MOSFET

Metal Oxide Semiconductor Field Effect Transistor

OptiMOS™ Small-Signal-Transistor, 100V

BSL372SN

Data Sheet

Rev. 2.0
Final

Industrial & Multimarket

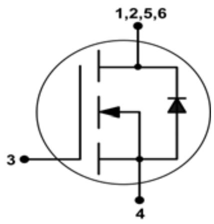
OptiMOS™ Small-Signal-Transistor

Features

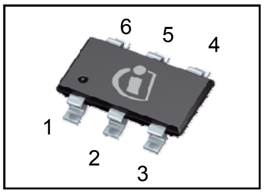
- N-channel
- Enhancement mode
- Logic Level (4.5V rated)
- Avalanche rated
- Qualified according to AEC Q101
- RoHS compliant
- Halogen-free according to IEC61249-2-21

Product Summary

V_{DS}		100	V
$R_{DS(on),max}$	V_{GS}=10 V	0.22	Ω
	V_{GS}=4.5 V	0.26	
I_D		2	A



PG-TSOP6



Type	Package	Tape and Reel Info	Marking	Halogen Free	Packing
BSL372SN	TSOP-6	H6327: 3000 pcs/ reel	sPX	Yes	Non dry

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_A=25 °C	2.0	A
		T_A=70 °C	1.6	
Pulsed drain current	$I_{D,pulse}$	T_A=25 °C	8.0	
Avalanche energy, single pulse	E_{AS}	I_D=2 A, R_{GS}=25 Ω	33	mJ
Reverse diode dv/dt	dv/dt	I_D=2 A, V_{DS}=50 V, di/dt=200 A/µs, $T_{j,max}$=150 °C	6	kV/µs
Gate source voltage	V_{GS}		±20	V
Power dissipation[1)]	P_{tot}	T_A=25 °C	2.0	W
Operating and storage temperature	T_j, T_{stg}		-55 ... 150	°C
ESD Class		JESD22-A114 -HBM	0 (<250V)	
Soldering Temperature			260 °C	
IEC climatic category; DIN IEC 68-1			55/150/56	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance junction - soldering point	R_{thJS}		-	-	50	K/W
Thermal resistance junction - ambient	R_{thJA}	minimal footprint	-	-	230	
		6 cm^2 cooling area[1)]	-	-	62.5	

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

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=250 µA	100	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=Vgs V, I_D=218 µA	0.8	1.4	1.80	
Drain-source leakage current	I_{DSS}	V_{DS}=100 V, V_{GS}=0 V, T_j=25 °C	-	-	0.02	µA
		V_{DS}=100 V, V_{GS}=0 V, T_j=150 °C	-	-	10	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	-	10	nA
Gate-source on-state resistance	$R_{DS(on)}$	V_{GS}=10 V, I_D=2 A	-	151	220	mΩ
		V_{GS}=4.5 V, I_D=1.85 A	-	170	260	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=1.6 A		5.3	-	S

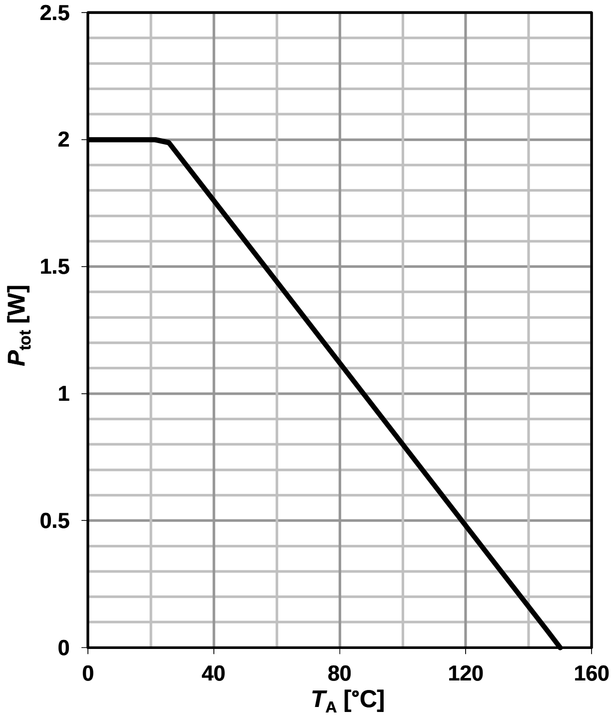
1) Device on 40mm x 40mm x 1.5mm epoxy PCB FR4 with 6cm^2 (one layer, 70µm thick) copper area for drain connection. PCB is vertical in still air. (t < 5 sec.)

