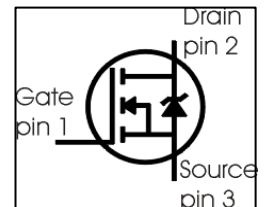
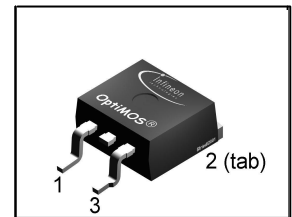


OptiMOS™ Power-Transistor
Feature

- N-Channel
- Enhancement mode
- Excellent Gate Charge x $R_{DS(on)}$ product (FOM)
- Superior thermal resistance
- 175°C operating temperature
- Avalanche rated
- dv/dt rated; Halogen Free according to IEC61249-2-21


Product Summary

V_{DS}	30	V
$R_{DS(on)}$ max. SMD version	3	mΩ
I_D	100	A

P-TO263 -3


Type	Package	Marking
SPB100N03S2-03	P- TO263 -3	PN0303

Maximum Ratings, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous drain current ¹⁾ $T_C=25^\circ\text{C}$	I_D	100 100	A
Pulsed drain current $T_C=25^\circ\text{C}$	I_D puls	400	
Avalanche energy, single pulse $I_D=80\text{A}$, $V_{DD}=25\text{V}$, $R_{GS}=25\Omega$	E_{AS}	810	mJ
Repetitive avalanche energy, limited by $T_{jmax}^{2)}$	E_{AR}	30	
Reverse diode dv/dt $I_S=100\text{A}$, $V_{DS}=24\text{V}$, $di/dt=200\text{A}/\mu\text{s}$, $T_{jmax}=175^\circ\text{C}$	dv/dt	6	kV/ μs
Gate source voltage	V_{GS}	± 20	V
Power dissipation $T_C=25^\circ\text{C}$	P_{tot}	300	W
Operating and storage temperature	T_j, T_{stg}	-55... +175	$^\circ\text{C}$
IEC climatic category; DIN IEC 68-1		55/175/56	

Thermal Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Characteristics					
Thermal resistance, junction - case	R_{thJC}	-	0.3	0.5	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	62	
SMD version, device on PCB: @ min. footprint @ 6 cm ² cooling area ³⁾	R_{thJA}	-	-	62 40	

Electrical Characteristics, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain-source breakdown voltage $V_{GS}=0V, I_D=1mA$	$V_{(BR)DSS}$	30	-	-	V
Gate threshold voltage, $V_{GS} = V_{DS}$ $I_D = 250\mu A$	$V_{GS(th)}$	2.1	3	4	
Zero gate voltage drain current $V_{DS}=30V, V_{GS}=0V, T_j=25^\circ C$ $V_{DS}=30V, V_{GS}=0V, T_j=125^\circ C$	I_{DSS}	-	0.01 1	1 100	μA
Gate-source leakage current $V_{GS}=20V, V_{DS}=0V$	I_{GSS}	-	1	100	
Drain-source on-state resistance $V_{GS}=10V, I_D=80A$ $V_{GS}=10V, I_D=80A, \text{SMD version}$	$R_{DS(on)}$	-	2.5 2.2	3.3 3	$m\Omega$

¹Current limited by bondwire ; with an $R_{thJC} = 0.5K/W$ the chip is able to carry $I_D = 233A$ at $25^\circ C$, for detailed information see app.-note ANPS071E available at www.infineon.com/optimos

²Defined by design. Not subject to production test.

³Device on 40mm*40mm*1.5mm epoxy PCB FR4 with 6cm² (one layer, 70 μm thick) copper area for drain connection. PCB is vertical without blown air.

