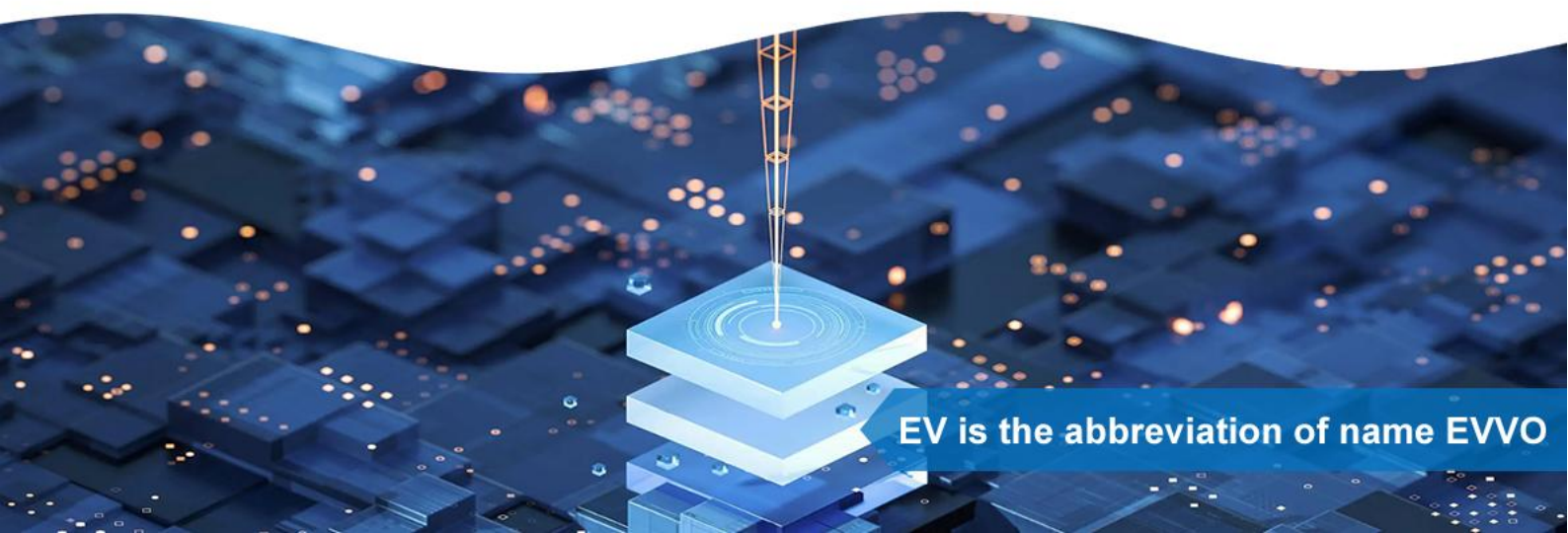
EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

Product Specification

Domestic Part Number	EVBSS308PE-S1
Overseas Part Number	BSS308PE
Equivalent Part Number	BSS308PE

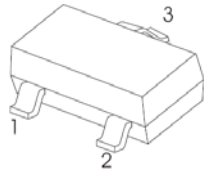
"S1" means SOT-23



Features

- $V_{DS\ (V)}$ = -30V
- $R_{DS(ON)}$ < 80mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 130mΩ (V_{GS} = 4.5V)