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics[2)]						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=25 V, f=1 MHz	-	247	329	pF
Output capacitance	C_{oss}		-	40	54	
Reverse transfer capacitance	C_{rss}		-	19	28	
Turn-on delay time	$t_{d(on)}$	V_{DD}=50 V, V_{GS}=10 V, I_D=2 A, $R_{G,ext}$=6 Ω	-	3.5	5.2	ns
Rise time	t_r		-	4.8	7.3	
Turn-off delay time	$t_{d(off)}$		-	54.0	81.0	
Fall time	t_f		-	22.1	33.2	
Gate Charge Characteristics[2)]						
Gate to source charge	Q_{gs}	V_{DD}=50 V, I_D=2 A, V_{GS}=0 to 10 V	-	0.6	0.8	nC
Gate to drain charge	Q_{gd}		-	3.0	4.5	
Gate charge total	Q_g		-	9.5	14.3	
Gate plateau voltage	$V_{plateau}$		-	2.3	-	V
Reverse Diode						
Diode continous forward current	I_S	T_A=25 °C	-	-	2.0	A
Diode pulse current	$I_{S,pulse}$		-	-	8.0	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=2 A, T_j=25 °C	-	0.8	1.1	V
Reverse recovery time[2)]	t_{rr}	V_R=50 V, I_F=2 A, di_F/dt=100 A/µs	-	41	62	ns
Reverse recovery charge[2)]	Q_{rr}		-	47	71	nC

2) Defined by design. Not subjected to production test

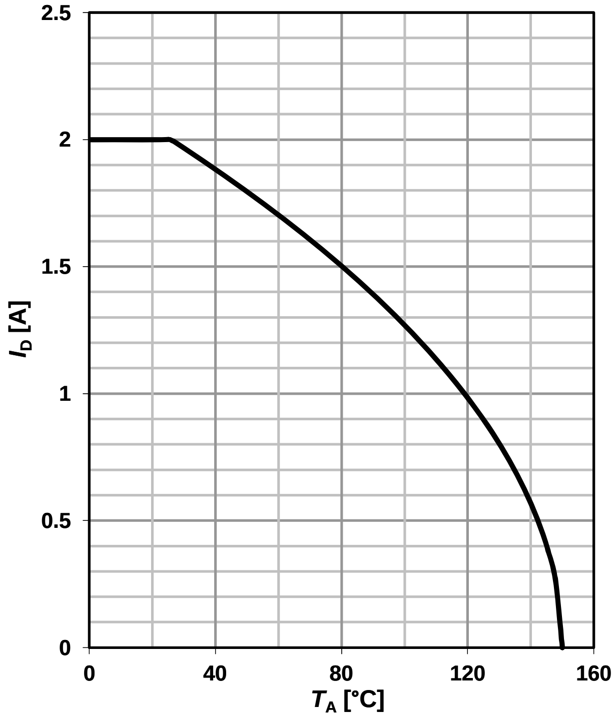
1 Power dissipation

P_{tot}=f(T_A)



