OptiMOS™-3 Small-Signal-Transistor

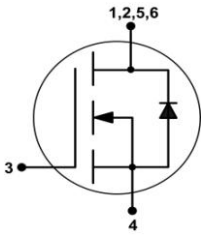
Features

- N-channel
- Enhancement mode
- Logic level (4.5V rated)
- Avalanche rated
- Qualified according to AEC Q101
- 100%lead-free; Halogen-free; RoHS compliant

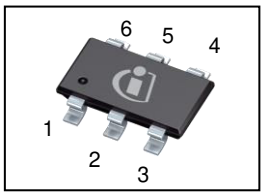
AEC Qualified RoHS Halogen-Free

Product Summary

V_{DS}		60	V
$R_{DS(on),max}$	V_{GS}=10 V	60	mΩ
	V_{GS}=4.5 V	95	
I_D		4.5	A



PG-TSOP-6



Type	Package	Tape and Reel Info	Marking	Halogen-free	Package
BSL606SN	PG-TSOP-6	H6327: 3000 pcs/reel	sPW	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	4.5	A
		T_A=70 °C	3.6	
Pulsed drain current	$I_{D,pulse}$	T_A=25 °C	18.1	
Avalanche energy, single pulse	E_{AS}	I_D=4.5 A, R_{GS}=25 Ω	14	mJ
Reverse diode dv/dt	dv/dt	I_D=4.5 A, V_{DS}=16 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	class 0 (<250V)	
Soldering Temperature			260 °C	
IEC climatic category; DIN IEC 68-1			55/150/56	

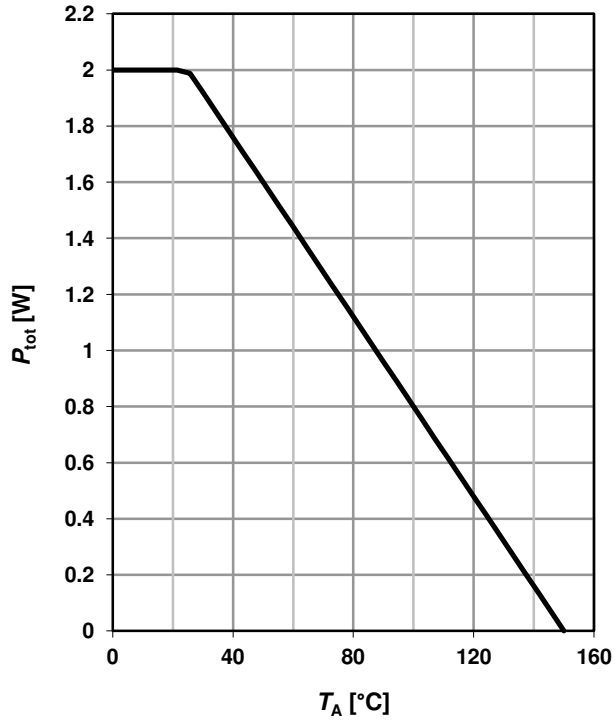
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
SMD version, device on PCB	R_{thJA}	@6cm^2 cooling area [1]	-	-	62.5	
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=250 µA	60	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=0 V, I_D=15 µA	1.3	1.8	2.3	
Drain-source leakage current	I_{DSS}	V_{DS}=60 V, V_{GS}=0 V, T_j=25 °C	-	-	1	µA
		V_{DS}=60 V, V_{GS}=0 V, T_j=150 °C	-	-	100	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=4.5 V, I_D=3.6 A	-	69	95	mΩ
		V_{GS}=10 V, I_D=4.5 A	-	49	60	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=3.6 A		7.1	-	S

[1] Performed on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm^2 (one layer, 70 µm thick) copper area for drain connection. PCB is vertical without blown air; t ≤ 5 sec.

