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OptiMOS®-P Small-Signal-Transistor

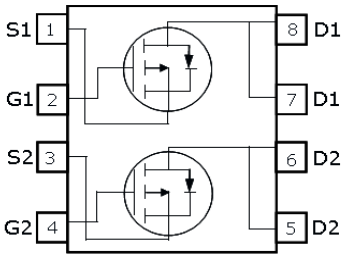
Features

- Dual P-Channel in SO8
- Enhancement mode
- Logic level
- 150°C operating temperature
- Qualified according JEDEC for target applications
- Halogen-free according to IEC61249-2-21
- Pb-free lead plating; RoHS compliant

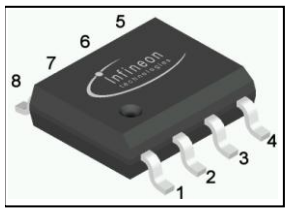
RoHS Halogen-Free

Product Summary

V_{DS}		-30	V
$R_{DS(on),max}$	V_{GS}=-10V	21	mΩ
	V_{GS}=-4.5V	32	
I_D		-8.2	A



SO 8



Type	Package	Marking	Lead free	Halogen free	Packing
BSO303P H	PG-DSO- 8	303P	Yes	Yes	dry

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

Parameter	Symbol	Conditions	Value		Unit
			10 secs	steady state	
Continuous drain current[1]	I_D	T_C=25 °C	-8,2	-7,0	A
		T_C=70 °C	-6,6	-5,8	
Pulsed drain current[2]	$I_{D,pulse}$	T_C=25 °C	-32,8		
Avalanche energy, single pulse	E_{AS}	I_D=-8.2 A, R_{GS}=25 Ω	97		mJ
Gate source voltage	V_{GS}		±20		V
Power dissipation	P_{tot}	T_A=25 °C	2		W
Operating and storage temperature	T_j, T_{stg}		-55 ... 150		°C
ESD class		JESD22-A114 HBM	1B (500V - 1kV)		
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
SMD version, device on PCB:	R_{thJA}	minimal footprint, t< 10s			110	
		minimal footprint, steady state			150	
		6 cm^2 cooling area[1)] t<10s	-	-	62,5	
		6 cm^2 cooling area[1),] steady state	-	-	80	
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=-250µA	-30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-100 µA	-1	-1,5	-2	
Zero gate voltage drain current	I_{DSS}	V_{DS}=-30 V, V_{GS}=0 V, T_j=25 °C	-	-0,1	-1	µA
		V_{DS}=-30 V, V_{GS}=0 V, T_j=150 °C	-	-10	-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=-6.6 A	-	25	32	mW
		V_{GS}=-10 V, I_D=-8.2 A	-	17	21	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=-6.6 A	11	27	-	S

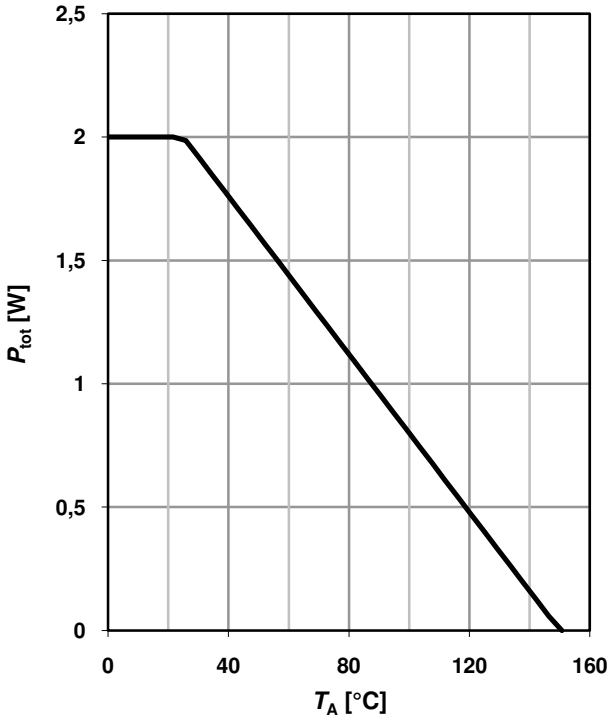
[1)] Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm^2 (one layer, 70 µm thick) copper area for drain connection. PCB is vertical without blown air: t≤10 sec.