2 Drain current

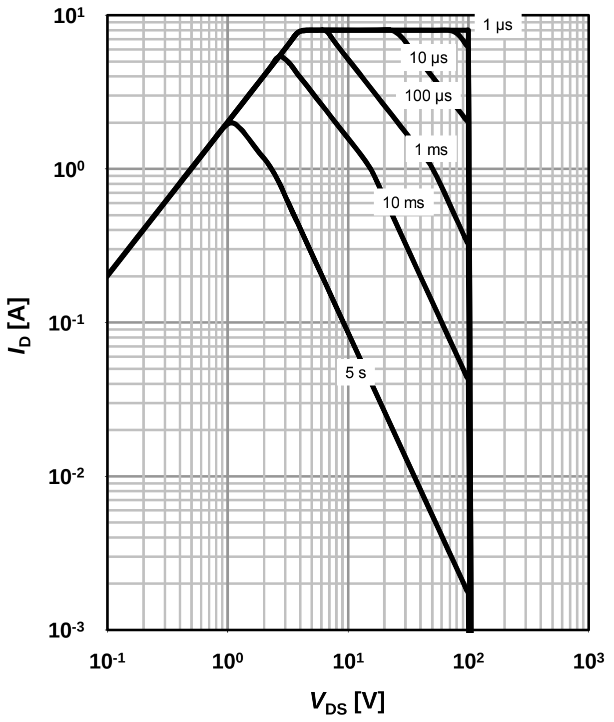
I_D=f(T_A); V_{GS}≥10 V



3 Safe operating area

I_D=f(V_{DS}); T_A=25 °C; D=0

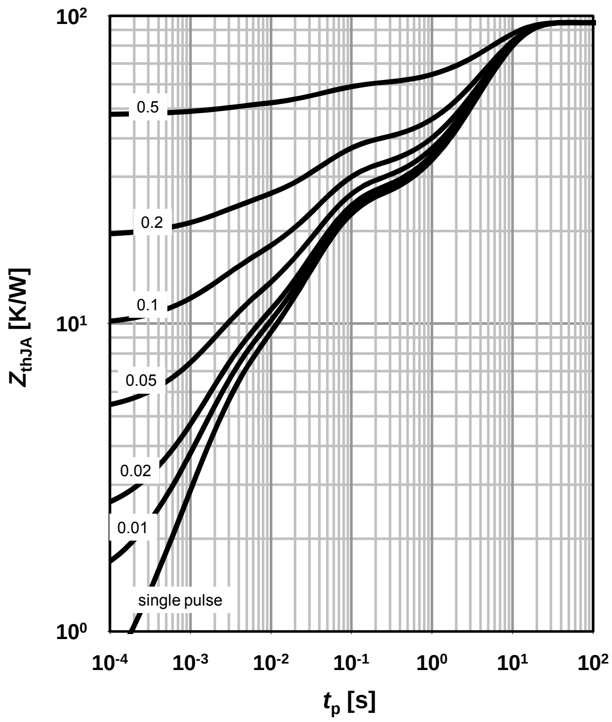
parameter: t_p



4 Max. transient thermal impedance

Z_{thJA}=f(t_p)