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=25 V, f=1 MHz	-	494	657	pF
Output capacitance	C_{oss}		-	131	174	
Reverse transfer capacitance	C_{rss}		-	10.2	15.3	
Turn-on delay time	$t_{d(on)}$	V_{DD}=30 V, V_{GS}=10 V, I_D=4.5 A, $R_{G,ext}$=6 Ω	-	6.8	-	ns
Rise time	t_r		-	3.0	-	
Turn-off delay time	$t_{d(off)}$		-	18	-	
Fall time	t_f		-	3.1	-	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=48 V, I_D=4.5 A, V_{GS}=0 to 5 V	-	1.7	2.2	nC
Gate to drain charge	Q_{gd}		-	1.0	1.5	
Gate charge total	Q_g		-	3.7	5.6	
Gate plateau voltage	$V_{plateau}$		-	3.4	-	V
Reverse Diode						
Diode continous forward current	I_S	T_A=25 °C	-	-	0.9	A
Diode pulse current	$I_{S,pulse}$		-	-	18.1	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=4.5 A, T_j=25 °C	-	0.9	1.1	V
Reverse recovery time	t_{rr}	V_R=10 V, I_F=4.5 A, di_F/dt=200 A/µs	-	21	-	ns
Reverse recovery charge	Q_{rr}		-	24	-	nC