[2.)] See figure3 for more detailed information

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	-	1785	2678	pF
Output capacitance	C_{oss}		-	510	765	
Reverse transfer capacitance	C_{rss}		-	425	638	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-15 V, V_{GS}=-10 V, I_D=-1 A, R_G=6 Ω	-	11	17	ns
Rise time	t_r		-	13	20	
Turn-off delay time	$t_{d(off)}$		-	55	83	
Fall time	t_f		-	39	59	
Gate Charge Characteristics[3)]						
Gate to source charge	Q_{gs}	V_{DD}=-24 V, I_D=-8.2 A, V_{GS}=0 to 10 V	-	-5	-6	nC
Gate to drain charge	Q_{gd}		-	-14	-20	
Gate charge total	Q_g		-	-36	-49	
Gate plateau voltage	$V_{plateau}$		-	-2,7	-	V
Reverse Diode						
Diode continous forward current	I_S	T_C=25 °C	-	-	-2,2	A
Diode direct current, pulsed	I_{SM}		-	-	-32,8	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=-8.2 A, T_j=25 °C	-	-0,9	-1,3	V
Reverse recovery time	t_{rr}	V_R=-15 V, I_F=$\|I_S\|$, di_F/dt=100 A/µs	-	24	36	ns
Reverse recovery charge	Q_{rr}		-	13	19	nC