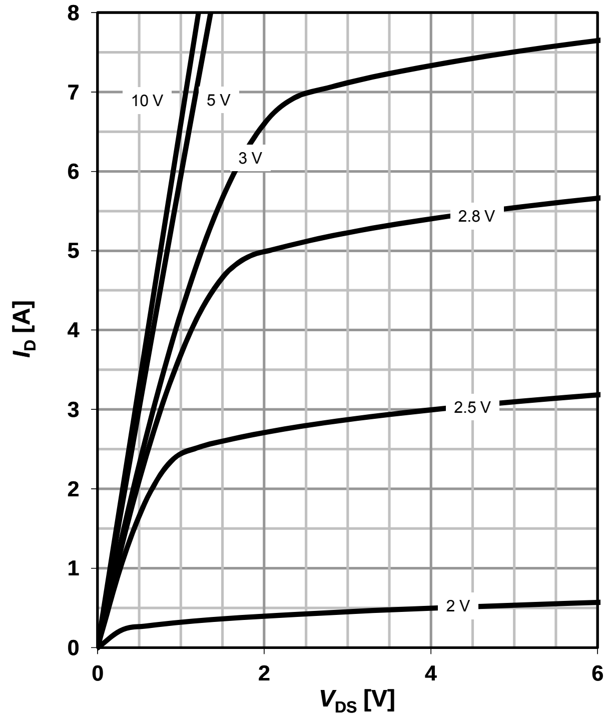
parameter: D=t_p/T



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

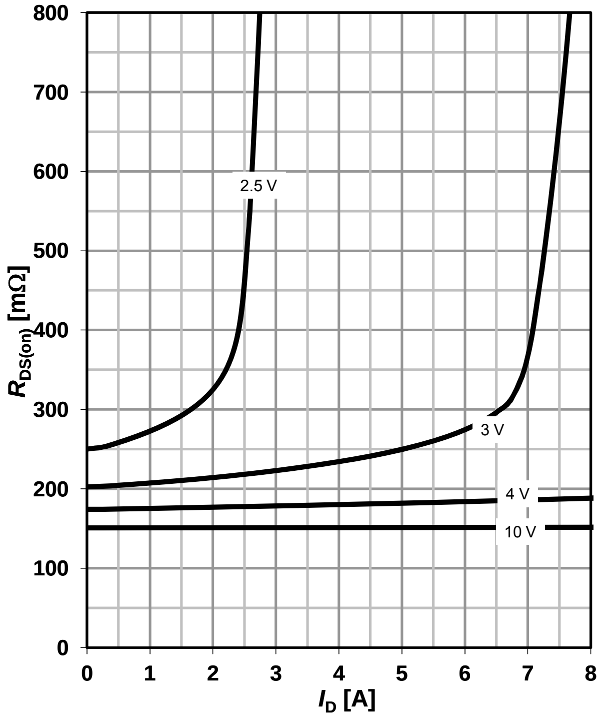
parameter: V_{GS}



6 Typ. drain-source on resistance

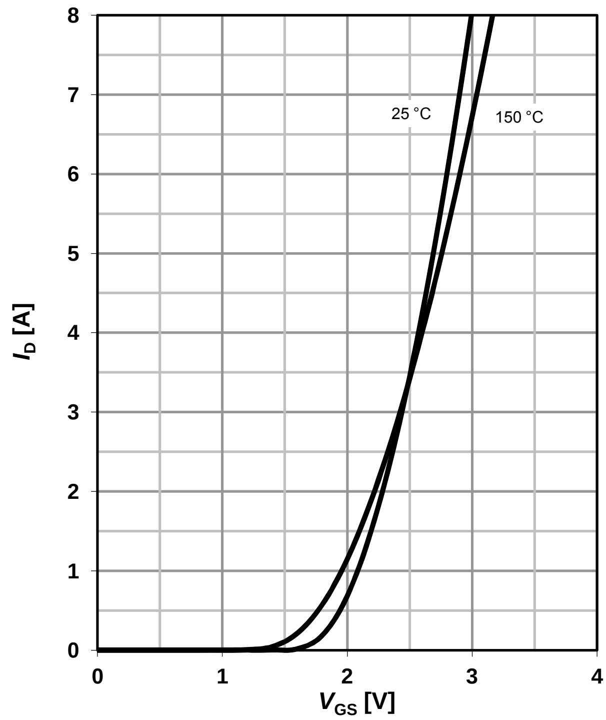
$R_{DS(on)}$=f(I_D); T_j=25 °C

parameter: V_{GS}



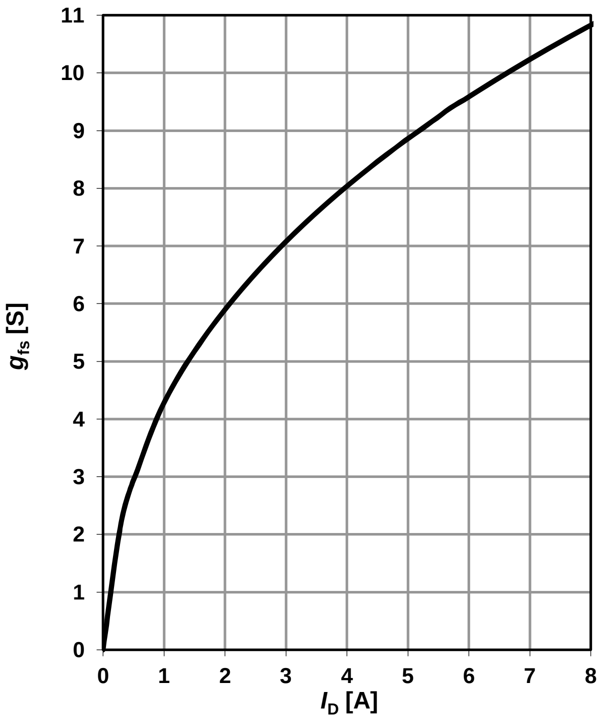