Electrical Characteristics

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Dynamic Characteristics

Transconductance	g_{fs}	$V_{DS} \geq 2 \cdot I_D \cdot R_{DS(on)max}$, $I_D = 100A$	71	142	-	S
Input capacitance	C_{iss}	$V_{GS} = 0V$, $V_{DS} = 25V$, $f = 1MHz$	-	5300	7020	pF
Output capacitance	C_{oss}		-	2450	3200	
Reverse transfer capacitance	C_{rss}		-	470	700	
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 15V$, $V_{GS} = 10V$, $I_D = 100A$, $R_G = 2.2\Omega$	-	24	36	ns
Rise time	t_r		-	40	60	
Turn-off delay time	$t_{d(off)}$		-	44	66	
Fall time	t_f		-	39	59	

Gate Charge Characteristics

Gate to source charge	Q_{gs}	$V_{DD} = 24V$, $I_D = 100A$	-	26	34	nC
Gate to drain charge	Q_{gd}		-	45	68	
Gate charge total	Q_g	$V_{DD} = 24V$, $I_D = 100A$, $V_{GS} = 0$ to $10V$	-	113	150	
Gate plateau voltage	$V_{(plateau)}$	$V_{DD} = 24V$, $I_D = 100A$	-	5.6	-	V

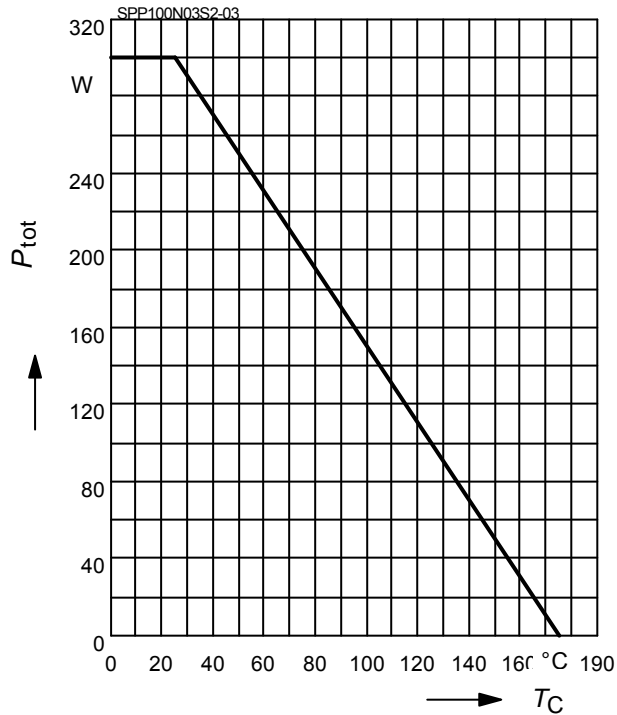
Reverse Diode

Inverse diode continuous forward current	I_S	$T_C = 25^\circ C$	-	-	100	A
Inv. diode direct current, pulsed	I_{SM}		-	-	400	
Inverse diode forward voltage	V_{SD}	$V_{GS} = 0V$, $I_F = 100A$	-	0.9	1.3	V
Reverse recovery time	t_{rr}	$V_R = 15V$, $I_F = I_S$, $di_F/dt = 100A/\mu s$	-	79	100	ns
Reverse recovery charge	Q_{rr}		-	109	136	nC

