OptiMOS™3 Power-Transistor

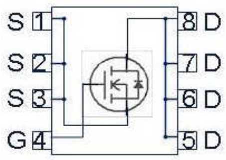
Product Summary

V_{DS}	60	V
$R_{DS(on),max}$	6.7	mΩ
I_D	20	A

Features

- Ideal for high frequency switching and sync. rec.
- Optimized technology for DC/DC converters
- Excellent gate charge x $R_{DS(on)}$ product (FOM)
- Very low on-resistance $R_{DS(on)}$
- N-channel, logic level
- 100% avalanche tested
- Pb-free plating; RoHS compliant
- Qualified according to JEDEC[1)] for target applications
- Halogen-free according to IEC61249-2-21

Type	BSZ067N06LS3 G
	
Package	PG-TSDSON-8
Marking	067N06L



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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current	I_D	V_{GS}=10 V, T_C=25 °C	20	A
		V_{GS}=10 V, T_C=100 °C	20	
		V_{GS}=4.5 V, T_C=25 °C	20	
		V_{GS}=4.5 V, T_C=100 °C	20	
		V_{GS}=10 V, T_A=25 °C, R_{thJA}=60 K/W[2)]	14	
Pulsed drain current[3)]	$I_{D,pulse}$	T_C=25 °C	80	
Avalanche energy, single pulse[4)]	E_{AS}	I_D=20 A, R_{GS}=25 Ω	118	mJ
Gate source voltage	V_{GS}		±20	V

1) J-STD20 and JESD22

2) Device on 40 mm x 40 mm x 1.5 mm epoxy PCB FR4 with 6 cm2 (one layer, 70 µm thick) copper area for drain connection. PCB is vertical in still air.

3) See figure 3 for more detailed information

4) See figure 13 for more detailed information

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

Parameter	Symbol	Conditions	Value	Unit
Power dissipation	P_{tot}	T_C=25 °C	69	W
		T_A=25 °C, R_{thJA}=60 K/W[2)]	2.1	
Operating and storage temperature	T_j, T_{stg}		-55 ... 150	°C
IEC climatic category; DIN IEC 68-1			55/150/56	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal characteristics						
Thermal resistance, junction - case	R_{thJC}		-	-	1.8	K/W
Device on PCB	R_{thJA}	minimal footprint	-	-	-	
		6 cm^2 cooling area[2)]	-	-	60	

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

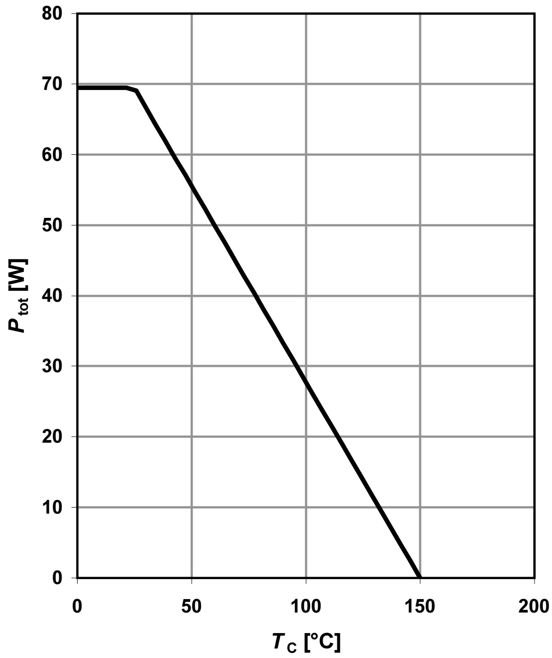
Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0 V, I_D=1 mA	60	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=35 µA	1.2	1.7	2.2	
Zero gate voltage drain current	I_{DSS}	V_{DS}=60 V, V_{GS}=0 V, T_j=25 °C	-	0.1	1	µA
		V_{DS}=60 V, V_{GS}=0 V, T_j=125 °C	-	10	100	
Gate-source leakage current	I_{GSS}	V_{GS}=20 V, V_{DS}=0 V	-	10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=4.5 V, I_D=20 A	-	7.8	12.1	mΩ
		V_{GS}=10 V, I_D=20 A	-	5.3	6.7	
Gate resistance	R_G		-	1	-	Ω
Transconductance	g_{fs}	$\|V_{DS}\|>2\|I_D\|R_{DS(on)max}$, I_D=20 A	25	50	-	S