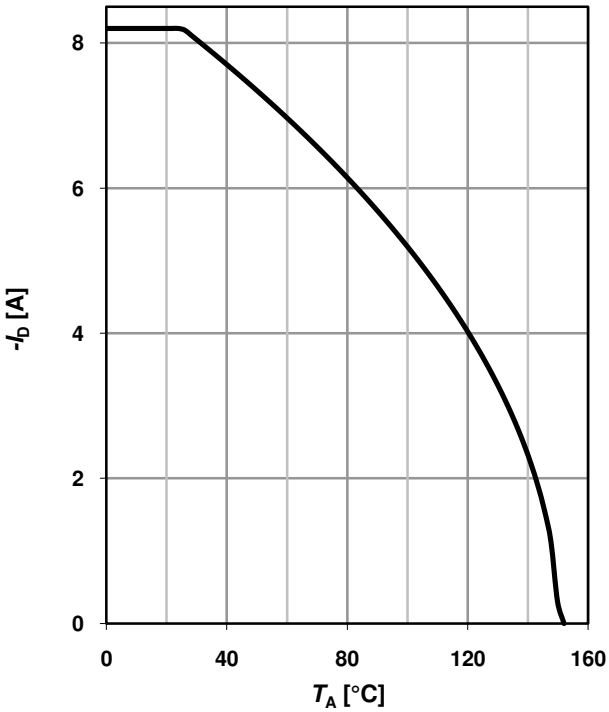
1 Power dissipation

$P_{tot}=f(T_A)$



2 Drain current

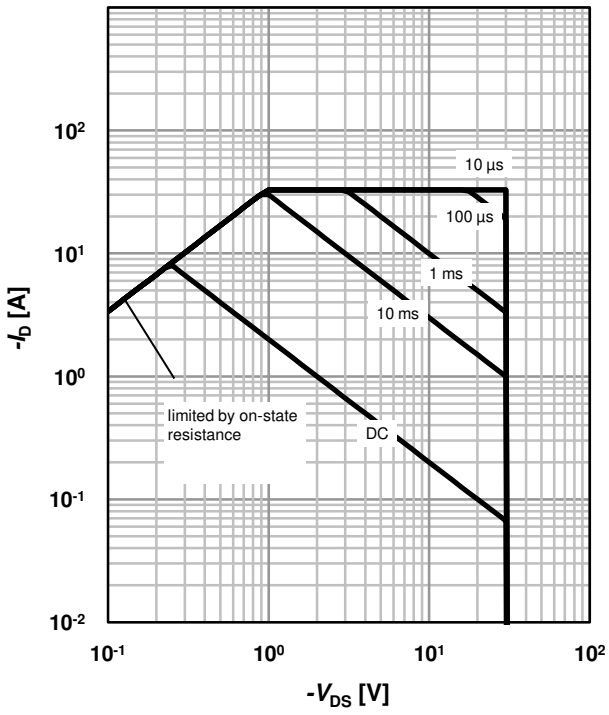
$I_D=f(T_A)$; $|V_{GS}|\geq 10$ V



3 Safe operating area

$I_D=f(V_{DS})$; $T_A=25$ °C[1)]; $D=0$

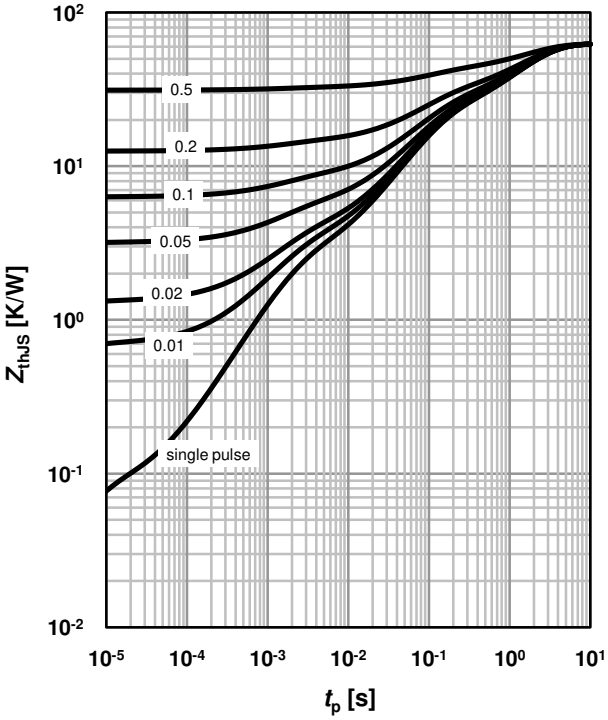
parameter: t_p



4 Max. transient thermal impedance

$Z_{thJS}=f(t_p)$

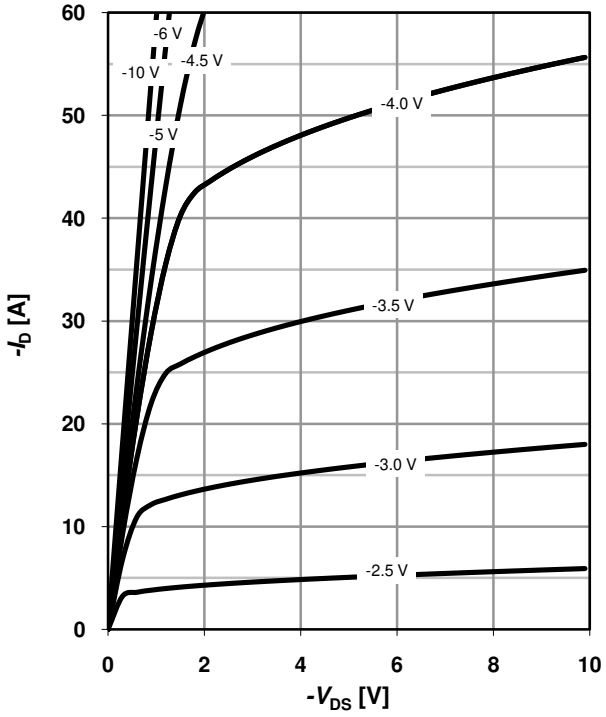