1 Power dissipation

$$P_{tot} = f(T_C)$$

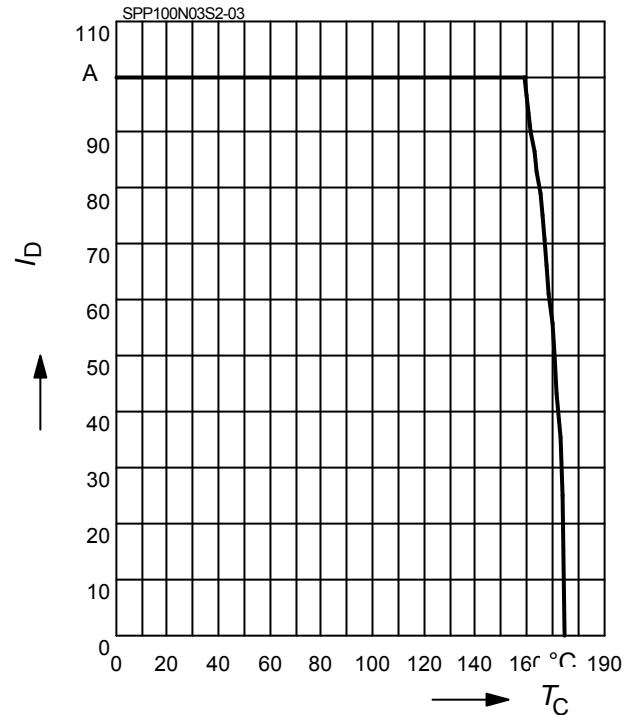
parameter: $V_{GS} \geq 6\text{ V}$



2 Drain current

$$I_D = f(T_C)$$

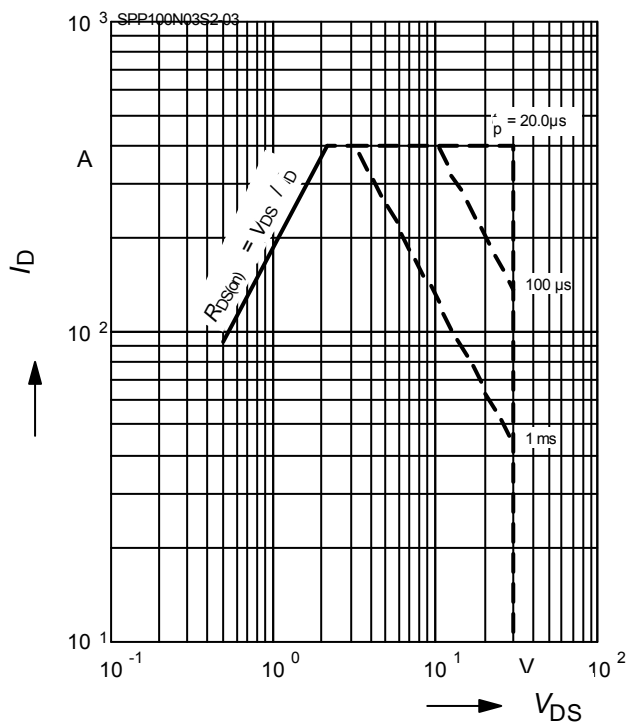
parameter: $V_{GS} \geq 10\text{ V}$



3 Safe operating area

$$I_D = f(V_{DS})$$

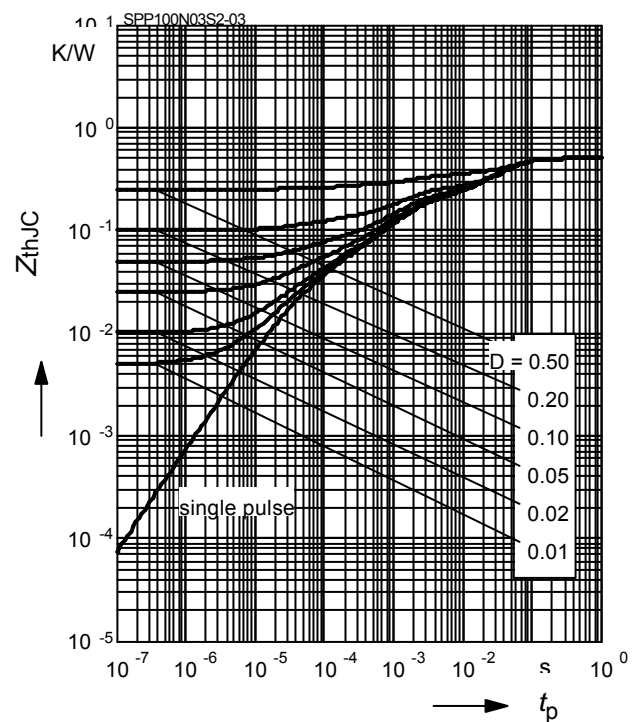
parameter: $D = 0, T_C = 25\text{ °C}$