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Dynamic characteristics						
Input capacitance	C_{iss}	V_{GS}=0 V, V_{DS}=30 V, f=1 MHz	-	3800	5100	pF
Output capacitance	C_{oss}		-	710	940	
Reverse transfer capacitance	C_{rss}		-	32	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=30 V, V_{GS}=10 V, I_D=20 A, R_G=2 Ω	-	15	-	ns
Rise time	t_r		-	26	-	
Turn-off delay time	$t_{d(off)}$		-	37	-	
Fall time	t_f		-	7	-	
Gate Charge Characteristics[5)]						
Gate to source charge	Q_{gs}	V_{DD}=30 V, I_D=20 A, V_{GS}=0 to 4.5 V	-	12	-	nC
Gate charge at threshold	$Q_{g(th)}$		-	7	-	
Gate to drain charge	Q_{gd}		-	4	-	
Switching charge	Q_{sw}		-	9	-	
Gate charge total	Q_g		-	23	30	
Gate plateau voltage	$V_{plateau}$		-	3.1	-	V
Gate charge total	Q_g	V_{DD}=30 V, I_D=20 A, V_{GS}=0 to 10 V	-	51	67	nC
Output charge	Q_{oss}	V_{DD}=30 V, V_{GS}=0 V	-	35	47	
Reverse Diode						
Diode continuous forward current	I_S	T_C=25 °C	-	-	20	A
Diode pulse current	$I_{S,pulse}$		-	-	80	
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_F=20 A, T_j=25 °C	-	0.8	1.2	V
Reverse recovery time	t_{rr}	V_R=30 V, I_F=20A, di_F/dt=100 A/µs	-	40	-	ns
Reverse recovery charge	Q_{rr}		-	39	-	nC

5) See figure 16 for gate charge parameter definition

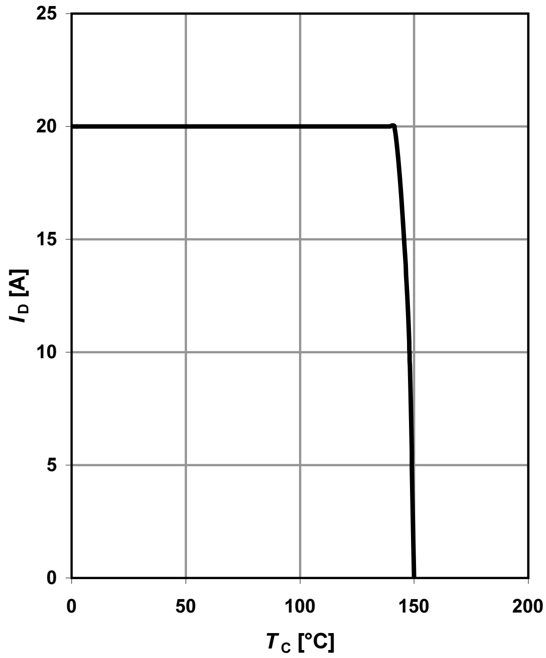
1 Power dissipation

P_{tot}=f(T_C)