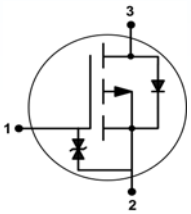
SOT－23



1. GATE
2. SOURCE
3. DRAIN

Product Summary

- P-channel
- Enhancement mode
- Logic level (4.5V rated)
- ESD protected



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

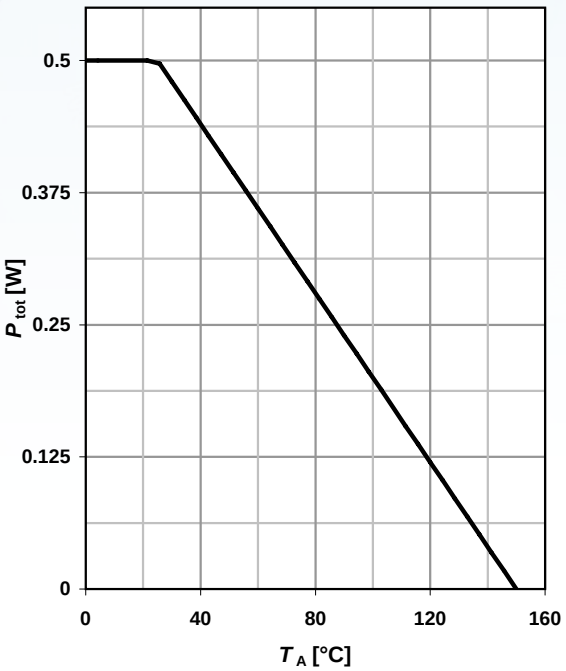
Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	T_A=25 °C	-2.0	A
		T_A=70 °C	-1.6	
Pulsed drain current	$I_{D,pulse}$	T_A=25 °C	-8.0	
Avalanche energy, single pulse	E_{AS}	I_D=-2 A, R_{GS}=25 Ω	-10.7	mJ
Reverse diode dv/dt	dv/dt	I_D=-2 A, V_{DS}=-16V, di/dt=-200A/µs, $T_{j,max}$=150 °C	6	kV/µs
Gate source voltage	V_{GS}		±20	V
Power dissipation[1)]	P_{tot}	T_A=25 °C	0.5	W
Operating and storage temperature	T_j, T_{stg}		-55 ... 150	°C
ESD Class		JESD22-A114 -HBM	2 (2kV to 4kV)	
Soldering Temperature			260 °C	°C
IEC climatic category; DIN IEC 68-1			55/150/56	°C

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - ambient	R_{thJA}	minimal footprint[1)]	-	-	250	K/W
Electrical characteristics, at T_j=25 °C, unless otherwise specified						
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D=-250µA	-30	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-11µA	-2.0	-1.5	-1.0	
Drain-source leakage current	I_{DSS}	V_{DS}=-30V, V_{GS}=0 V, T_j=25 °C	-	-	-1	µA
		V_{DS}=-30V, V_{GS}=0V, T_j=150 °C	-	-	-100	
Gate-source leakage current	I_{GSS}	V_{GS}=-20V, V_{DS}=0V	-	-	-5	µA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=-4.5 V, I_D=-1.7 A	-	88	130	mΩ
		V_{GS}=-10 V, I_D=-2 A	-	62	80	
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=-1.6 A		4.6	-	S

[1)] Performed on 40mm^2 FR4 PCB. The traces are 1mm wide, 70µm thick and 20mm long; they are present on both sides of the PCB.

