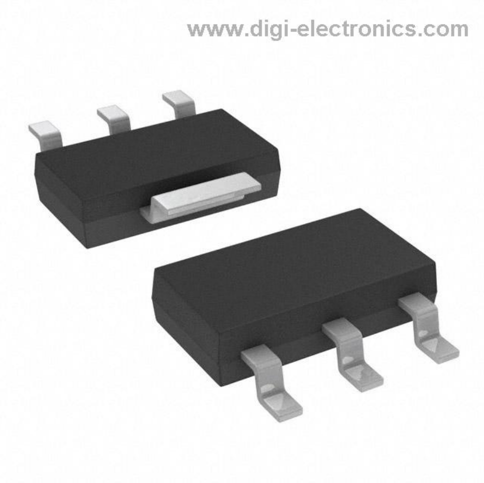
BSP89 E6327 Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	BSP89 E6327-DG
Manufacturer	Infineon Technologies
Manufacturer Product Number	BSP89 E6327
Description	MOSFET N-CH 240V 350MA SOT223-4
Detailed Description	N-Channel 240 V 350mA (Ta) 1.8W (Ta) Surface Mount PG-SOT223-4

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
BSP89 E6327	Infineon Technologies
Series:	Product Status:
SIPMOS®	Obsolete
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
240 V	350mA (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
4.5V, 10V	6Ohm @ 350mA, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
1.8V @ 108µA	6.4 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	140 pF @ 25 V
FET Feature:	Power Dissipation (Max):
-	1.8W (Ta)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Supplier Device Package:	Package / Case:
PG-SOT223-4	TO-261-4, TO-261AA

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
RoHS non-compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

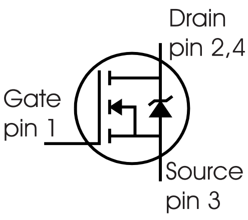
SIPMOS® Small-Signal-Transistor

Feature

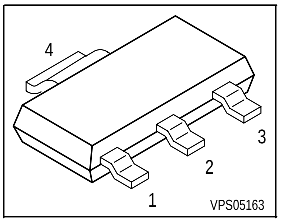
- N-Channel
- Enhancement mode
- Logic Level
- d*v*/d*t* rated
- Pb-free lead plating; RoHS compliant
- 4.5V rated
- Qualified according to AEC Q101

Product Summary

V_{DS}	240	V
$R_{DS(on)}$	6	Ω
I_D	0.35	A



PG-SOT223



Type	Package	Tape and Reel Information	Marking	Packaging
BSP89	PG-SOT223	L6327: 1000 pcs/reel	BSP89	Non dry

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

Parameter	Symbol	Value	Unit
Continuous drain current	I_D		A
T_A=25°C		0.35	
T_A=70°C		0.28	
Pulsed drain current T_A=25°C	$I_{D\ puls}$	1.4	
Reverse diode d*v*/d*t* I_S=0.35A, V_{DS}=192V, d*i*/d*t*=200A/µs, T_{jmax}=150°C	d*v*/d*t*	6	kV/µs
Gate source voltage	V_{GS}	±20	V
ESD class (JESD22-A114-HBM)		1A (>250V, <500V)	
Power dissipation T_A=25°C	P_{tot}	1.8	W
Operating and storage temperature	T_j , T_{stg}	-55... +150	°C
IEC climatic category; DIN IEC 68-1		55/150/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - soldering point (Pin 4)	R_{thJS}	-	-	25	K/W
SMD version, device on PCB:	R_{thJA}				
@ min. footprint		-	-	115	
@ 6 cm^2 cooling area [1]		-	-	70	