2 Drain current

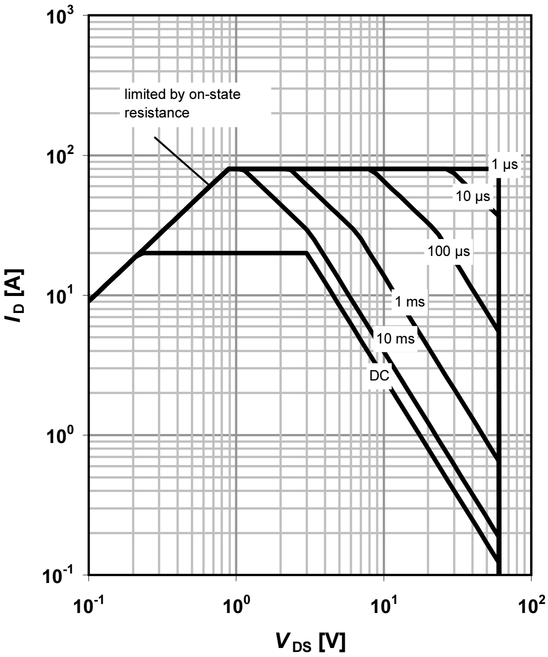
I_D=f(T_C); V_{GS}≥10 V



3 Safe operating area

I_D=f(V_{DS}); T_C=25 °C; D=0

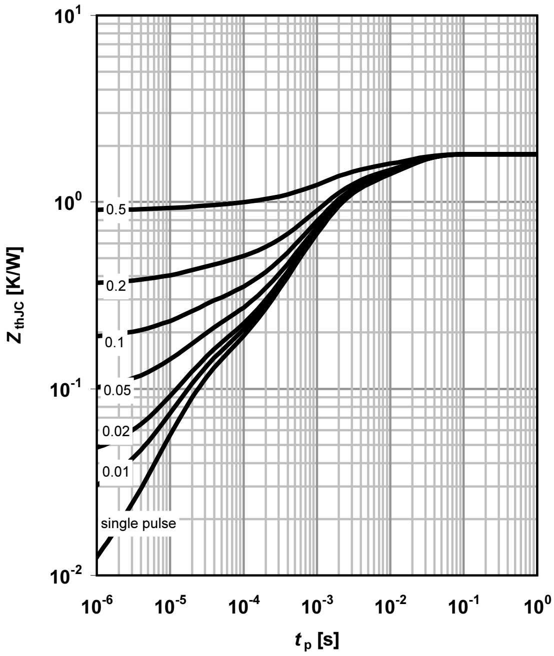
parameter: t_p



4 Max. transient thermal impedance

Z_{thJC}=f(t_p)