4 Max. transient thermal impedance

$$Z_{thJC} = f(t_p)$$

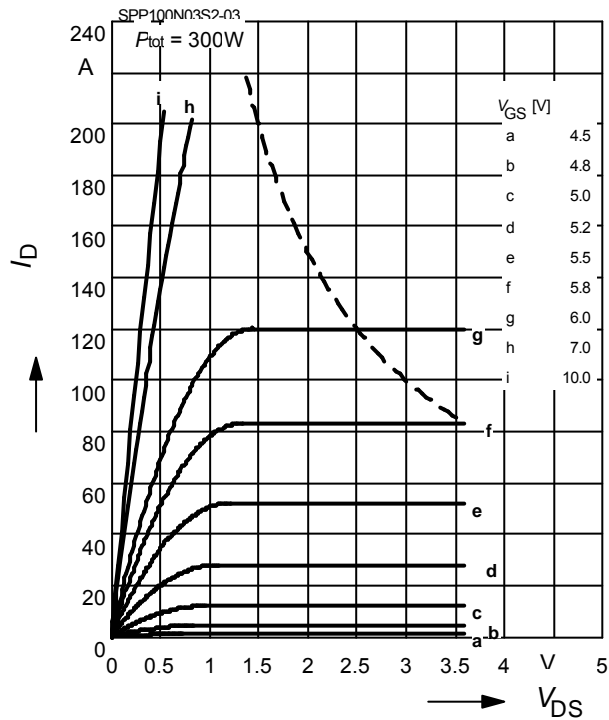
parameter: $D = t_p/T$



5 Typ. output characteristic

$I_D = f(V_{DS}); T_j = 25^\circ\text{C}$

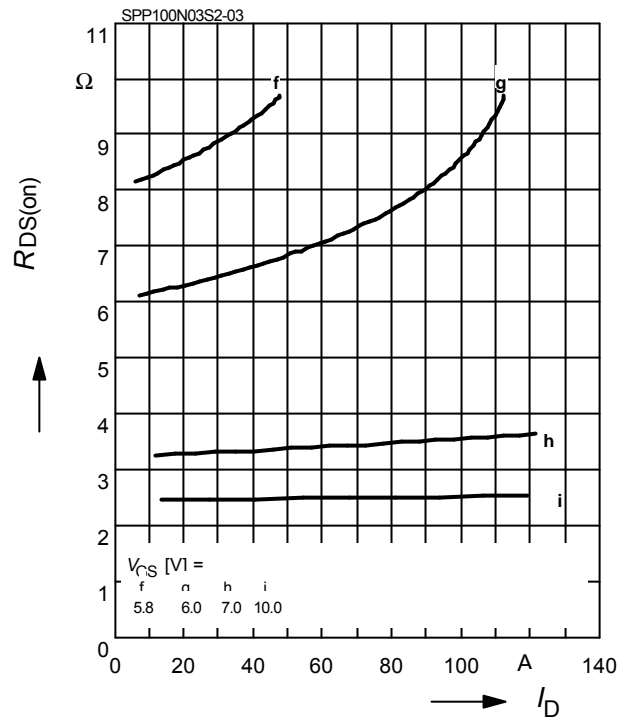
parameter: $t_p = 80 \mu\text{s}$



6 Typ. drain-source on resistance

$R_{DS(on)} = f(I_D)$

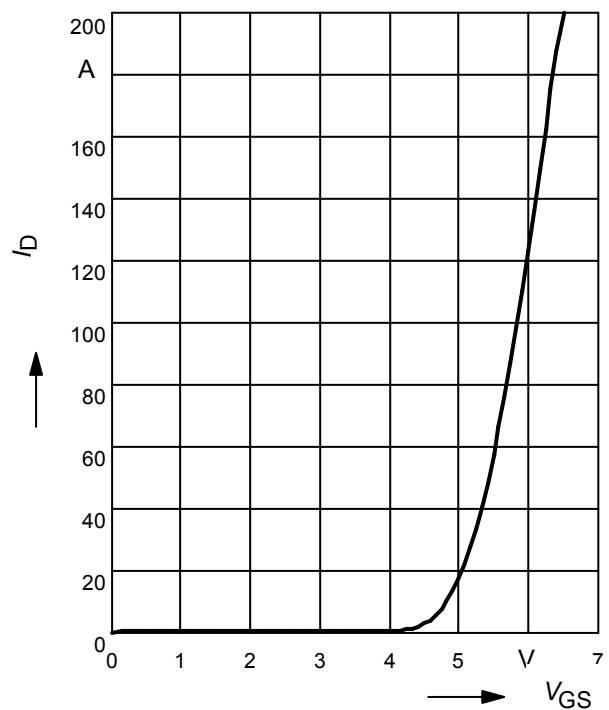
parameter: V_{GS}