parameter: $D=t_p/T$



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

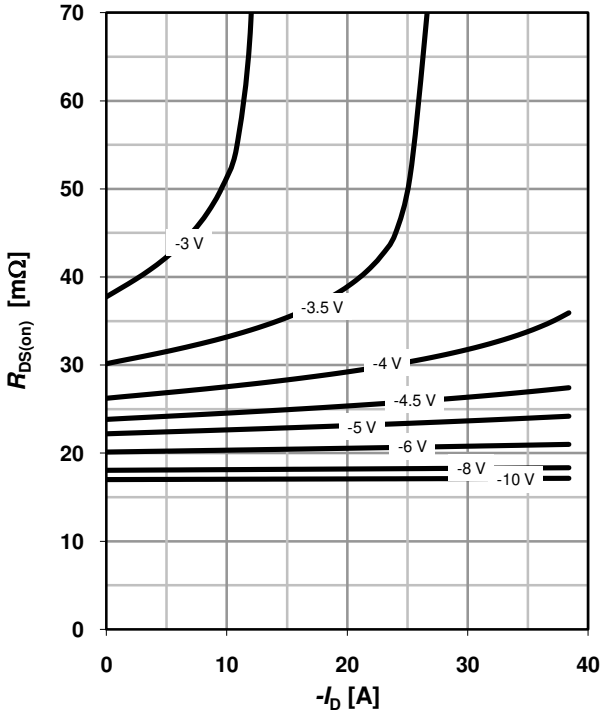
parameter: V_{GS}



6 Typ. drain-source on resistance

$R_{DS(on)}$=f(I_D); T_j=25 °C

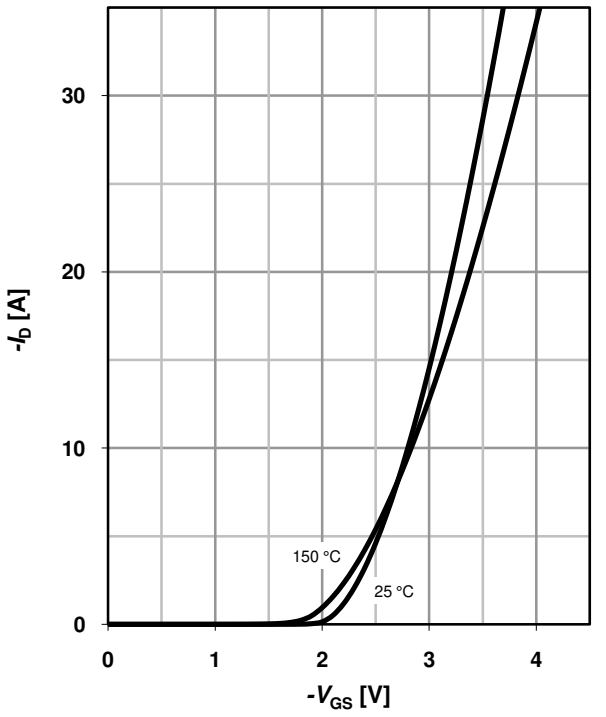
parameter: V_{GS}



7 Typ. transfer characteristics

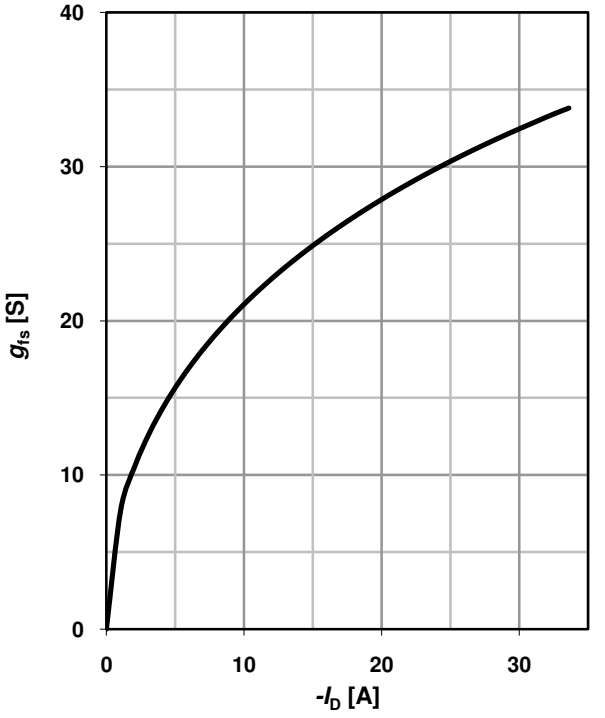
I_D=f(V_{GS}); $|V_{DS}|>2|I_D|R_{DS(on)max}$