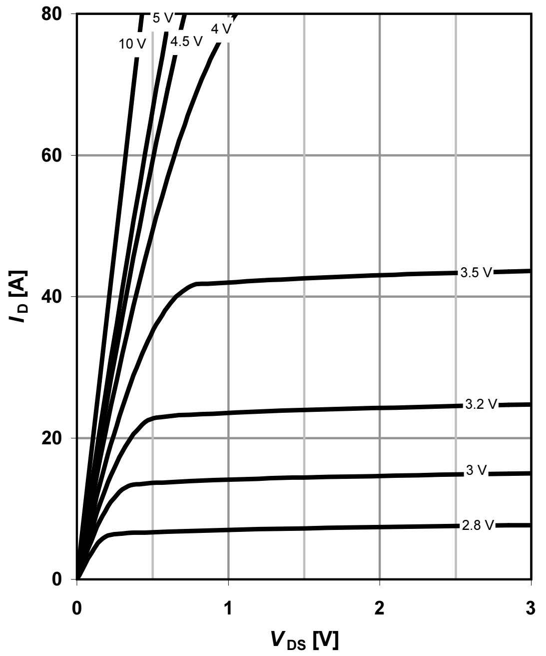
parameter: $D=t_p/T$



5 Typ. output characteristics

I_D=f(V_{DS}); T_j=25 °C

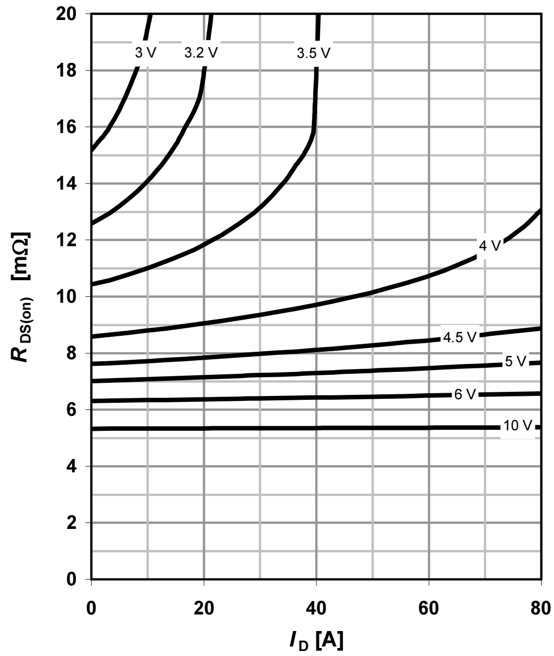
parameter: V_{GS}



6 Typ. drain-source on resistance

$R_{DS(on)}$=f(I_D); T_j=25 °C

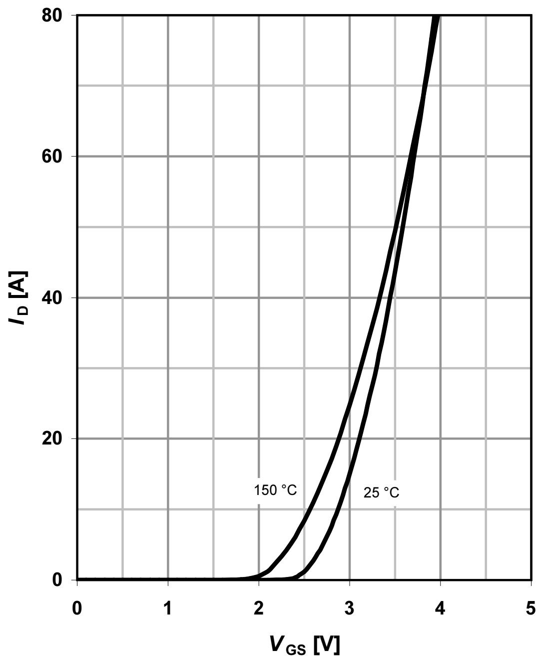
parameter: V_{GS}



7 Typ. transfer characteristics

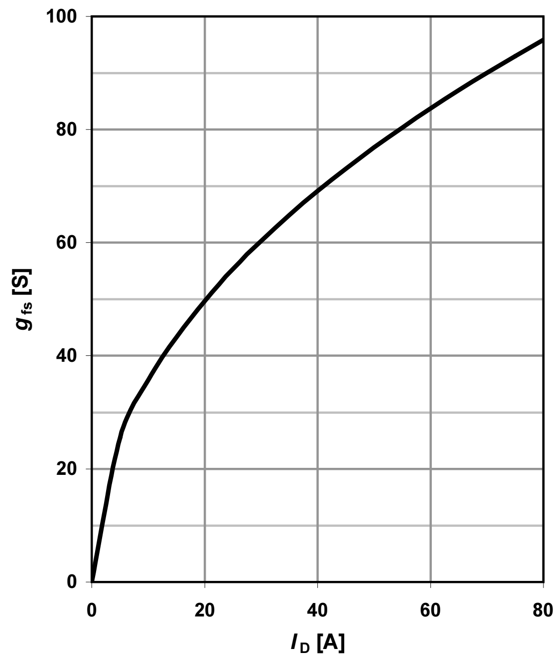
I_D=f(V_{GS}); $|V_{DS}|>2|I_D|R_{DS(on)max}$