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	$V_{(BR)DSS}$	240	-	-	V
Gate threshold voltage, V_{GS} = V_{DS} I_D=108µA	$V_{GS(th)}$	0.8	1.4	1.8	
Zero gate voltage drain current	I_{DSS}				µA
V_{DS}=240V, V_{GS}=0, T_j=25°C		-	-	0.1	
V_{DS}=240V, V_{GS}=0, T_j=150°C		-	-	10	
Gate-source leakage current V_{GS}=20V, V_{DS}=0	I_{GSS}	-	-	10	nA
Drain-source on-state resistance V_{GS}=4.5V, I_D=0.32A	$R_{DS(on)}$	-	4.9	7.5	Ω
Drain-source on-state resistance V_{GS}=10V, I_D=0.35A	$R_{DS(on)}$	-	4.2	6	

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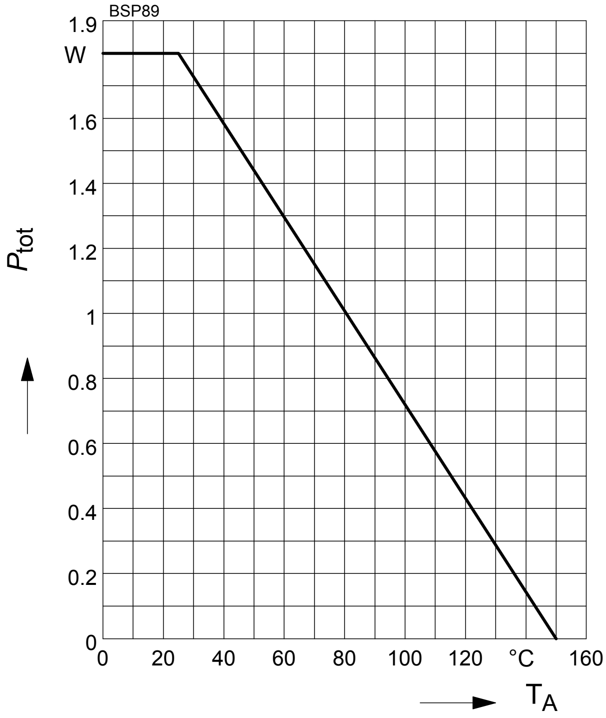
[1] Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm² (one layer, 70 µm thick) copper area for drain connection. PCB is vertical without blown air.

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

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Transconductance	g_{fs}	$V_{DS}\geq 2*I_D*R_{DS(on)max}$, I_D=0.28A	0.18	0.36	-	S
Input capacitance	C_{iss}	V_{GS}=0, V_{DS}=25V, f=1MHz	-	80	140	pF
Output capacitance	C_{oss}		-	11.2	16.8	
Reverse transfer capacitance	C_{rss}		-	5.2	7.8	
Turn-on delay time	$t_{d(on)}$	V_{DD}=120V, V_{GS}=10V, I_D=0.35A, R_G=6Ω	-	4	6	ns
Rise time	t_r		-	3.5	5.3	
Turn-off delay time	$t_{d(off)}$		-	15.9	23.8	
Fall time	t_f		-	18.4	27.6	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=192V, I_D=0.35A	-	0.2	0.3	nC
Gate to drain charge	Q_{gd}		-	2	3	
Gate charge total	Q_g	V_{DD}=192V, I_D=0.35A, V_{GS}=0 to 10V	-	4.3	6.4	
Gate plateau voltage	$V_{(plateau)}$	V_{DD}=192V, I_D = 0.35 A	-	3.1	-	V
Reverse Diode						
Inverse diode continuous forward current	I_S	T_A=25°C	-	-	0.35	A
Inv. diode direct current, pulsed	I_{SM}		-	-	1.4	
Inverse diode forward voltage	V_{SD}	V_{GS}=0, I_F = I_S	-	0.85	1.2	V
Reverse recovery time	t_{rr}	V_R=120V, I_F=I_S, di_F/dt=100A/μs	-	67	100	ns
Reverse recovery charge	Q_{rr}		-	123	184	nC