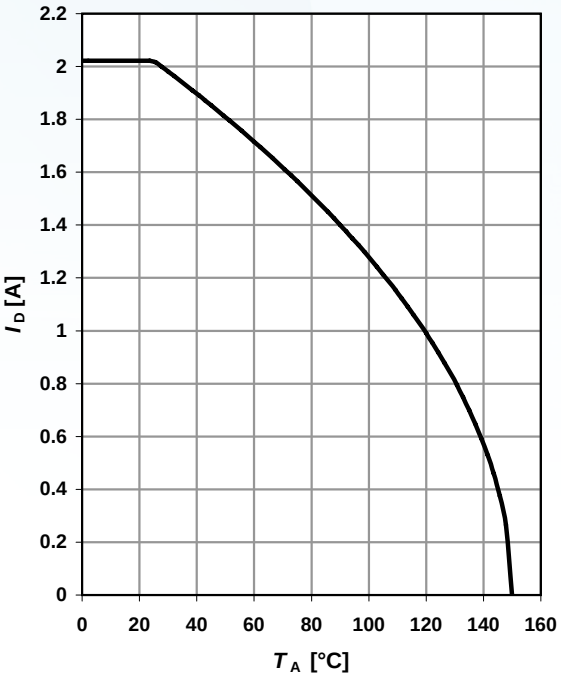
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=-15 V, f=1 MHz	-	376	500	pF
Output capacitance	C_{oss}		-	196	261	
Reverse transfer capacitance	C_{rss}		-	12	18	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-15V, V_{GS}=-10 V, I_D=-2 A, R_G=6 Ω	-	5.6	-	ns
Rise time	t_r		-	7.7	-	
Turn-off delay time	$t_{d(off)}$		-	15.3	-	
Fall time	t_f		-	2.8	-	
Gate Charge Characteristics						
Gate to source charge	Q_{gs}	V_{DD}=-15 V, I_D=-2 A, V_{GS}=0 to -10 V	-	-1.2	-	nC
Gate to drain charge	Q_{gd}		-	-0.6	-	
Gate charge total	Q_g		-	-5.0	-	
Gate plateau voltage	$V_{plateau}$		-	-3.1	-	V
Reverse Diode						
Diode continous forward current	I_S	T_A=25 °C	-	-	-0.4	A
Diode pulse current	$I_{S,pulse}$		-	-	-8.4	
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	t_{rr}	V_R=10 V, I_F=-2 A, di_F/dt=100 A/µs	-	14	-	ns
Reverse recovery charge	Q_{rr}		-	-5.9	-	nC