parameter: T_j



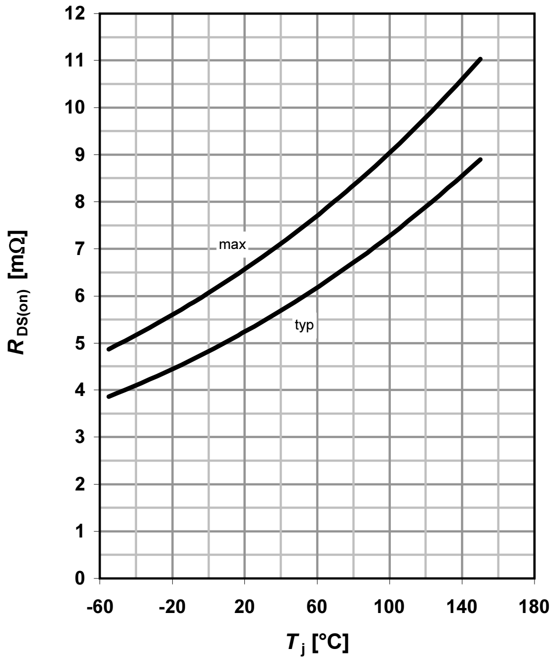
8 Typ. forward transconductance

g_{fs}=f(I_D); T_j=25 °C



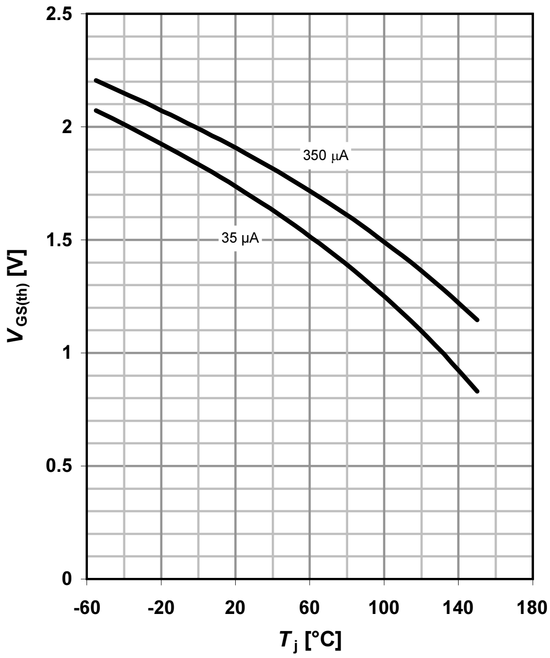
9 Drain-source on-state resistance

$R_{DS(on)}$=f(T_j); I_D=20 A; V_{GS}=10 V



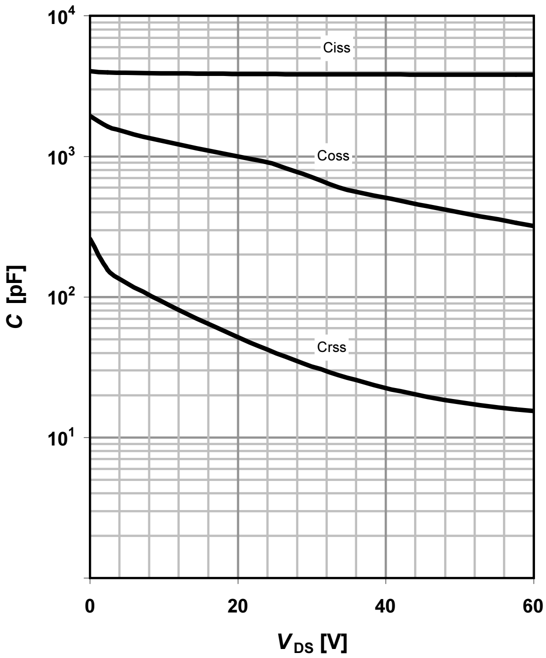
10 Typ. gate threshold voltage

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



11 Typ. capacitances

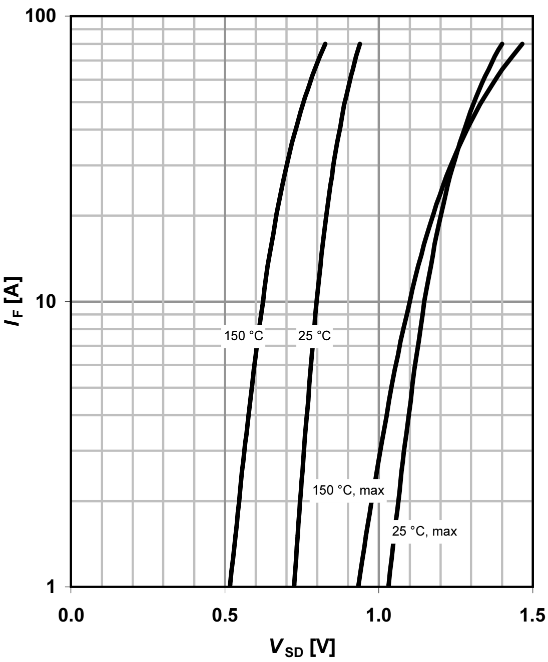
C=f(V_{DS}); V_{GS}=0 V; f=1 MHz



12 Forward characteristics of reverse diode

I_F=f(V_{SD})