7 Typ. transfer characteristics

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



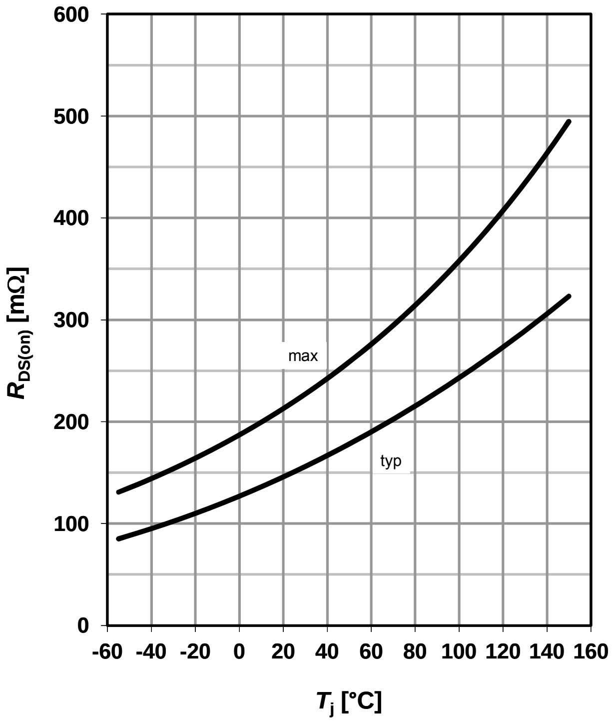
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



9 Drain-source on-state resistance

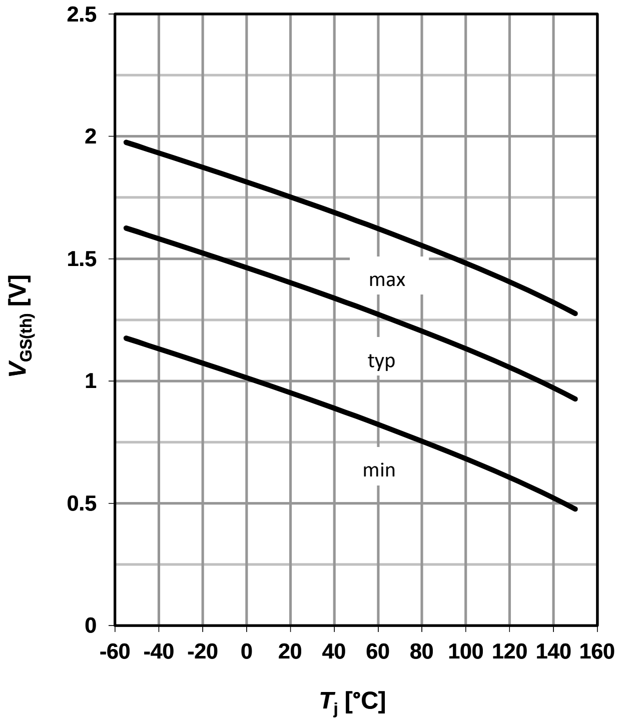
$R_{DS(on)}$=f(T_j); I_D=2 A; V_{GS}=10 V