Typical Electrical Characteristics



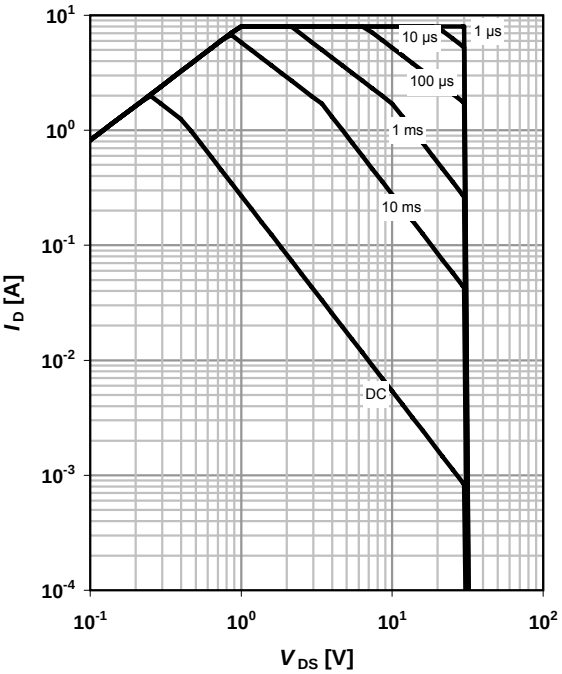
1 Power dissipation

$P_{tot}=f(T_A)$



2 Drain current

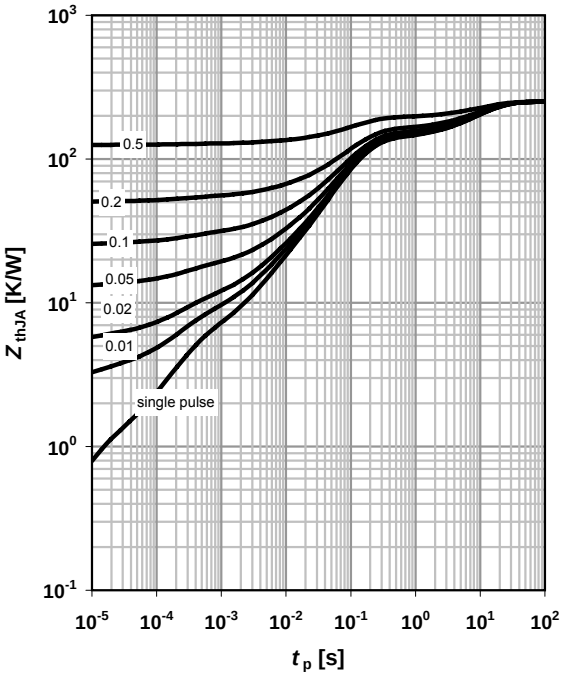
$I_D=f(T_A)$; $V_{GS}\geq 10$ V



3 Safe operating area

$I_D=f(V_{DS})$; $T_A=25$ °C; $D=0$

parameter: t_p

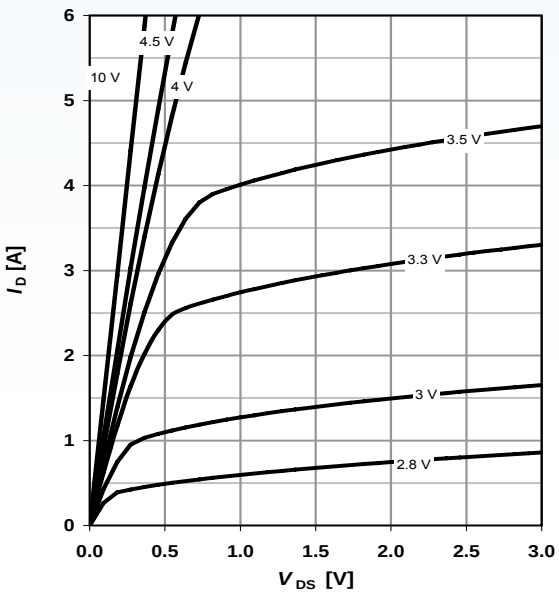


4 Max. transient thermal impedance

$Z_{thJA}=f(t_p)$

parameter: $D=t_p/T$

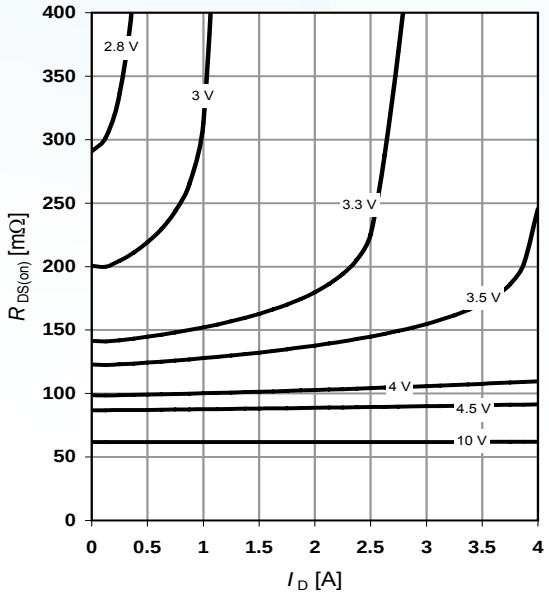