7 Typ. transfer characteristics

$I_D = f(V_{GS}); V_{DS} \geq 2 \times I_D \times R_{DS(on)max}$

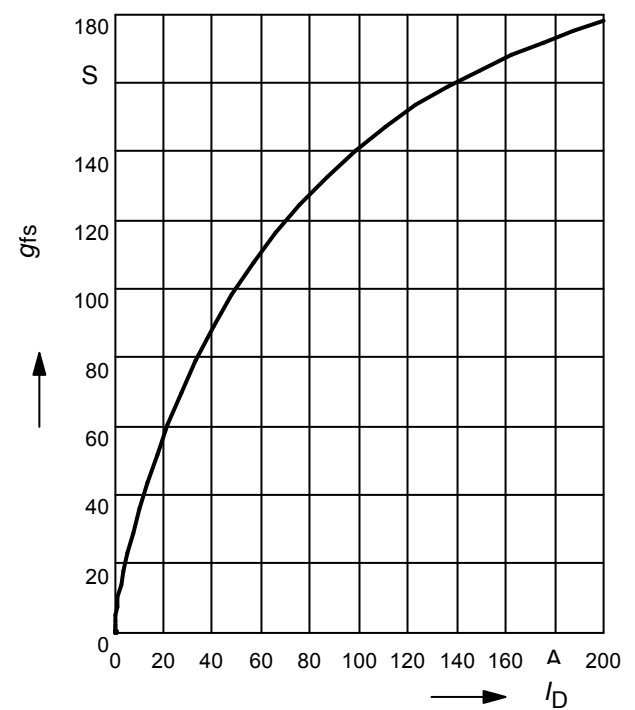
parameter: $t_p = 80 \mu\text{s}$



8 Typ. forward transconductance

$g_{fs} = f(I_D); T_j = 25^\circ\text{C}$

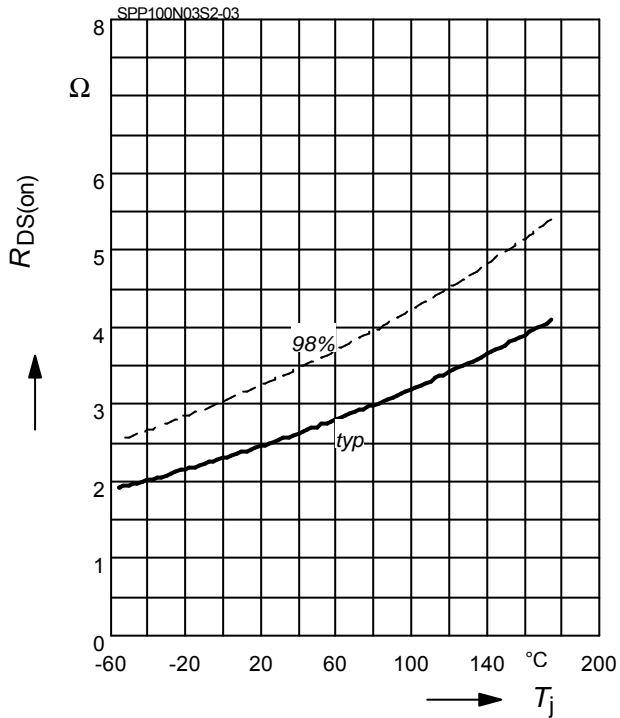
parameter: g_{fs}



9 Drain-source on-state resistance

$R_{DS(on)} = f(T_j)$