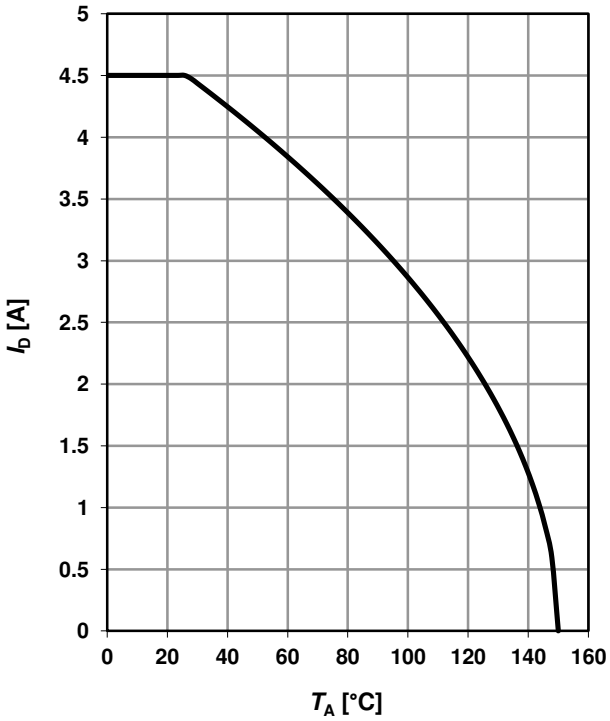
1 Power dissipation

$P_{tot}=f(T_A)$



2 Drain current

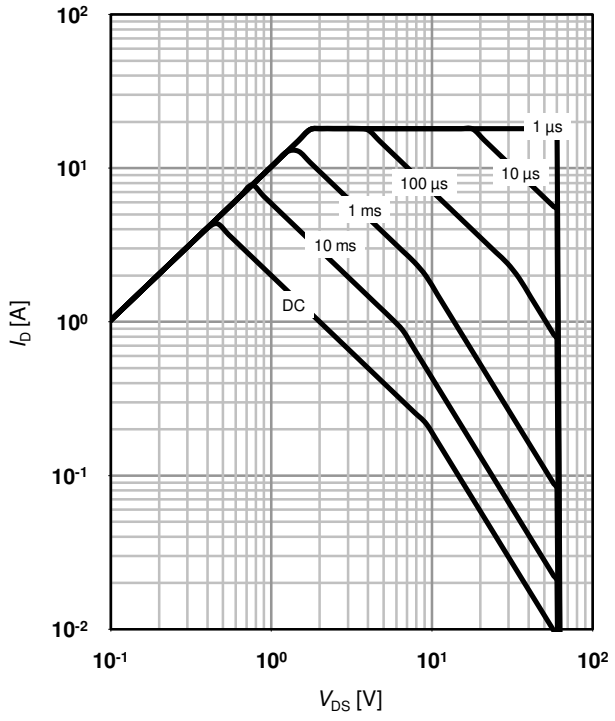
$I_D=f(T_A)$; $V_{GS}\geq 10$ V



3 Safe operating area

$I_D=f(V_{DS})$; $T_A=25$ °C; $D=0$

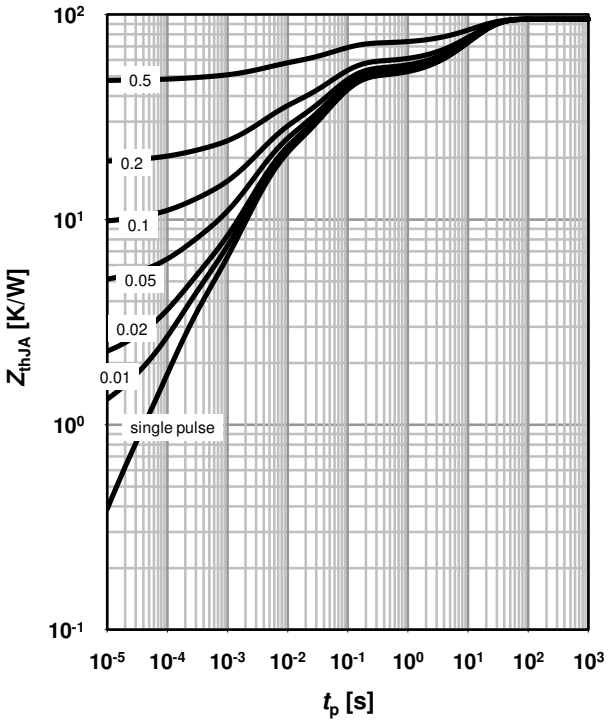
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJA}=f(t_p)$