10 Typ. gate threshold voltage

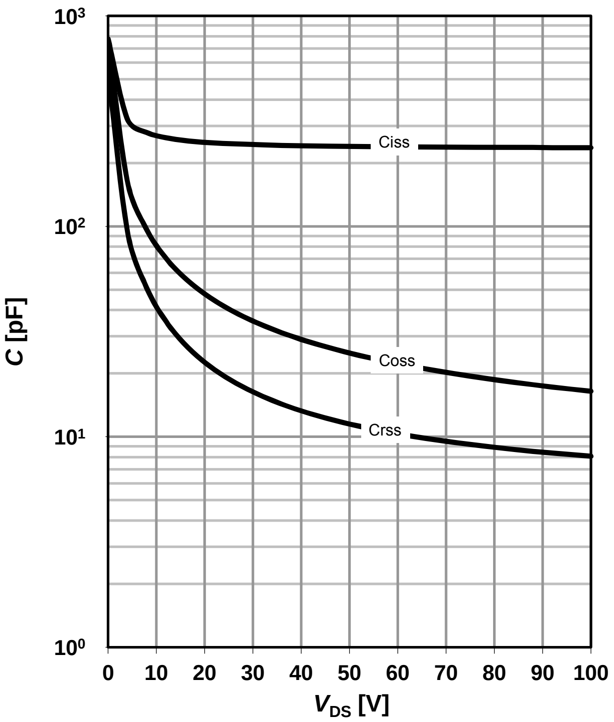
$V_{GS(th)}$=f(T_j); V_{DS}=V_{GS}; I_D=218 µA

parameter: I_D



11 Typ. capacitances

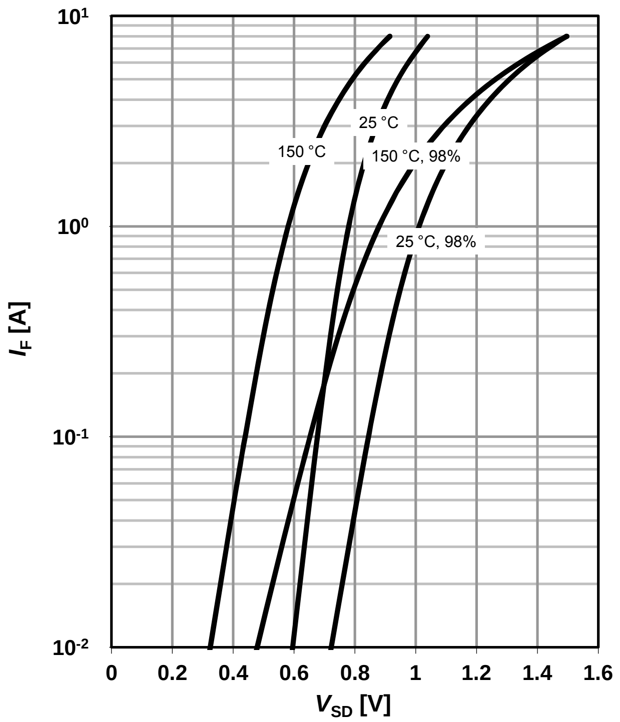
C=f(V_{DS}); V_{GS}=0 V; f=1 MHz; T_j=25°C



12 Forward characteristics of reverse diode

I_F=f(V_{SD})

