transconductance

$g_{fs} = f(I_D)$

parameter: $T_j = 25\text{ °C}$



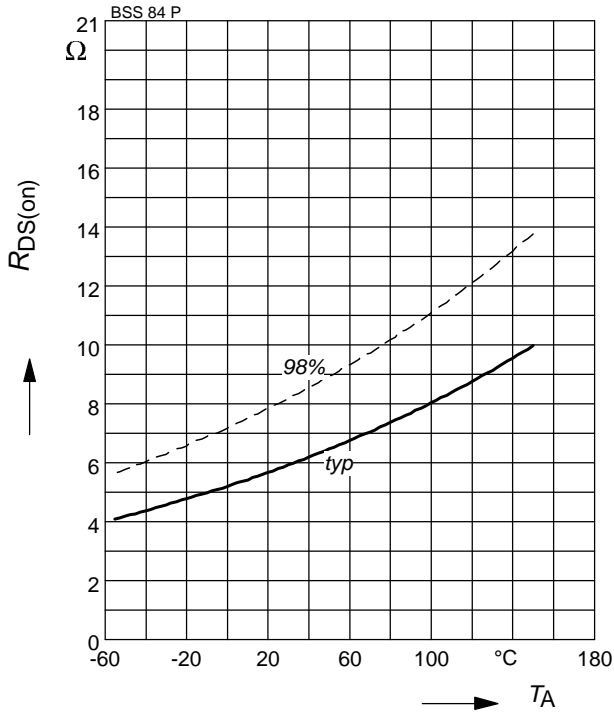


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9 Drain-source on-state resistance

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

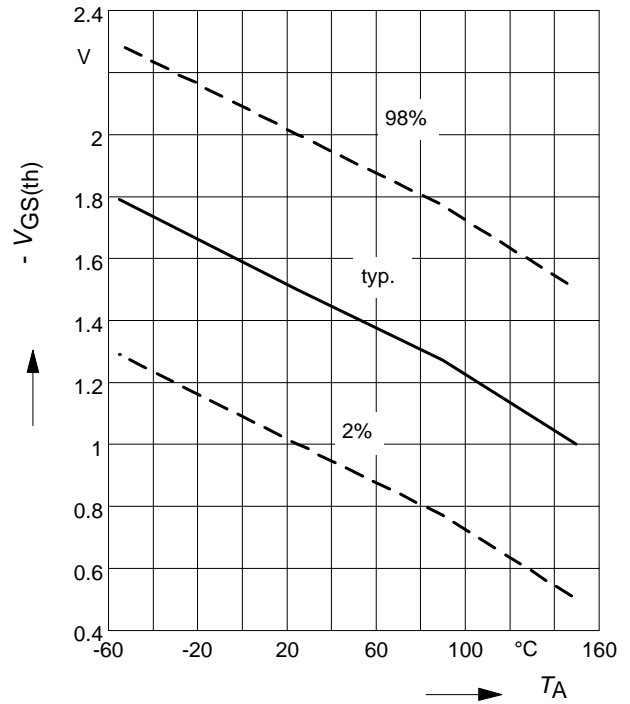
parameter: $I_D = -0.17\text{ A}$, $V_{GS} = -10\text{ V}$



10 Typ. gate threshold voltage

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

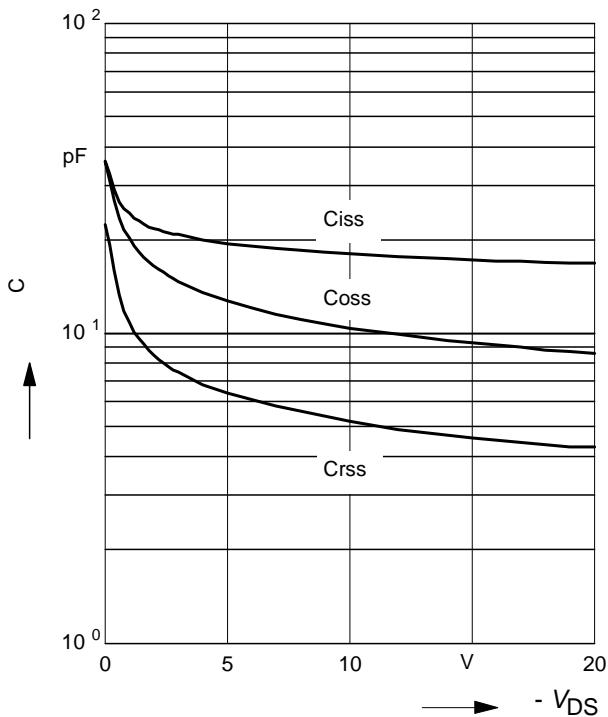
parameter: $V_{GS} = V_{DS}$



11 Typ. capacitances

$C = f(V_{DS})$

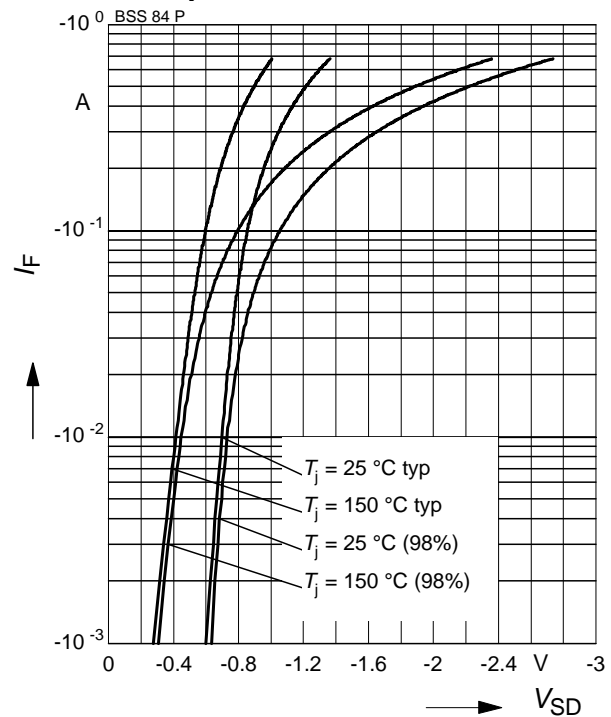
parameter: $V_{GS} = 0$, $f = 1\text{ MHz}$