Typical Electrical Characteristics



5 Typ. output characteristics

$I_D=f(V_{DS})$; $T_j=25$ °C

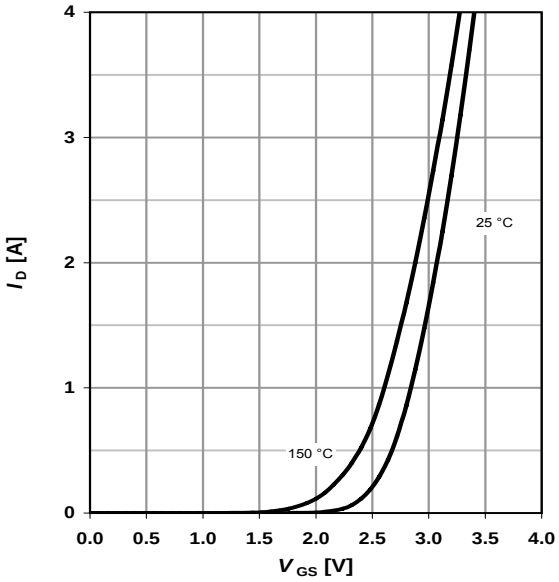
parameter: V_{GS}



6 Typ. drain-source on resistance

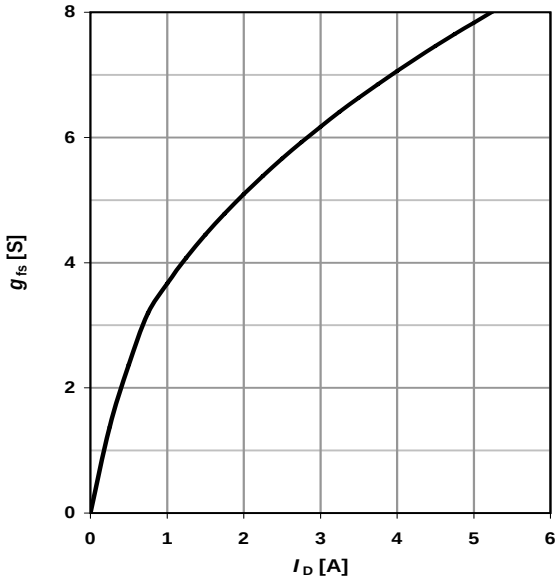
$R_{DS(on)}=f(I_D)$; $T_j=25$ °C

parameter: V_{GS}



7 Typ. transfer characteristics

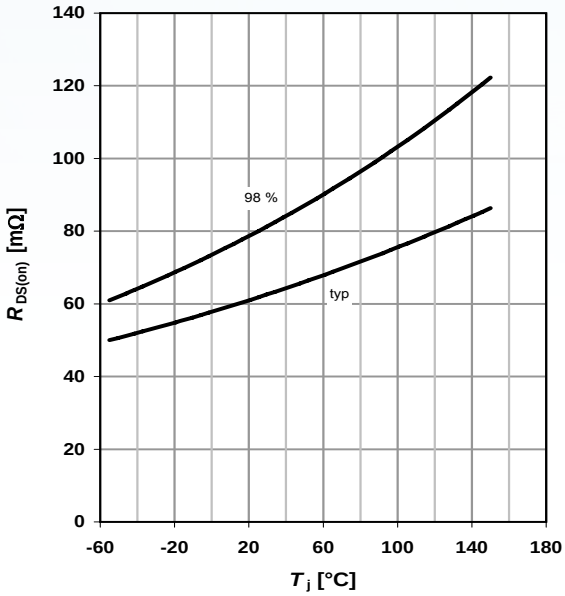
$I_D=f(V_{GS})$; $|V_{DS}|>2|I_D|R_{DS(on)max}$