1 Power dissipation

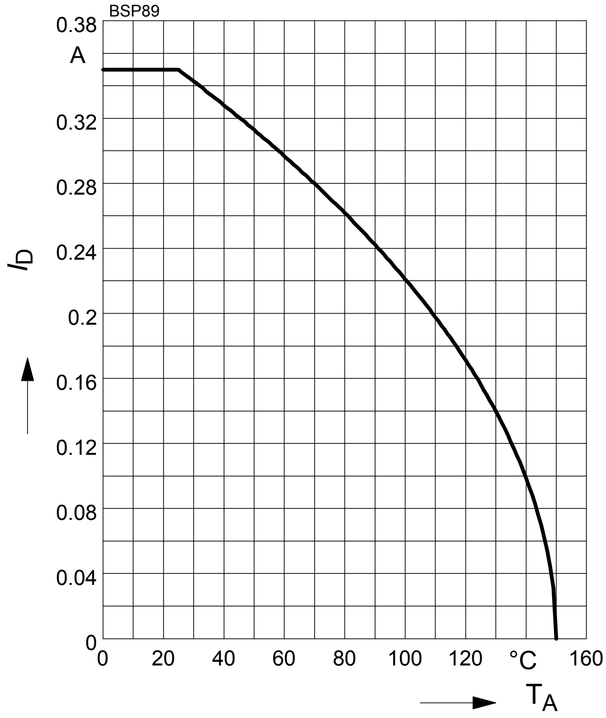
$P_{tot} = f(T_A)$



2 Drain current

$I_D = f(T_A)$

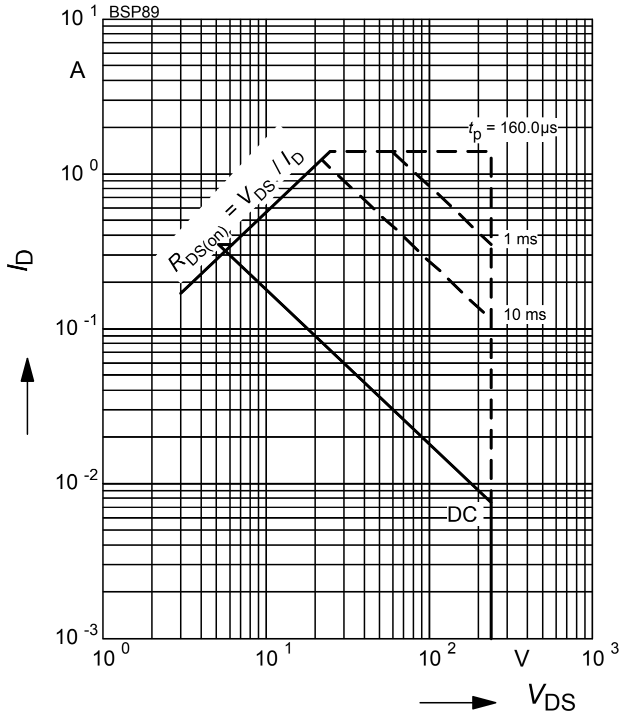
parameter: $V_{GS} \geq 10$ V



3 Safe operating area

$I_D = f(V_{DS})$

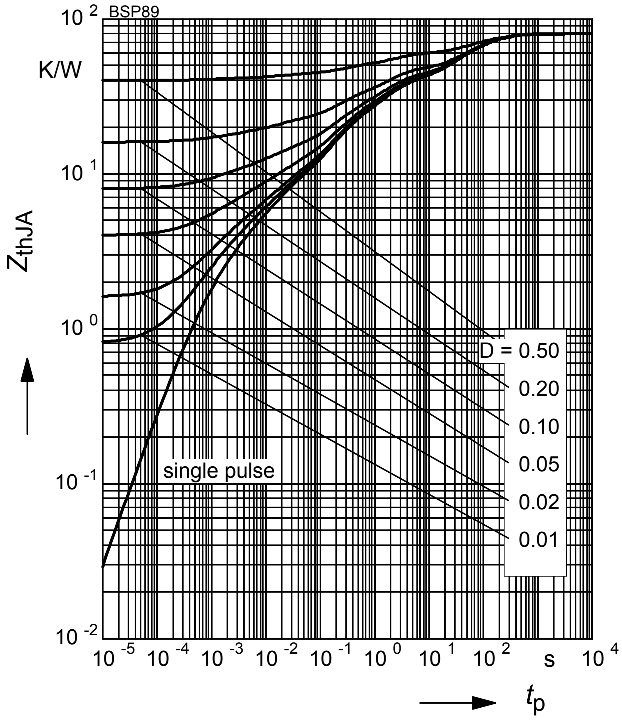
parameter : $D = 0$, $T_A = 25$ °C



4 Transient thermal impedance