parameter: T_j



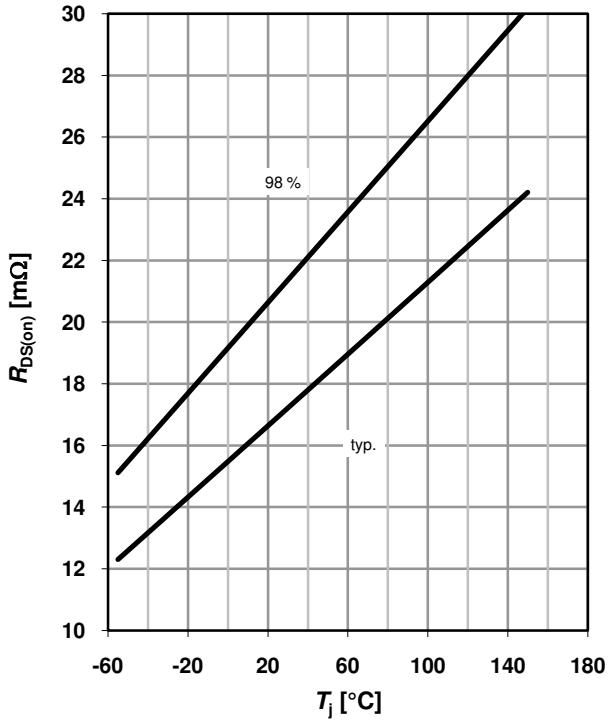
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