8 Typ. forward transconductance

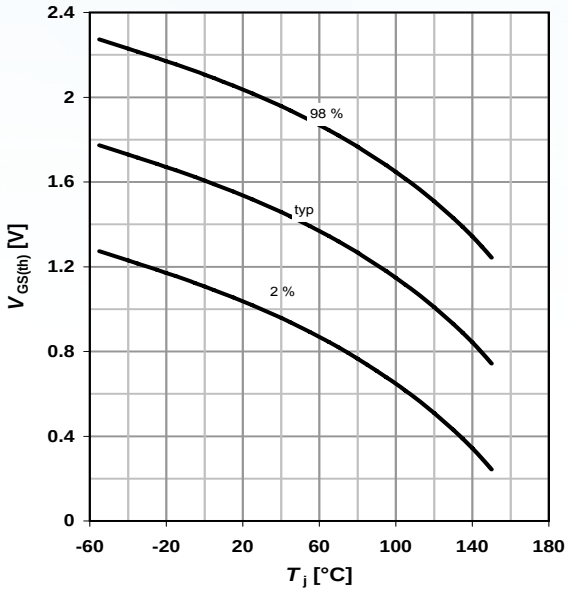
$g_{fs}=f(I_D)$; $T_j=25$ °C

Typical Electrical Characteristics



9 Drain-source on-state resistance

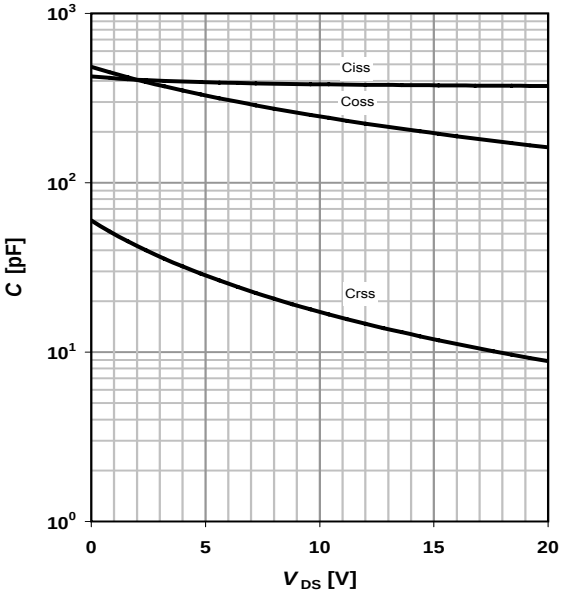
$R_{DS(on)}$=f(T_j); I_D=-2 A; V_{GS}=-10 V



10 Typ. gate threshold voltage

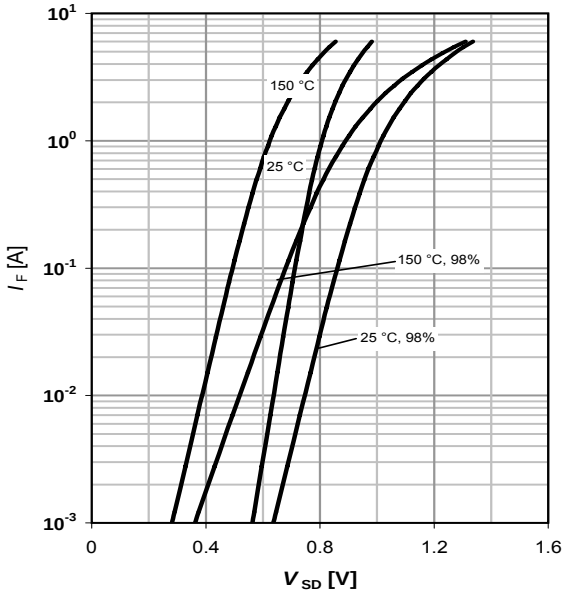
$V_{GS(th)}$=f(T_j); V_{DS}=V_{GS}; I_D=11 µA

parameter: I_D



11 Typ. capacitances

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

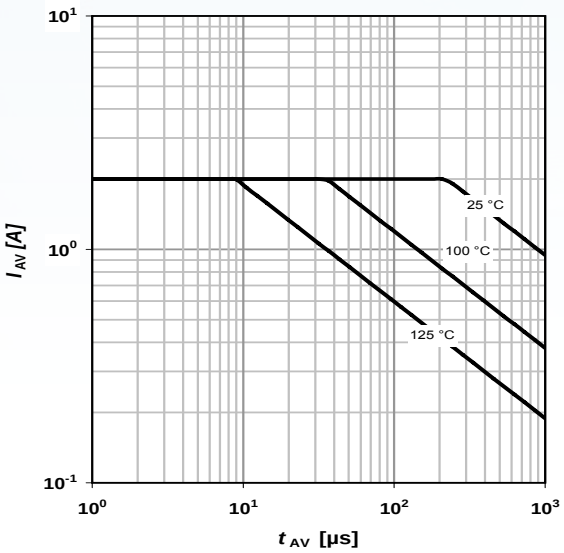


12 Forward characteristics of reverse diode

I_F=f(V_{SD})