$Z_{thJA} = f(t_p)$

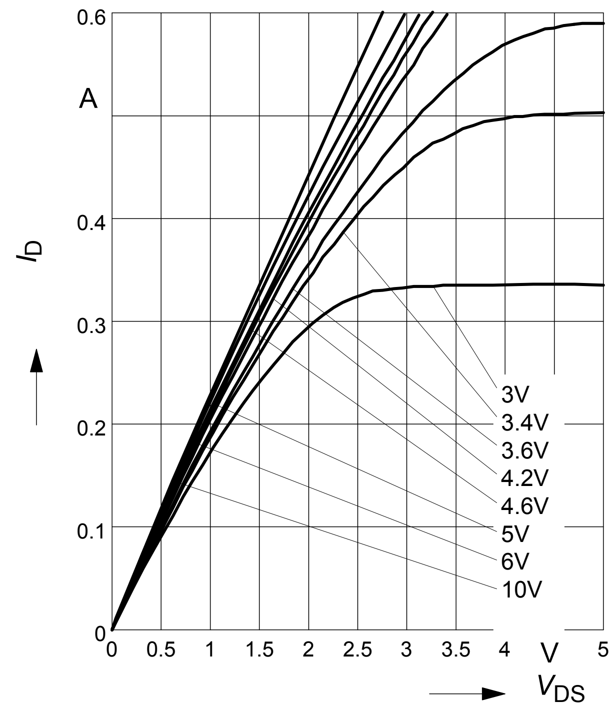
parameter : $D = t_p/T$



5 Typ. output characteristic

$I_D = f(V_{DS})$

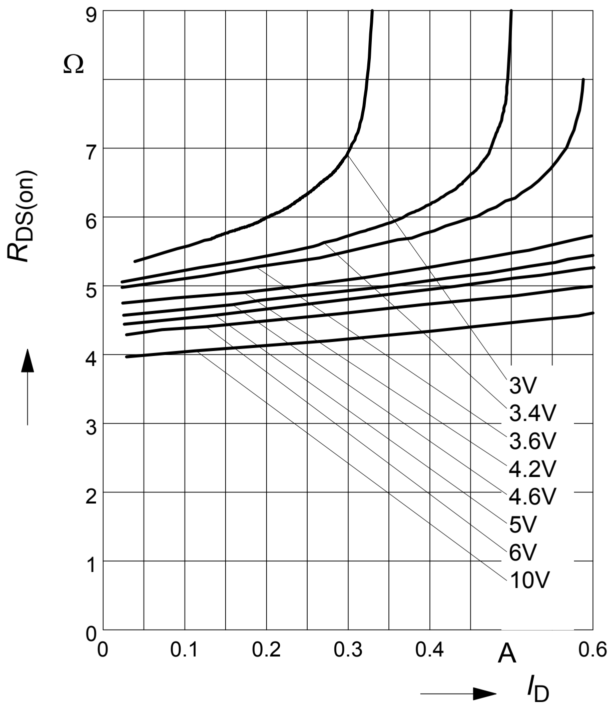
parameter: T_j = 25 °C, V_{GS}



6 Typ. drain-source on resistance

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

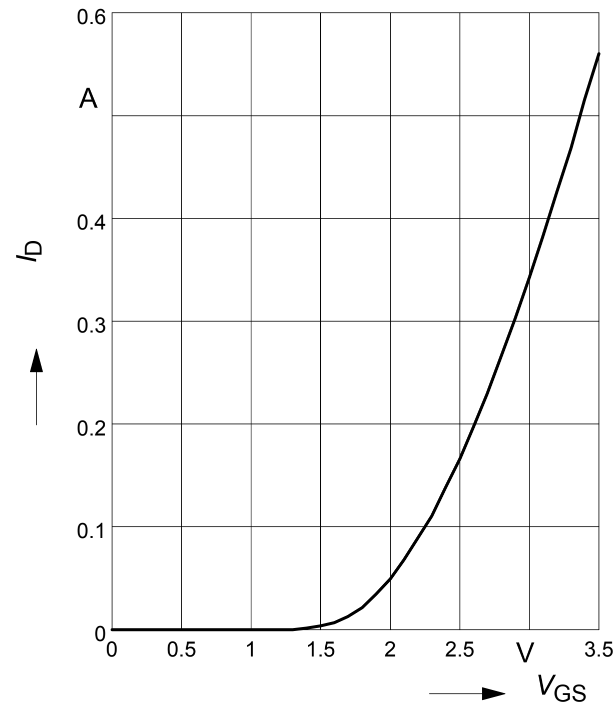