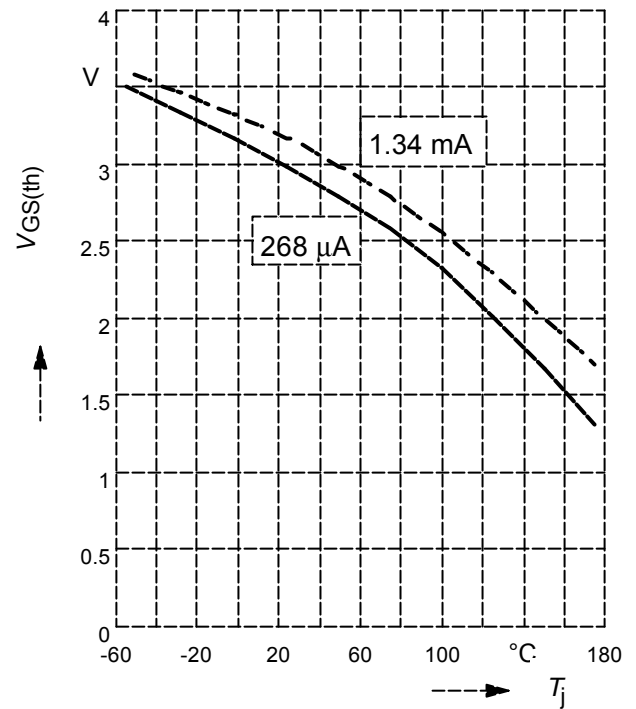
parameter : $I_D = 80 \text{ A}$, $V_{GS} = 10 \text{ V}$



10 Typ. gate threshold voltage

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

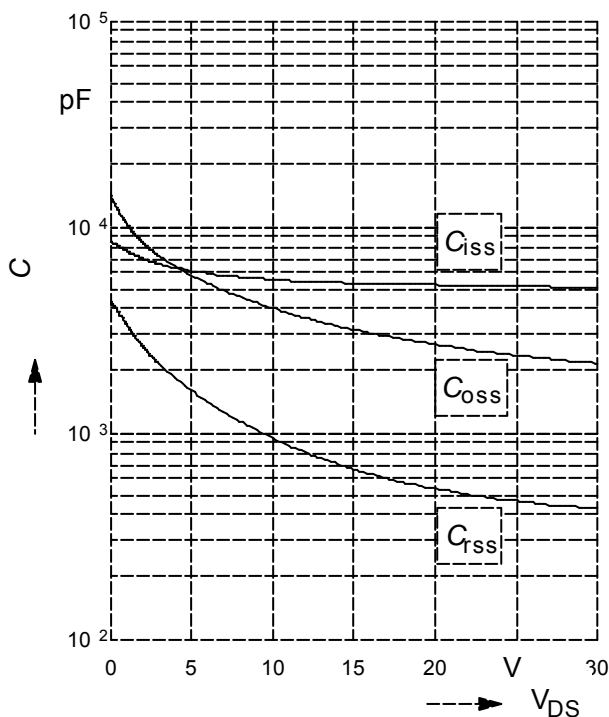
parameter: $V_{GS} = V_{DS}$



11 Typ. capacitances

$C = f(V_{DS})$

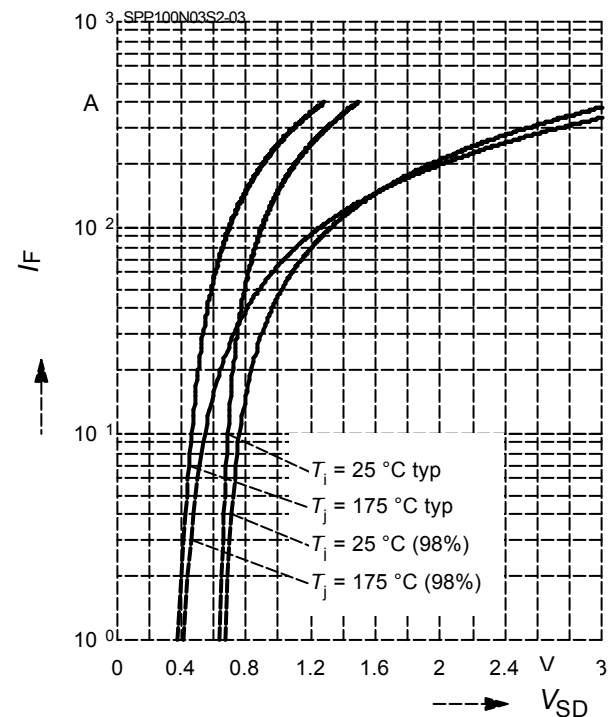
parameter: $V_{GS}=0\text{V}$, $f=1 \text{ MHz}$