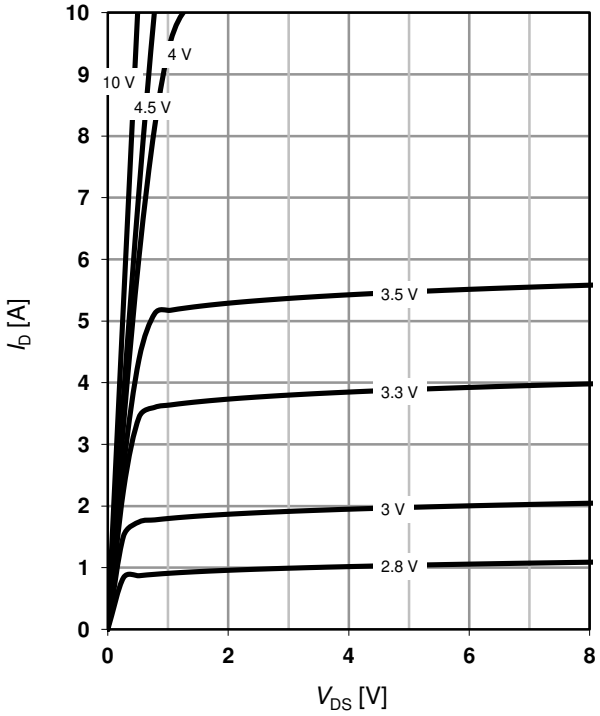
parameter: $D=t_p/T$



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

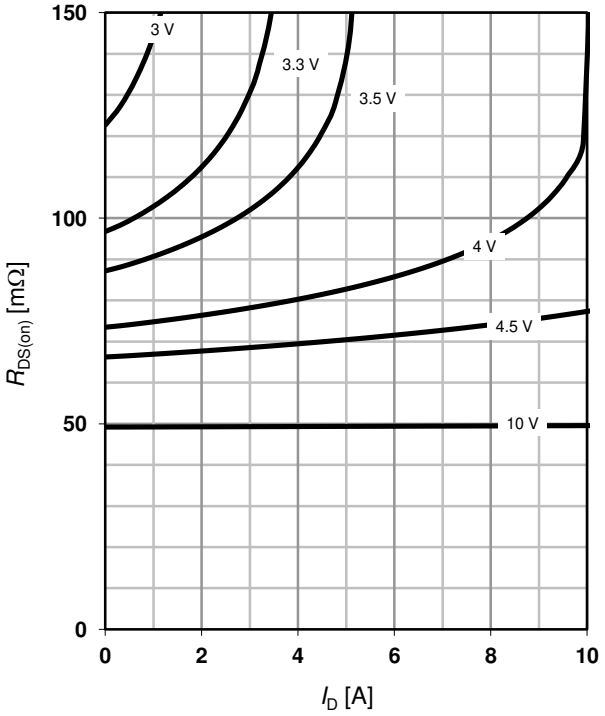
parameter: V_{GS}



6 Typ. drain-source on resistance

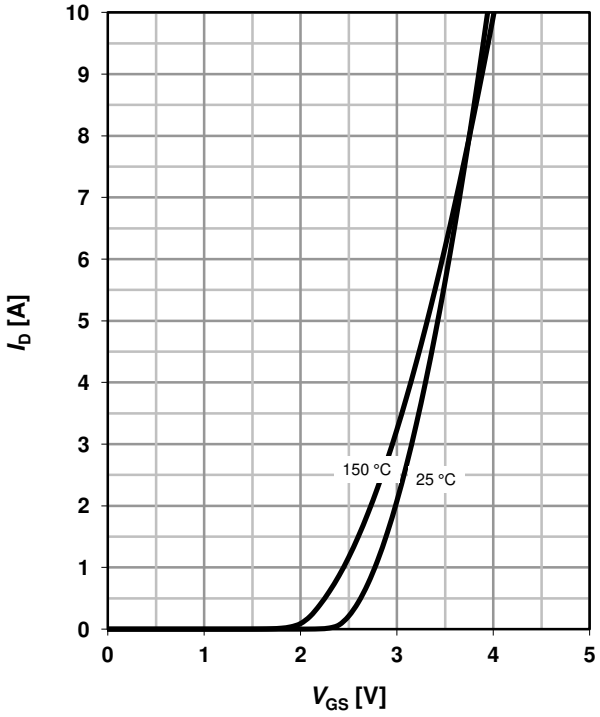
$R_{DS(on)}$=f(I_D); T_j=25 °C

parameter: V_{GS}



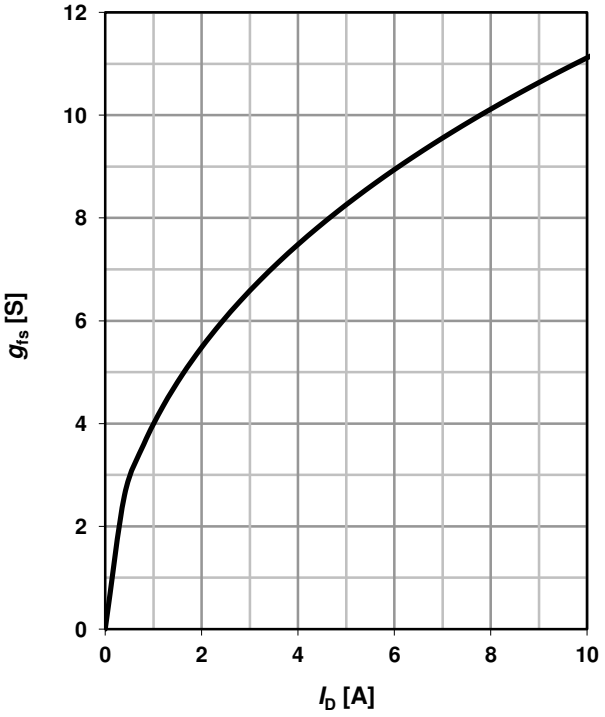
7 Typ. transfer characteristics

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



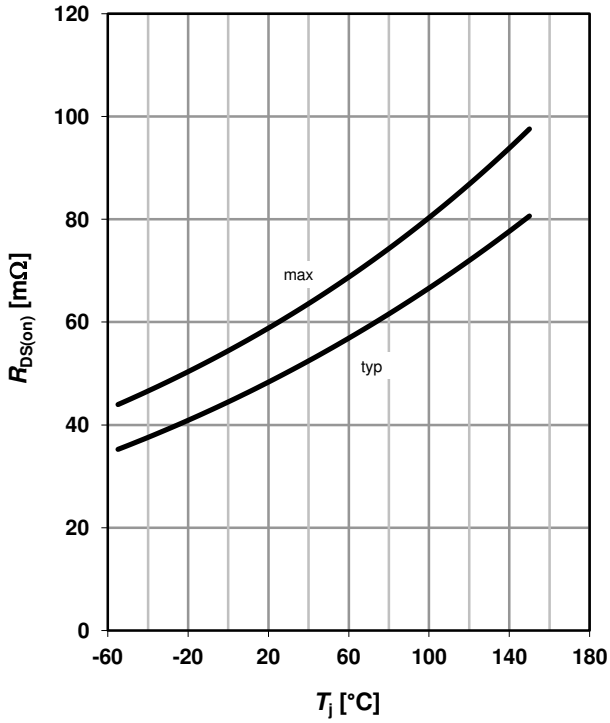
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