parameter: T_j = 25 °C, V_{GS}



7 Typ. transfer characteristics

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

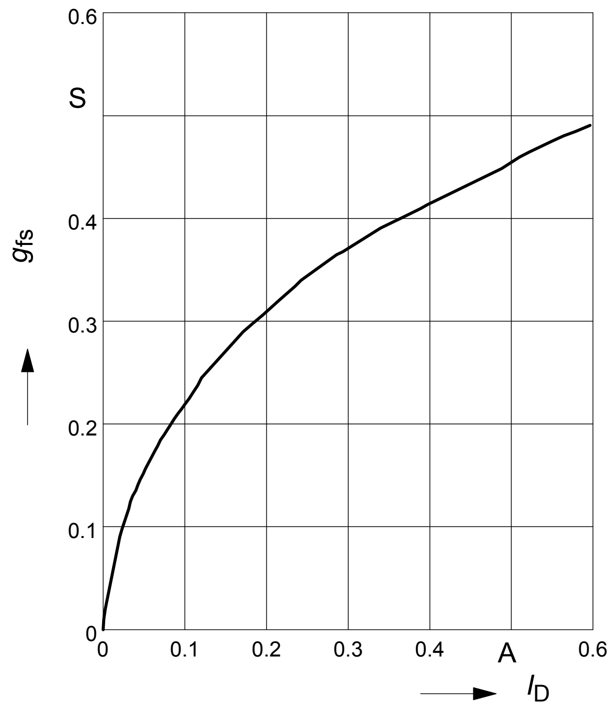
parameter: T_j = 25 °C



8 Typ. forward transconductance

$g_{fs} = f(I_D)$

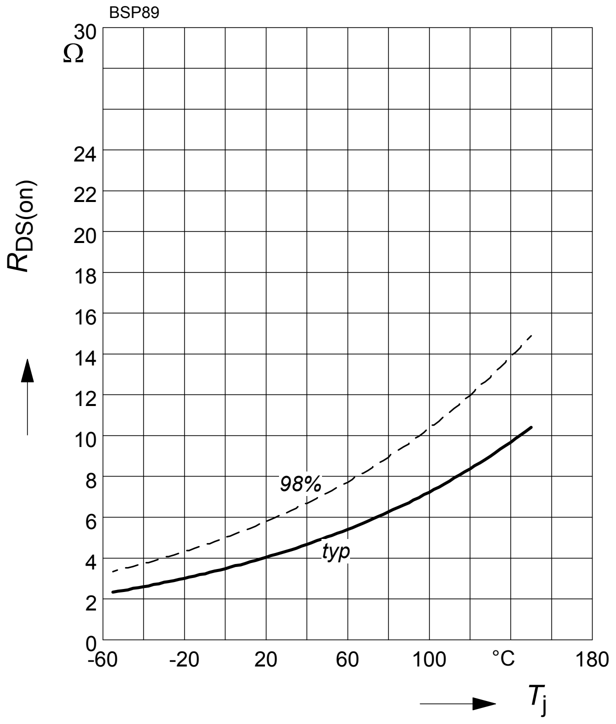
parameter: T_j = 25 °C