12 Forward character. of reverse diode

$I_F = f(V_{SD})$

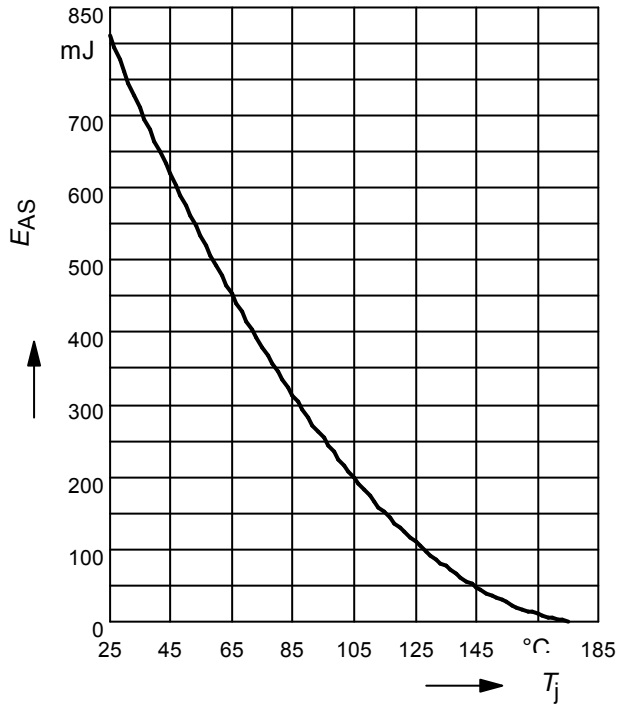
parameter: T_j , $t_p = 80 \mu\text{s}$



13 Typ. avalanche energy

$$E_{AS} = f(T_j)$$

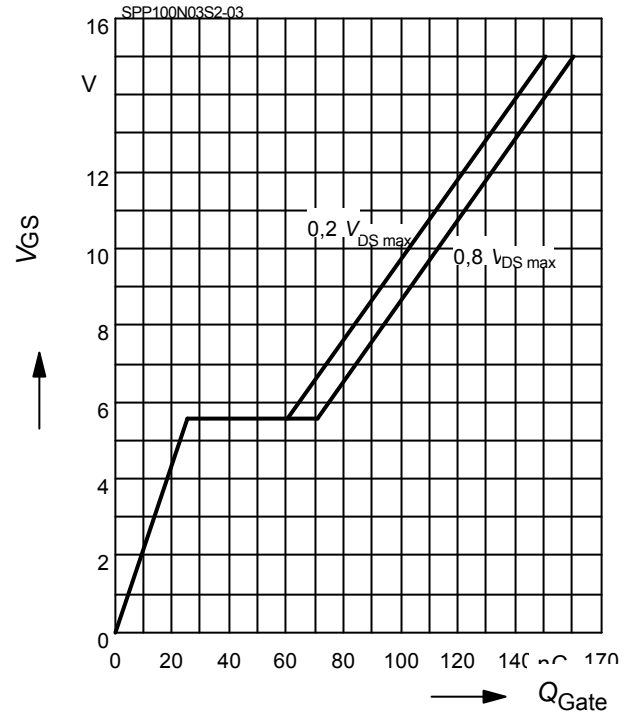
par.: $I_D = 80 \text{ A}$, $V_{DD} = 25 \text{ V}$, $R_{GS} = 25 \Omega$