9 Drain-source on-state resistance

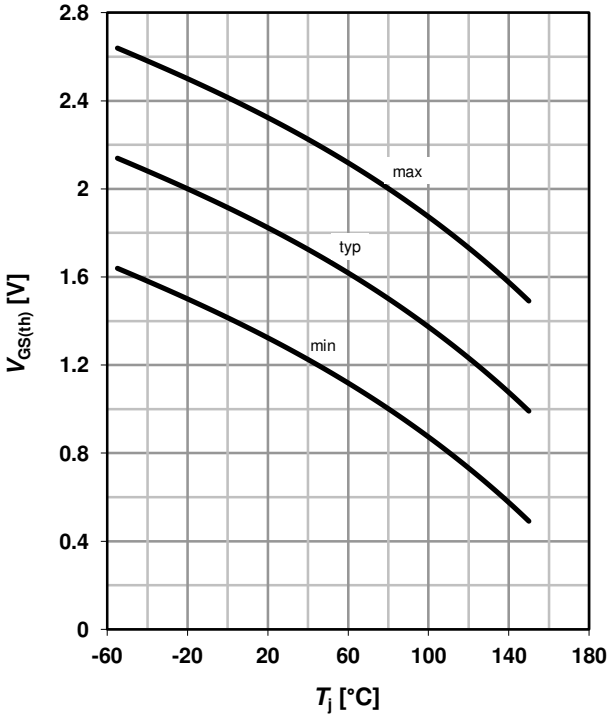
$R_{DS(on)}$=f(T_j); I_D=4.5 A; V_{GS}=10 V



10 Typ. gate threshold voltage

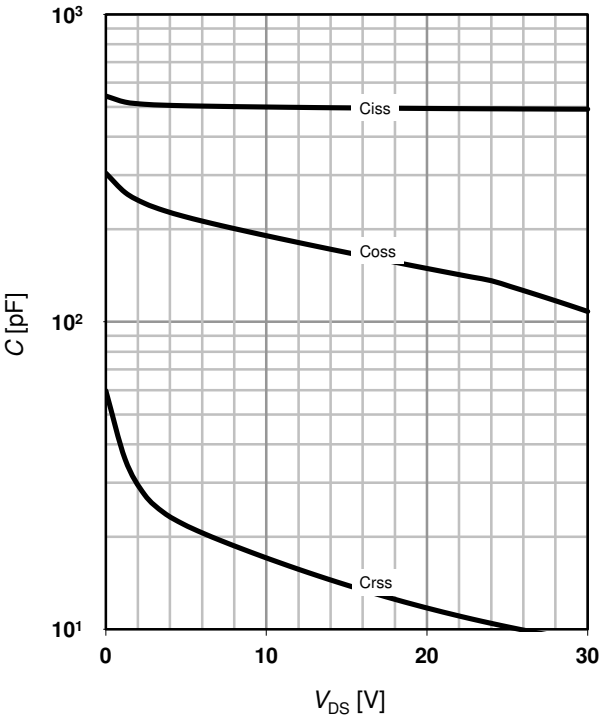
$V_{GS(th)}$=f(T_j); V_{DS}=V_{GS}; I_D=15 µA

parameter: I_D



11 Typ. capacitances

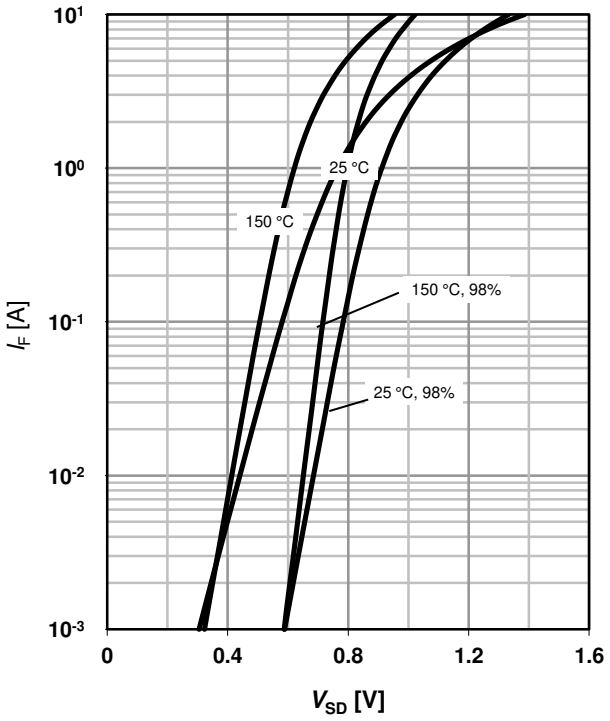
C=f(V_{DS}); V_{GS}=0 V; f=1 MHz; T_j=25°C