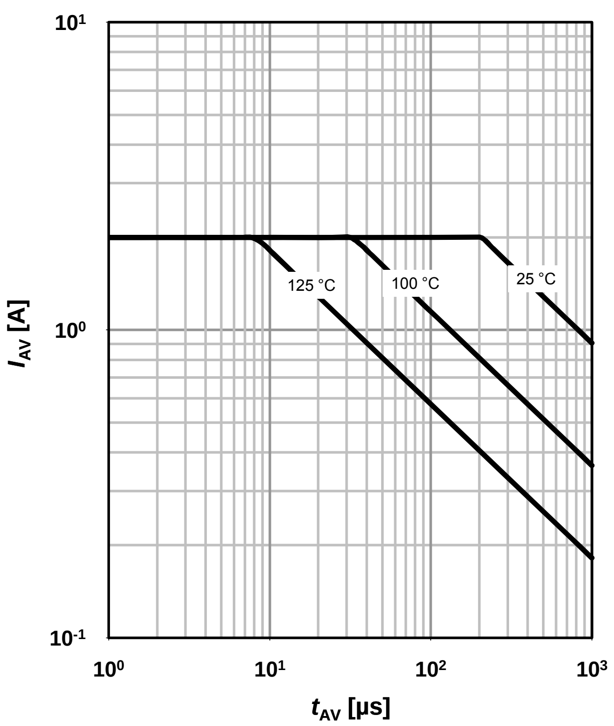
parameter: T_j



13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

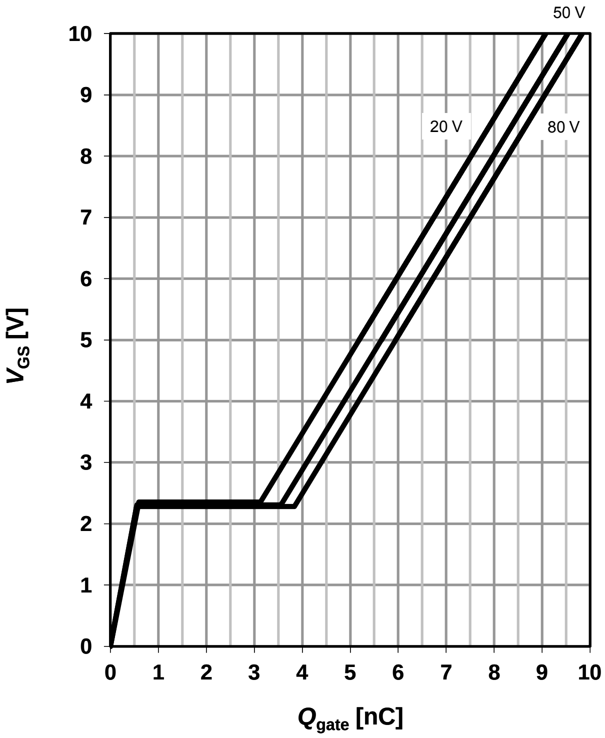
parameter: $T_{j(start)}$



14 Typ. gate charge

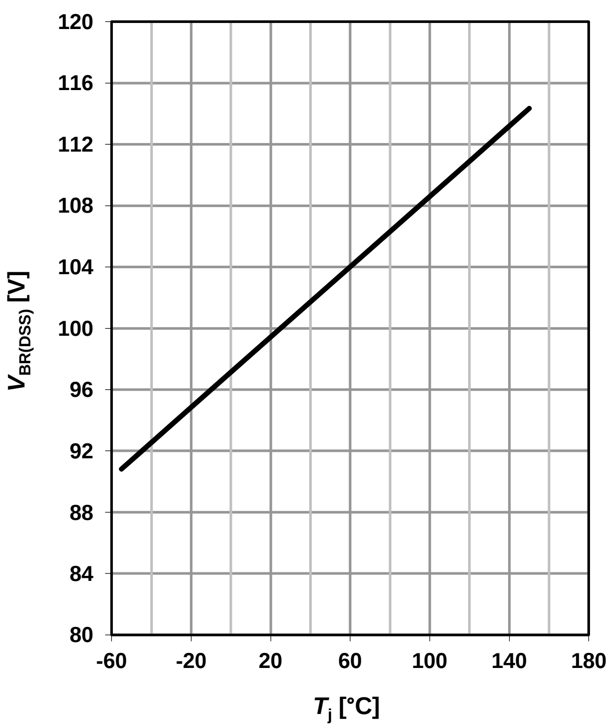
V_{GS}=f(Q_{gate}); I_D=2 A pulsed

parameter: V_{DD}

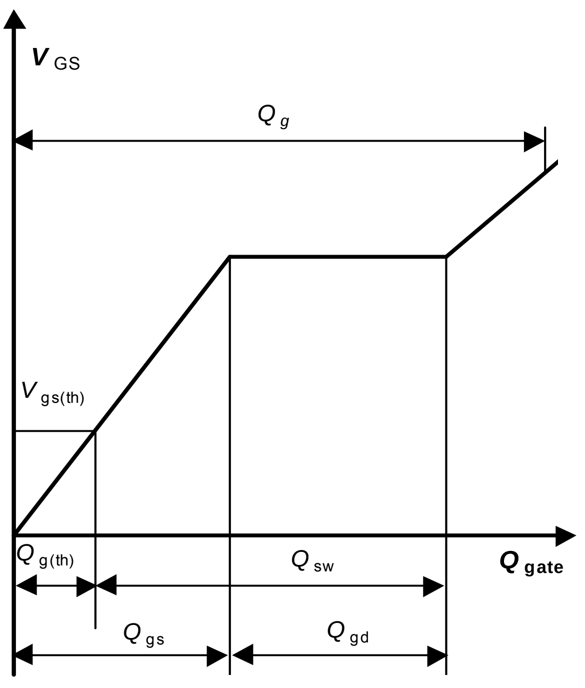


15 Drain-source breakdown voltage

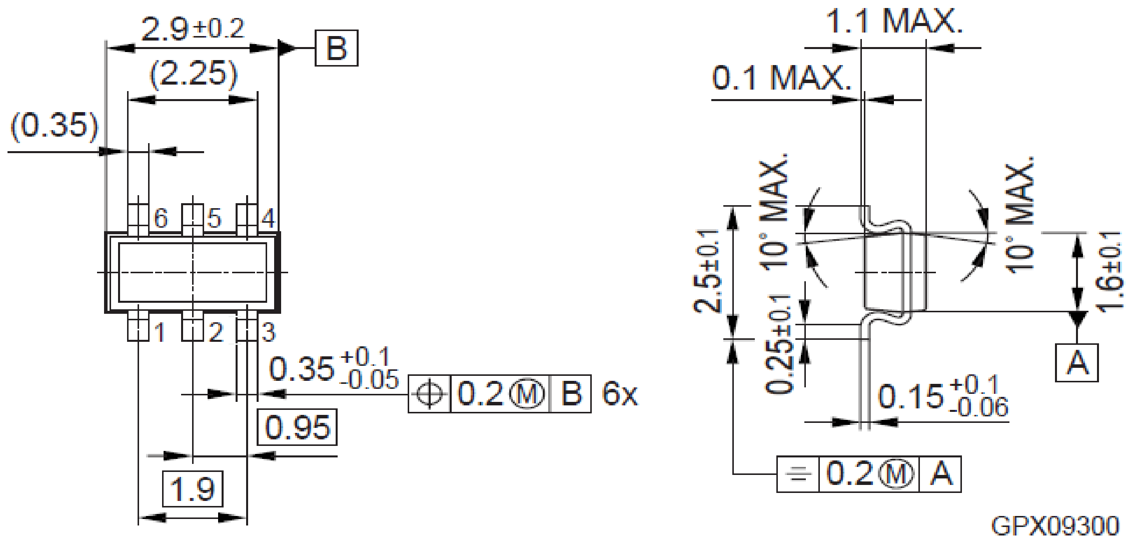
$V_{BR(DSS)}$=f(T_j); I_D=250 µA



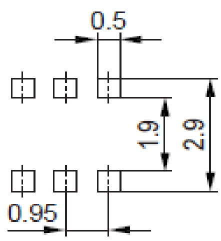
16 Gate charge waveforms



TSOP6



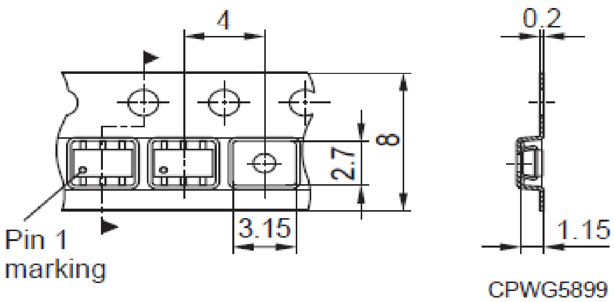
Footprint:



Remark: Wave soldering possible dep.
on customers process conditions

HLG09283

Packaging:



Dimensions in mm

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

Revision History

BSL372SN

Revision: 2014-10-22, Rev. 2.0

Previous Revision		
Revision	Date	Subjects (major changes since last revision)
2.0	2014-10-22	Release of final version

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