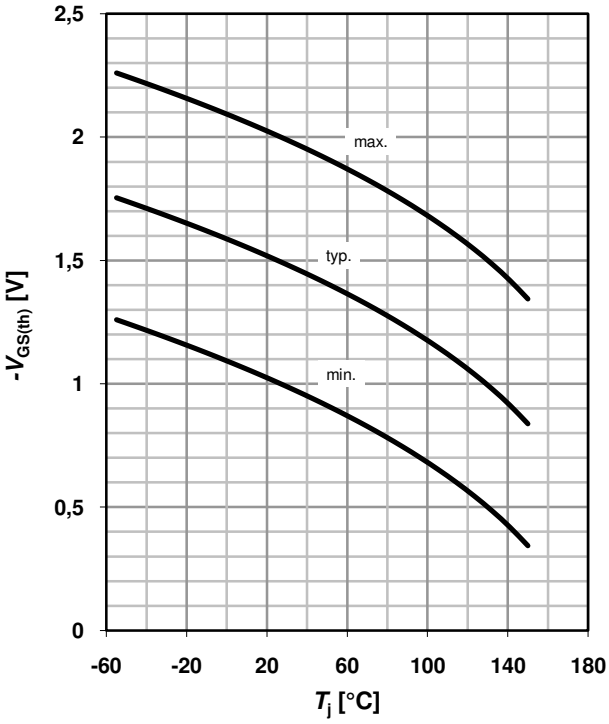
9 Drain-source on-state resistance

$R_{DS(on)}=f(T_j)$; I_D=-8.2 A; V_{GS}=-10 V



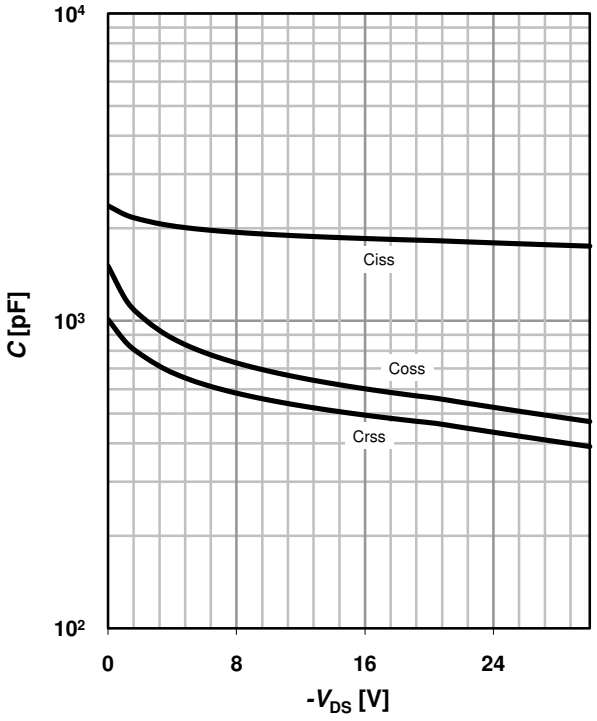
10 Typ. gate threshold voltage

$V_{GS(th)}=f(T_j)$; $V_{GS}=V_{DS}$; I_D=-100 µA



11 Typ. capacitances

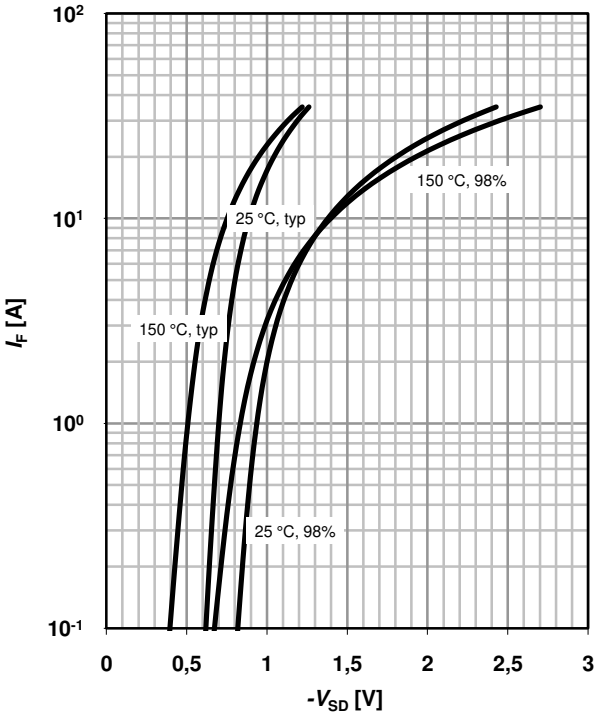
$C=f(V_{DS})$; V_{GS}=0 V; f=1 MHz



12 Forward characteristics of reverse diode

$I_F=f(V_{SD})$

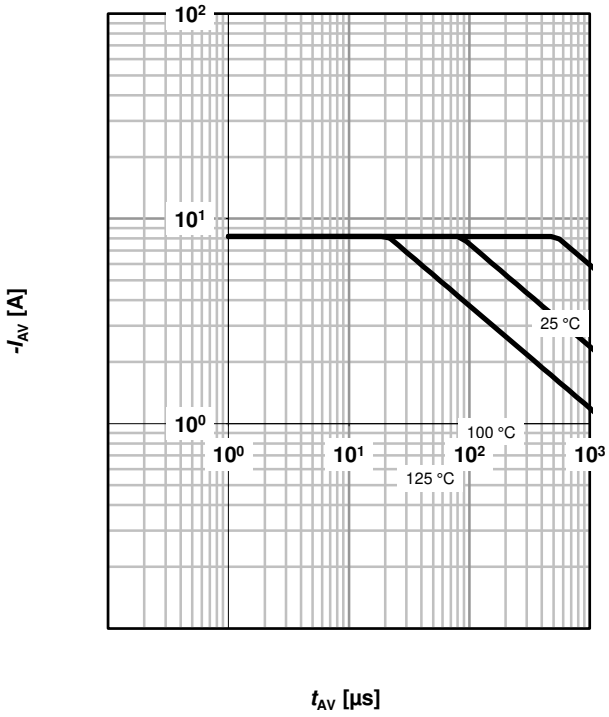