9 Drain-source on-state resistance

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

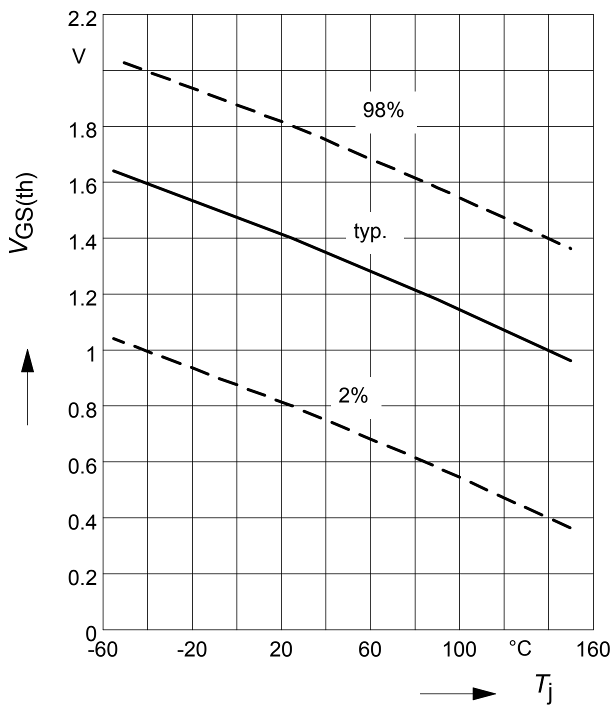
parameter : I_D = 0.35 A, V_{GS} = 10 V



10 Typ. gate threshold voltage

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

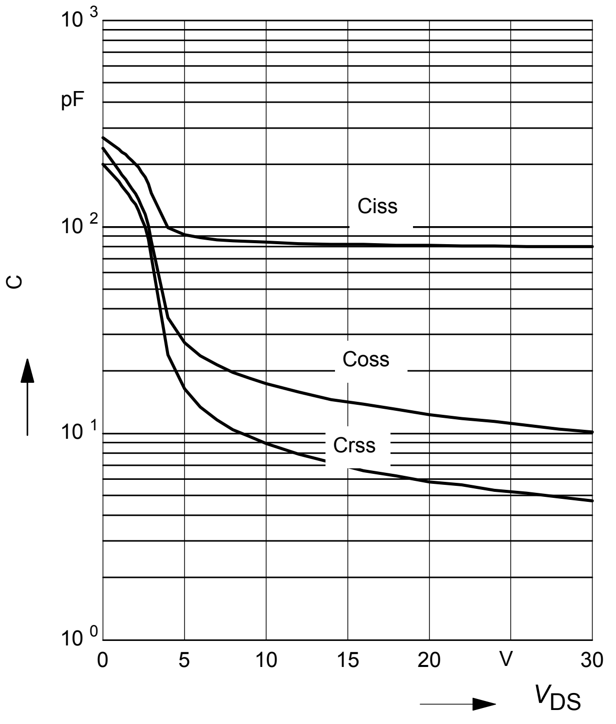
parameter: $V_{GS} = V_{DS}$; I_D =108µA