parameter: T_j

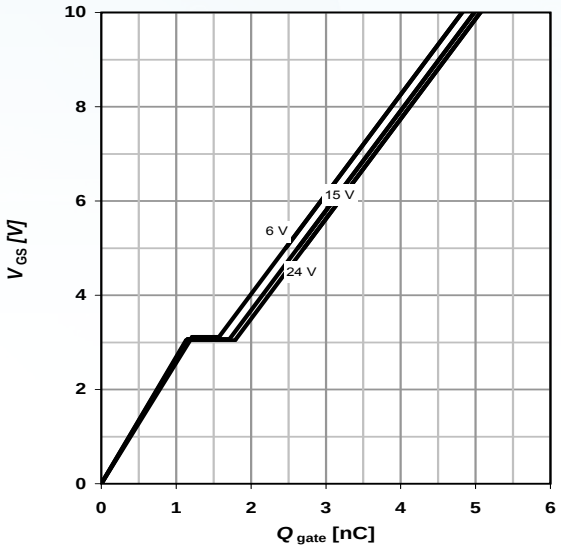
Typical Electrical Characteristics



13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

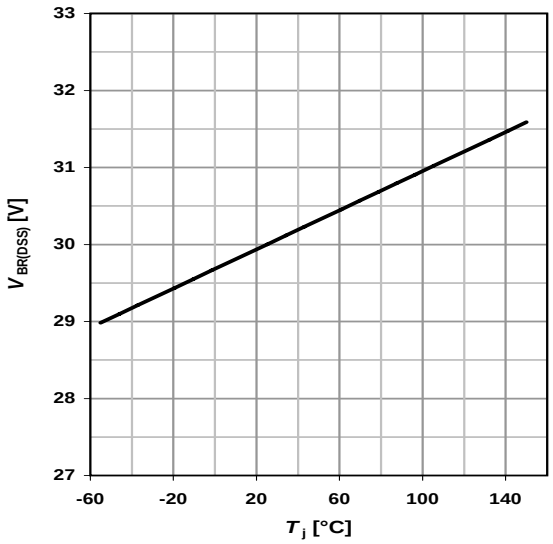
parameter: $T_{j(start)}$



14 Typ. gate charge

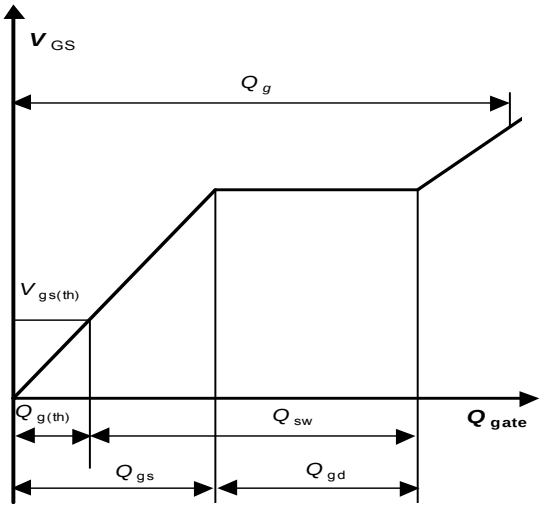
V_{GS}=f(Q_{gate}); I_D=-2 A pulsed

parameter: V_{DD}



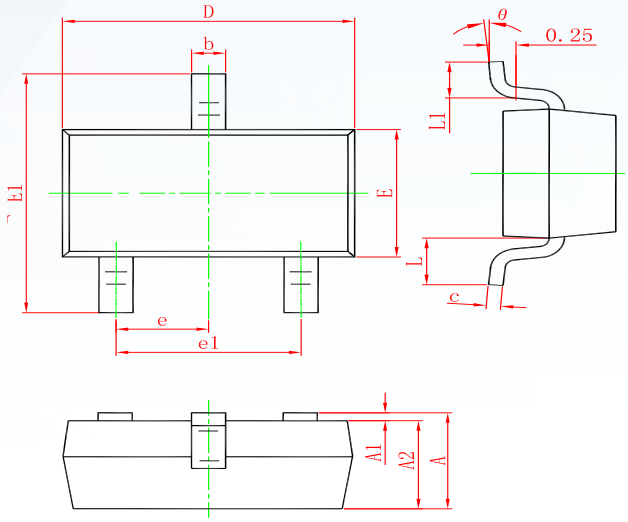
15 Drain-source breakdown voltage

$V_{BR(DSS)}$=f(T_j); I_D=250 µA



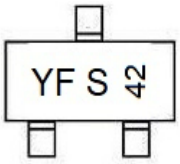
16 Gate charge waveforms

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
BSS308PE	SOT-23	3000	Tape and reel

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