12 Forward characteristics of reverse diode

I_F=f(V_{SD})

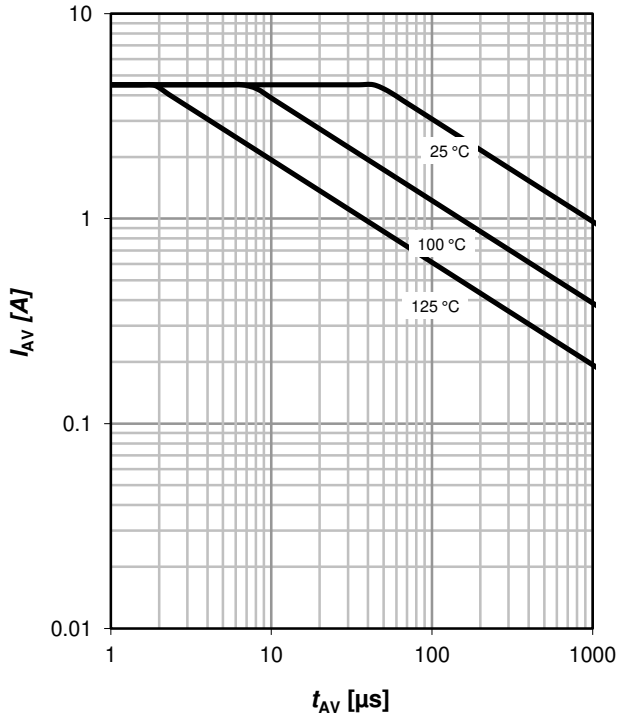
parameter: T_j



13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

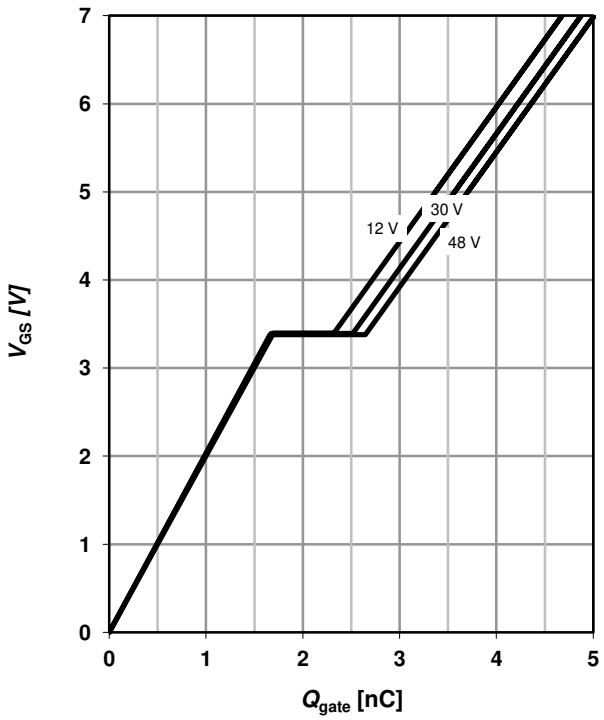
parameter: $T_{j(start)}$



14 Typ. gate charge

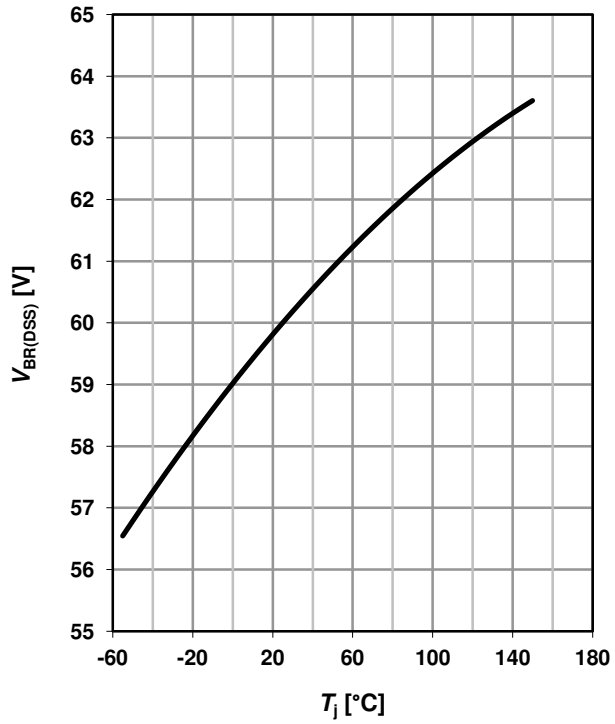
V_{GS}=f(Q_{gate}); I_D=4.5 A pulsed

parameter: V_{DD}

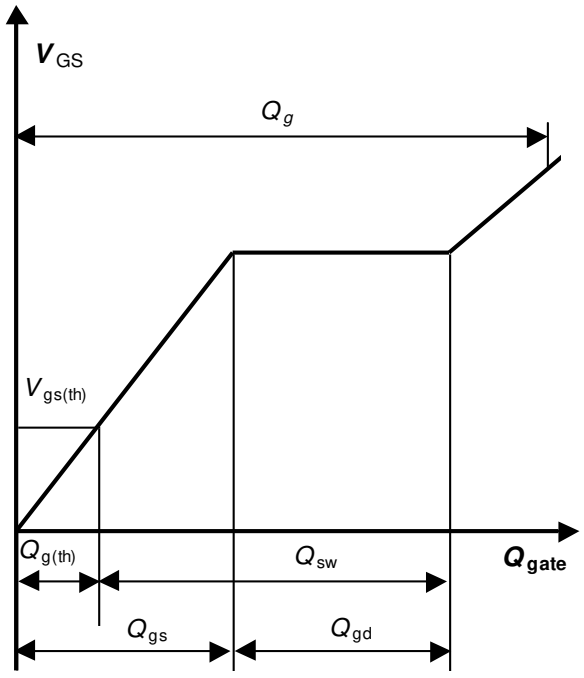


15 Drain-source breakdown voltage