11 Typ. capacitances

$C = f(V_{DS})$

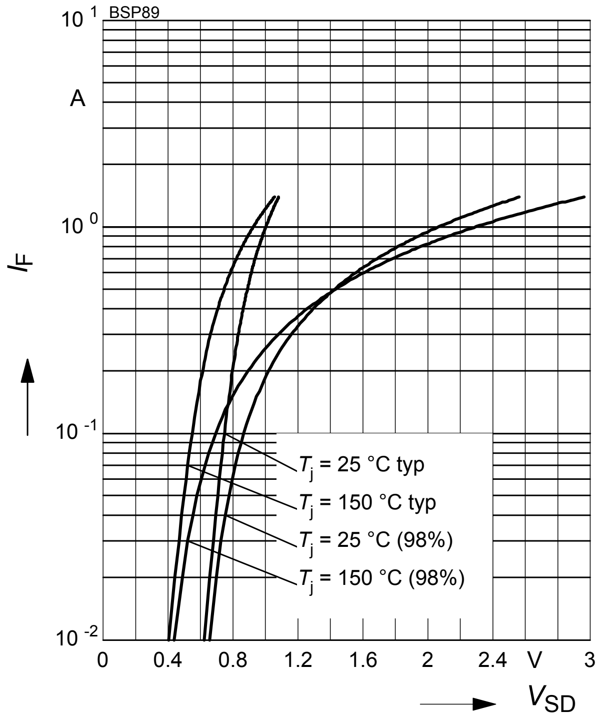
parameter: V_{GS}=0, f=1 MHz, T_j = 25 °C



12 Forward character. of reverse diode

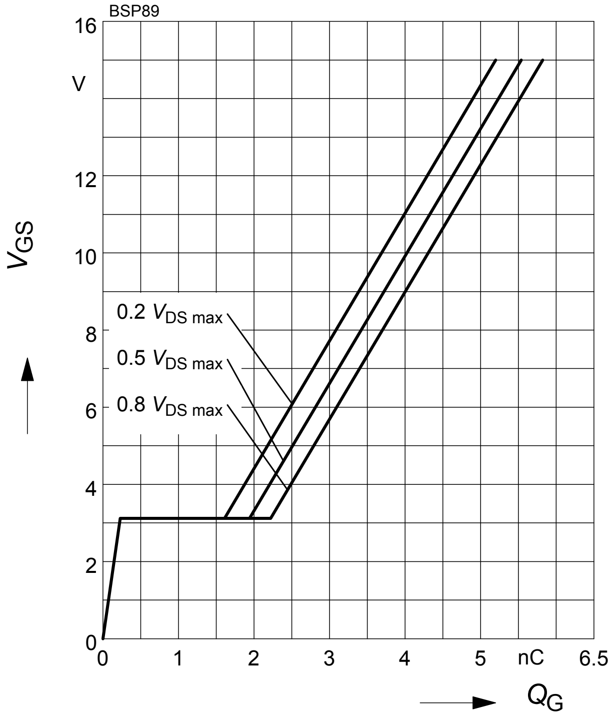
$I_F = f(V_{SD})$

parameter: T_j



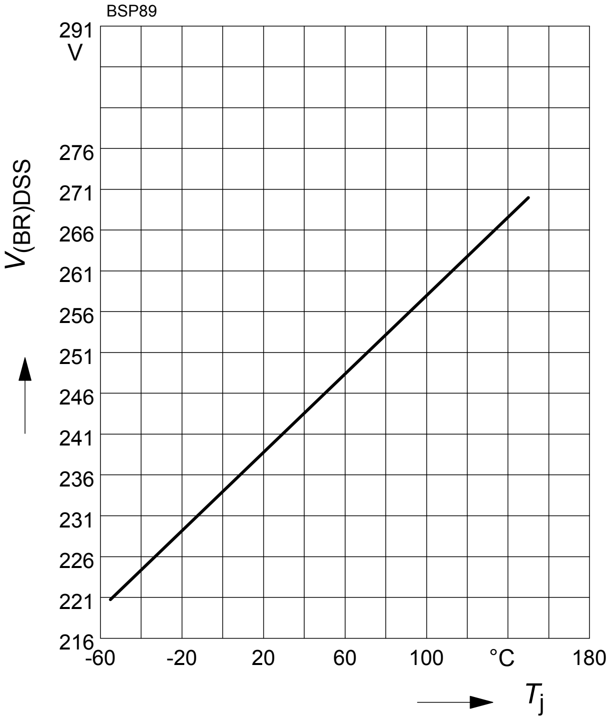
13 Typ. gate charge

$V_{GS} = f\ (Q_G)$; parameter: V_{DS} ,
I_D = 0.35 A pulsed, T_j = 25 °C



14 Drain-source breakdown voltage

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



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