parameter: T_j



13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

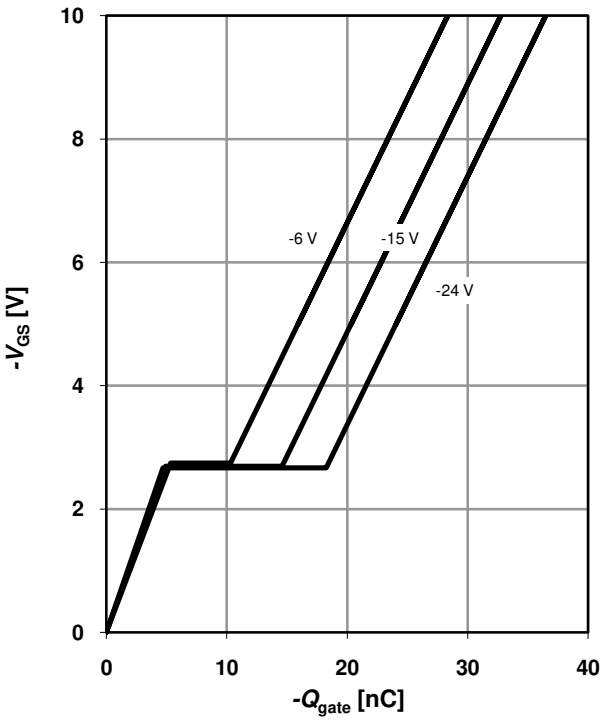
parameter: $T_{j(start)}$



14 Typ. gate charge

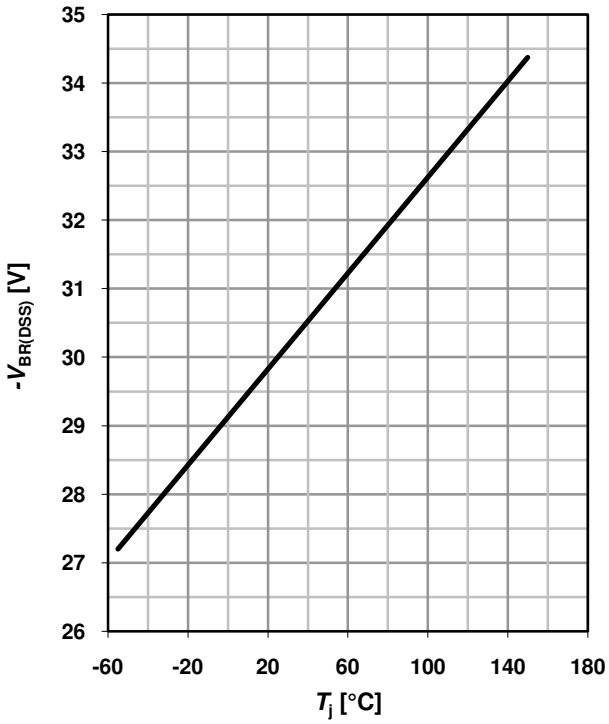
V_{GS}=f(Q_{gate}); I_D=-8.2 A pulsed

parameter: V_{DD}



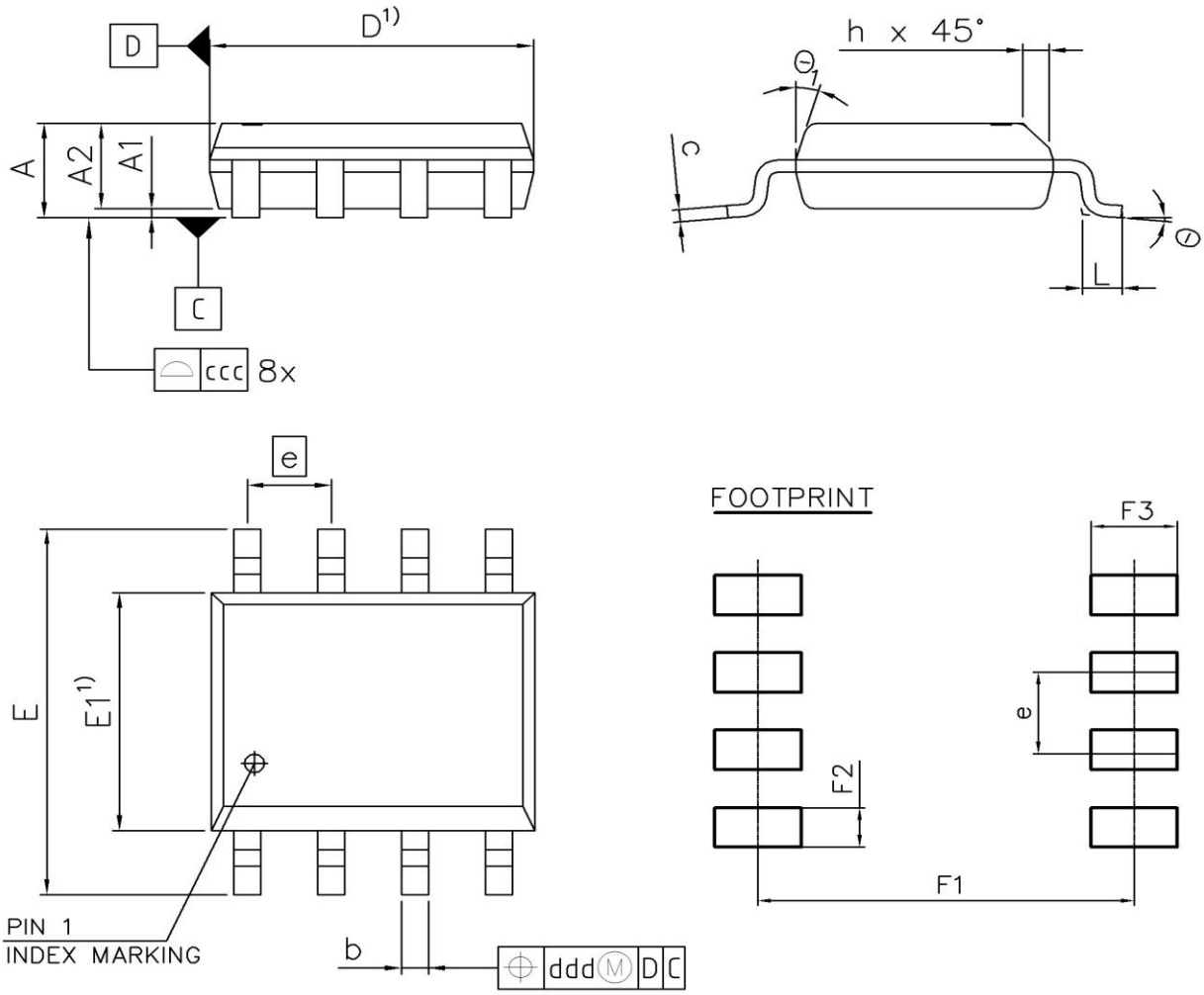
15 Drain-source breakdown voltage

$V_{BR(DSS)}$=f(T_j); I_D=-250 µA



Package Outline

PG-DSO-8: Outline



1) DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	1.75	-	0.069
A1	0.10	-	0.004	-
A2	1.25	1.65	0.049	0.065
b	0.35	0.51	0.014	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27		0.050	
N	8		8	
L	0.39	0.89	0.015	0.035
h	0.23	0.50	0.009	0.020
Θ	0°	8°	0°	8°
Θ_1	-	19°	-	19°
ccc	0.10		0.004	
ddd	0.25		0.010	
F1	5.59	5.79	0.220	0.228
F2	0.55	0.75	0.022	0.030
F3	1.21	1.41	0.048	0.056

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SCALE 0 1.0 0 1.0 2mm

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