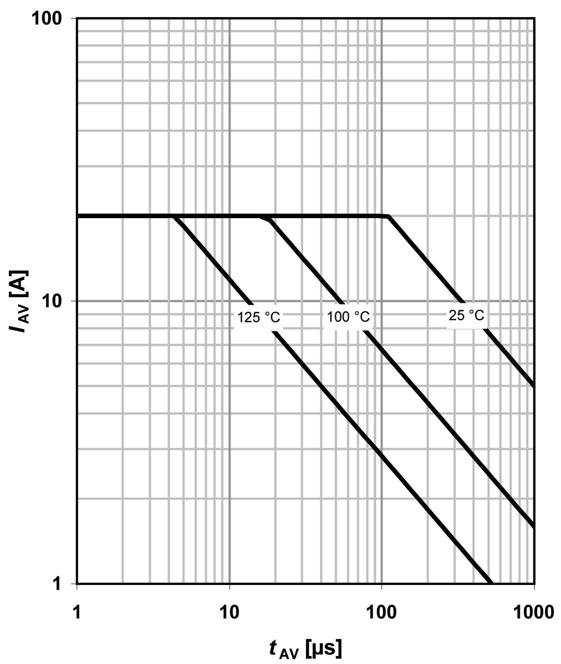
parameter: T_j



13 Avalanche characteristics

I_{AS}=f(t_{AV}); R_{GS}=25 Ω

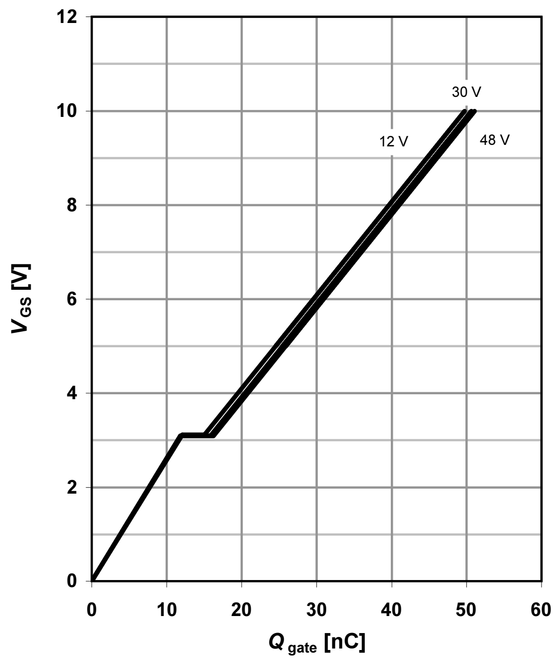
parameter: $T_{j(start)}$



14 Typ. gate charge

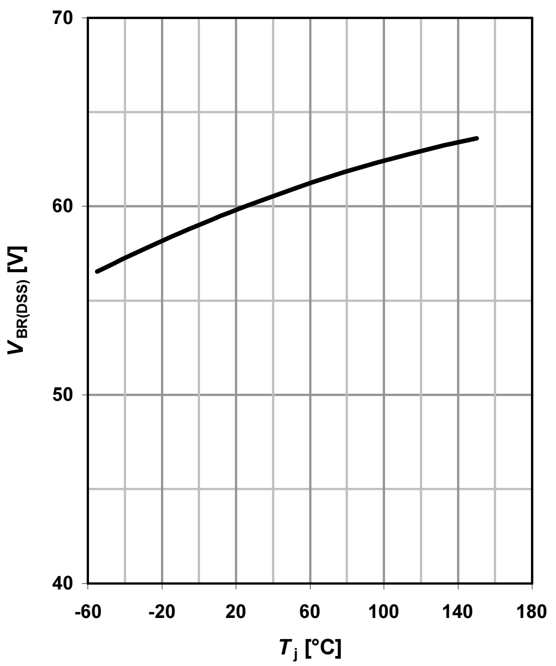
V_{GS}=f(Q_{gate}); I_D=20 A pulsed

parameter: V_{DD}

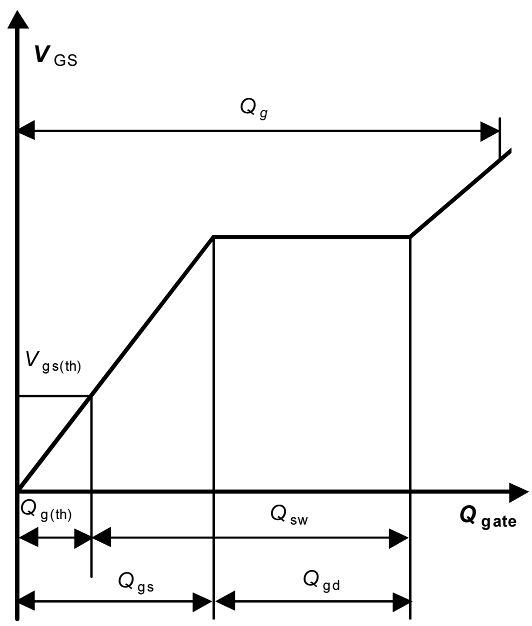


15 Drain-source breakdown voltage

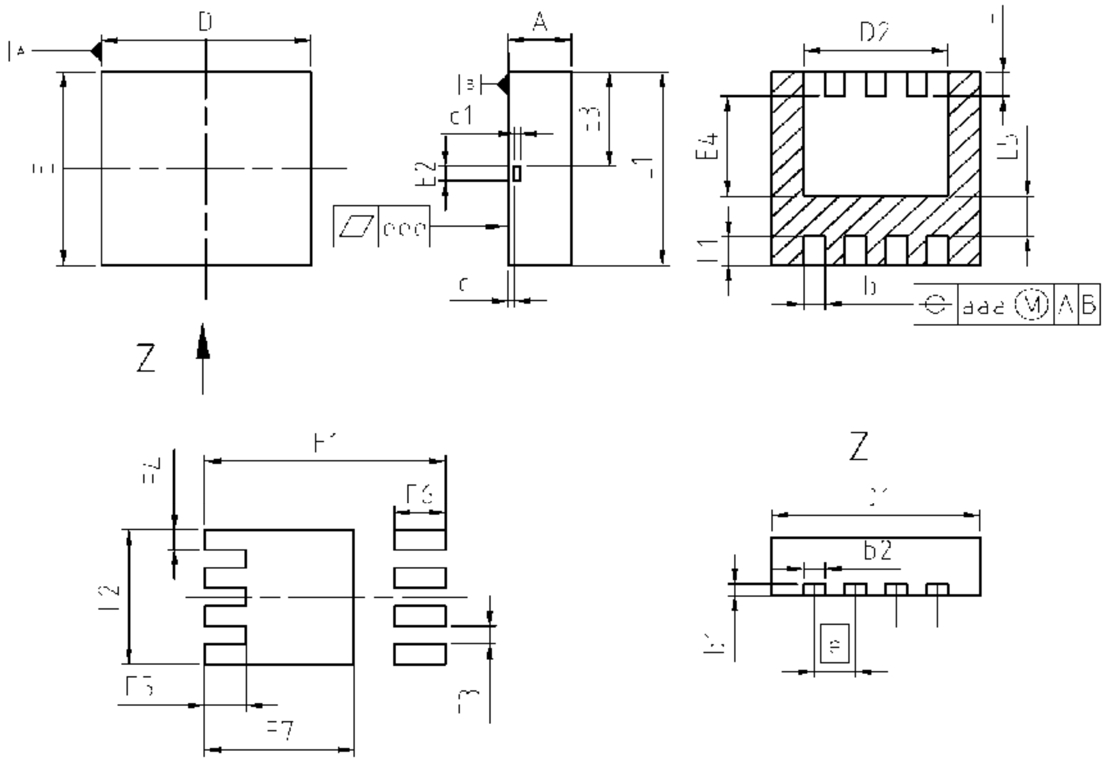
$V_{BR(DSS)}$=f(T_j); I_D=1 mA



16 Gate charge waveforms



Package Outline **PG-TSDSON-8**

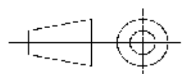


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.95	1.00	0.037	0.039
b	0.25	0.35	0.010	0.014
b1	0.10	0.30	0.004	0.012
b2	0.20	0.40	0.008	0.016
c	0.00	0.20	0.000	0.008
D=D1	3.20	3.40	0.126	0.134
D2	2.15	2.35	0.085	0.093
E=E1	3.20	3.40	0.126	0.134
E2	0.10	0.30	0.004	0.012
E3	1.35	1.55	0.053	0.061
E4	1.60	1.80	0.063	0.071
E5	0.66	0.86	0.026	0.034
e	0.60	0.70	0.024	0.028
N	8		8	
L	0.31	0.51	0.012	0.020
L1	0.33	0.53	0.013	0.021
aaa	0.25		0.010	
eee	0.05		0.002	
F1	3.70	3.90	0.146	0.154
F2	2.19	2.39	0.086	0.094
F3	0.21	0.41	0.008	0.016
F4	0.24	0.44	0.009	0.017
F5	0.55	0.75	0.022	0.030
F6	0.70	0.90	0.028	0.035
F7	2.26	2.46	0.089	0.097

DOCUMENT NO.
Z8B00131645

SCALE 0 2.5 5mm

EUROPEAN PROJECTION



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