$V_{BR(DSS)}$=f(T_j); I_D=250 µA

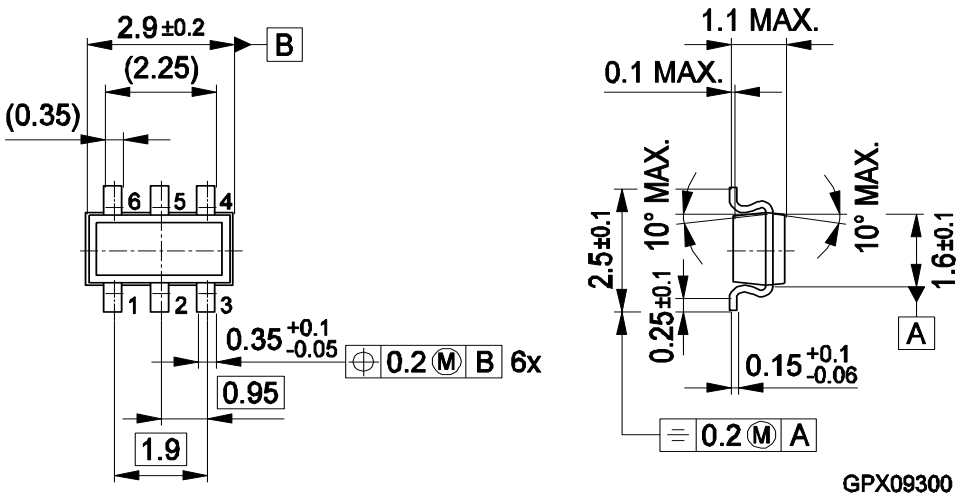


16 Gate charge waveforms

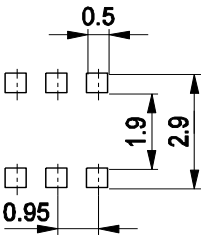


Package Outline:

TSOP-6



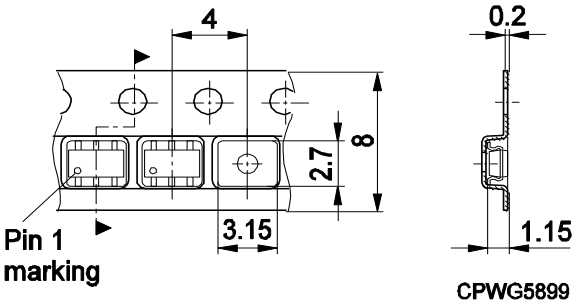
Footprint:



Remark: Wave soldering possible dep. on customers process conditions

HLG09283

Packaging:



Dimensions in mm

Published by
Infineon Technologies AG
81726 Munich, Germany

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