14 Typ. gate charge

$$V_{GS} = f(Q_{Gate})$$

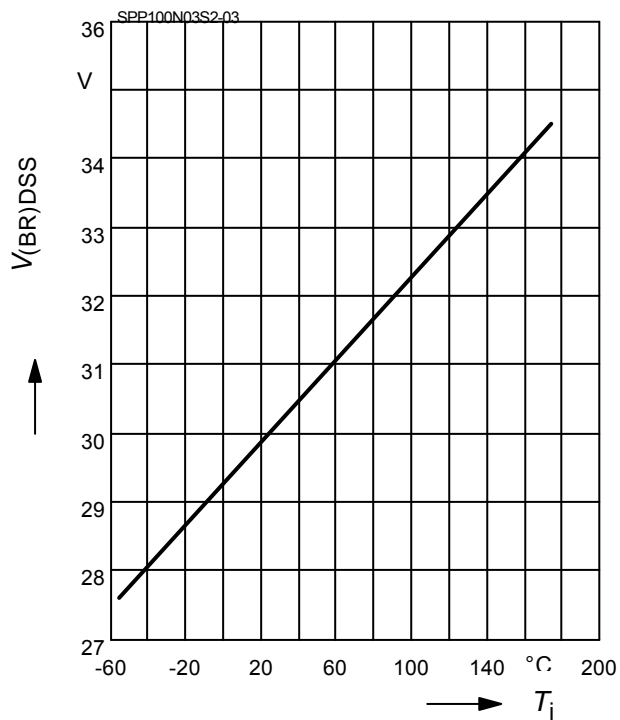
parameter: $I_D = 100 \text{ A}$ pulsed



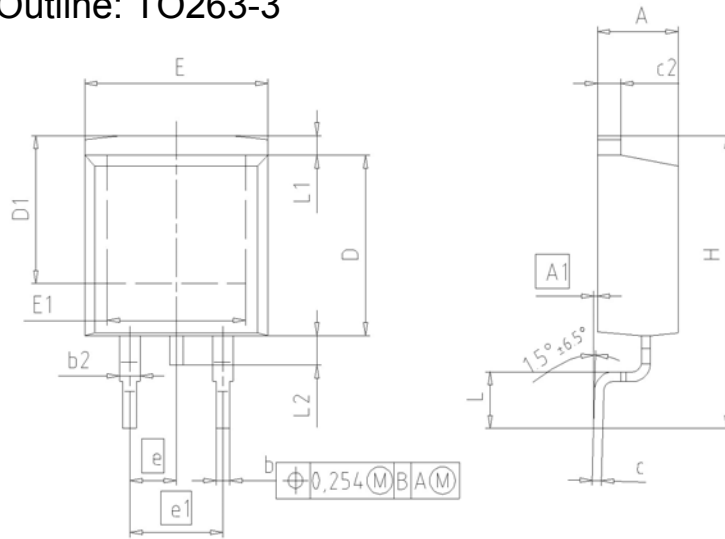
15 Drain-source breakdown voltage

$$V_{(BR)DSS} = f(T_j)$$

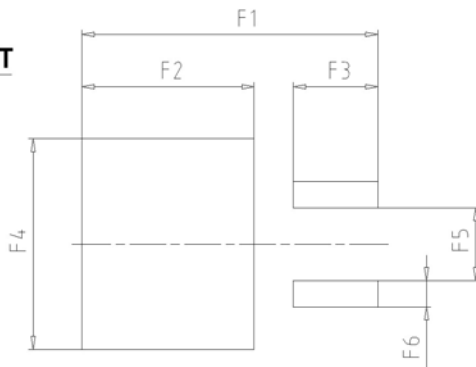
parameter: $I_D = 10 \text{ mA}$



Package Outline: TO263-3



FOOTPRINT



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.57	0.169	0.180
A1	0.00	0.25	0.000	0.010
b	0.65	0.85	0.026	0.033
b2	0.95	1.15	0.037	0.045
c	0.33	0.65	0.013	0.026
c2	1.17	1.40	0.046	0.055
D	8.51	9.45	0.335	0.372
D1	7.10	7.90	0.280	0.311
E	9.80	10.31	0.386	0.406
E1	6.50	8.60	0.256	0.339
e	2.54		0.100	
e1	5.08		0.200	
N	2		2	
H	14.61	15.88	0.575	0.625
L	2.29	3.00	0.090	0.118
L1	0.70	1.60	0.028	0.063
L2	1.00	1.78	0.039	0.070
F1	16.05	16.25	0.632	0.640
F2	9.30	9.50	0.366	0.374
F3	4.50	4.70	0.177	0.185
F4	10.70	10.90	0.421	0.429
F5	3.65	3.85	0.144	0.152
F6	1.25	1.45	0.049	0.057

DOCUMENT NO.
Z8B00003324

SCALE

7.5mm

EUROPEAN PROJECTION

ISSUE DATE
30-08-2007

REVISION
01

Published by
Infineon Technologies AG
81726 Munich, Germany
© 2008 Infineon Technologies AG
All Rights Reserved.

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office. Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Infineon\(英飞凌\)](#)