12 Forward character. of reverse diode

$I_F = f(V_{SD})$

parameter: T_j , $t_p = 80\ \mu\text{s}$



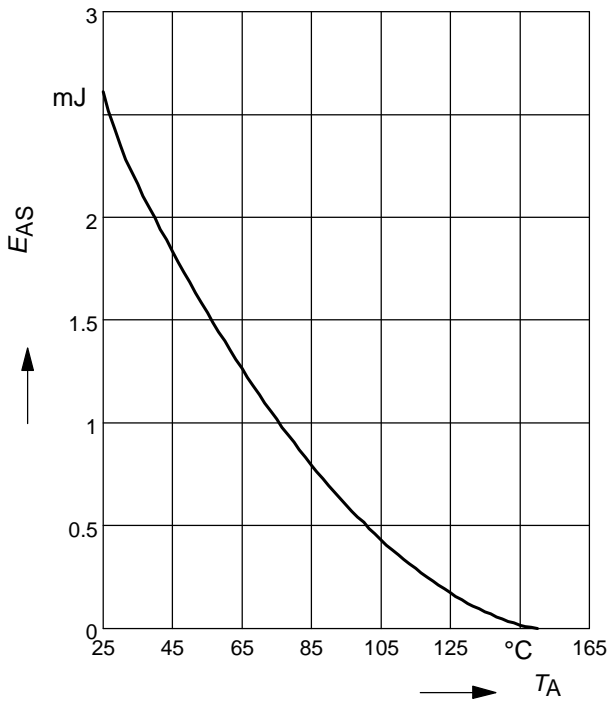


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13 Typ. avalanche energy

$E_{AS} = f(T_A)$, parameter:

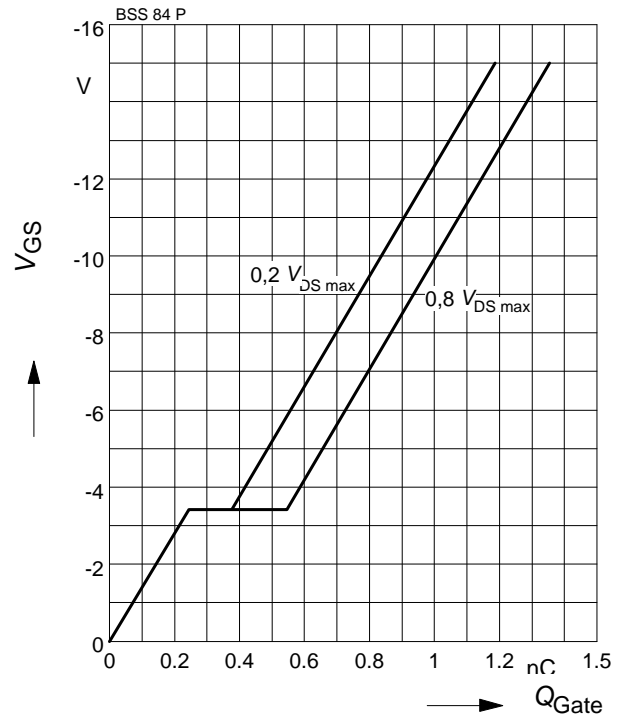
$I_D = -0.17\text{ A}$, $V_{DD} = -25\text{ V}$, $R_{GS} = 25\ \Omega$



14 Typ. gate charge

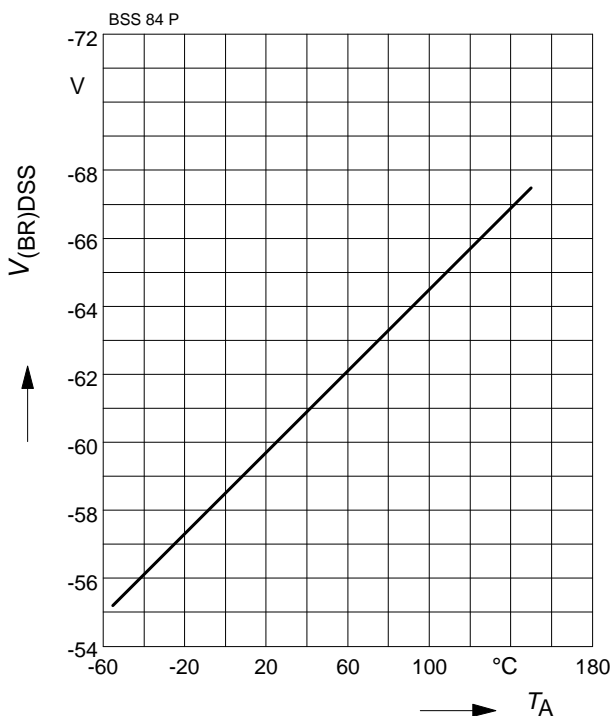
$V_{GS} = f(Q_{Gate})$

parameter: $I_D = -0.17\text{ A}$ pulsed; $T_j = 25\text{ °C}$



15 Drain-source breakdown voltage

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





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Published by

Infineon Technologies AG

81726 Munich, Germany

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