Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China
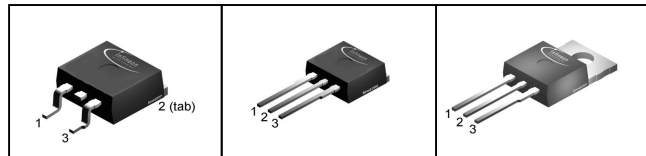
OptiMOS®-P2 Power-Transistor

Product Summary

V_{DS}	-40	V
$R_{DS(on)}$ (SMD Version)	7.4	mΩ
I_D	-80	A

Features

• P-channel - Normal Level - Enhancement mode

• AEC qualified

• MSL1 up to 260°C peak reflow

• 175°C operating temperature

• Green package (RoHS compliant)
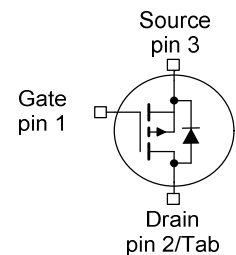
• 100% Avalanche tested

PG-TO263-3-2   PG-TO262-3-1   PG-TO220-3-1

Type	Package	Marking
IPB80P04P4-07	PG-TO263-3-2	4P0407
IPI80P04P4-07	PG-TO262-3-1	4P0407
IPP80P04P4-07	PG-TO220-3-1	4P0407

Source pin 3

Gate pin 1

Drain pin 2/Tab

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

Parameter	Symbol	Conditions	Value	Unit
Continuous drain current[1]	I_D	T_C=25°C, V_{GS}=-10V	-80	A
		T_C=100°C, V_{GS}=-10V[2]	62	
Pulsed drain current[2]	$I_{D,pulse}$	T_C=25°C	-320	
Avalanche energy, single pulse	E_{AS}	I_D=-40A	31	mJ
Avalanche current, single pulse	I_{AS}	-	-80	A
Gate source voltage	V_{GS}	-	±20	V
Power dissipation	P_{tot}	T_C=25 °C	88	W
Operating and storage temperature	T_j, T_{stg}	-	-55 ... +175	°C
IEC climatic category; DIN IEC 68-1	-	-	55/175/56	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Thermal characteristics[2]

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	-	1.7	K/W
Thermal resistance, junction - ambient, leaded	R_{thJA}	-	-	-	62	
SMD version, device on PCB	R_{thJA}	minimal footprint	-	-	62	
		6 cm^2 cooling area[3]	-	-	40	

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

Static characteristics

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D= -1mA	-40	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-150µA	-2.0	-3.0	-4.0	
Zero gate voltage drain current	I_{DSS}	V_{DS}=-32V, V_{GS}=0V, T_j=25°C	-	-0.05	-1	µA
		V_{DS}=-32V, V_{GS}=0V, T_j=125°C[2]	-	-20	-200	
Gate-source leakage current	I_{GSS}	V_{GS}=-20V, V_{DS}=0V	-	-	-100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-80A	-	5.7	7.7	mΩ
		V_{GS}=-10V, I_D=-80A, SMD version	-	5.4	7.4	

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

Dynamic characteristics[2]

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-25V, f=1MHz	-	4681	6085	pF
Output capacitance	C_{oss}		-	1520	2280	
Reverse transfer capacitance	C_{rss}		-	45	91	
Turn-on delay time	$t_{d(on)}$	V_{DD}=-20V, V_{GS}=-10V, I_D=-80A, R_G=3.5Ω	-	25	-	ns
Rise time	t_r		-	15	-	
Turn-off delay time	$t_{d(off)}$		-	34	-	
Fall time	t_f		-	41	-	

Gate Charge Characteristics[2]

Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Gate to source charge	Q_{gs}	V_{DD}=-32V, I_D=-80A, V_{GS}=0 to -10V	-	25	33	nC
Gate to drain charge	Q_{gd}		-	13	26	
Gate charge total	Q_g		-	68	89	
Gate plateau voltage	$V_{plateau}$		-	-5.4	-	V

Reverse Diode

| Parameter	Symbol	Conditions	min.	typ.	max.	Unit
Diode continous forward current[2]	I_S	T_C=25°C	-	-	-80	A
Diode pulse current[2]	$I_{S,pulse}$		-	-	-320	
Diode forward voltage	V_{SD}	V_{GS}=0V, I_F=-80A, T_j=25°C	-	-1	-1.3	V
Reverse recovery time[2]	t_{rr}	V_R=-20V, I_F=-50A, di_F/dt=-100A/µs	-	48	-	ns
Reverse recovery charge[2]	Q_{rr}		-	54	-	nC

[1] Current is limited by bondwire; with an R_{thJC} = 1.7K/W the chip is able to carry -88A at 25°C.

[2] Defined by design. Not subject to production test.

[3] 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 in still air.
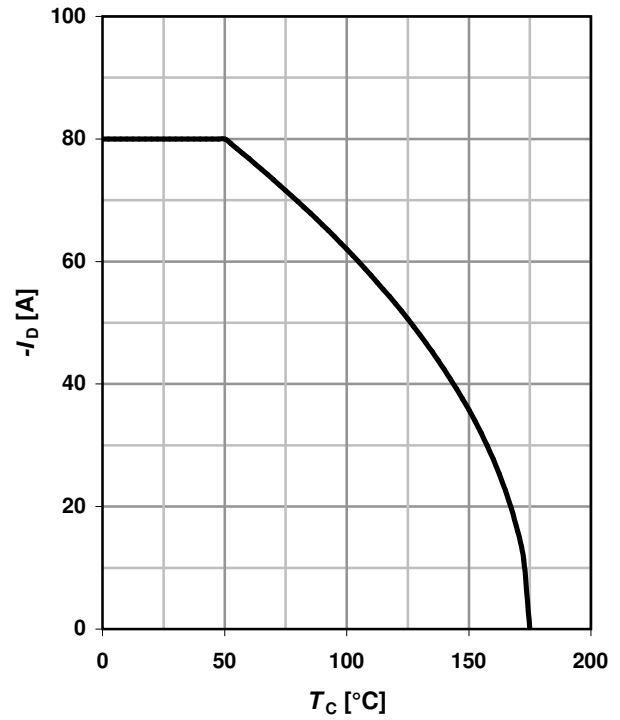
1 Power dissipation

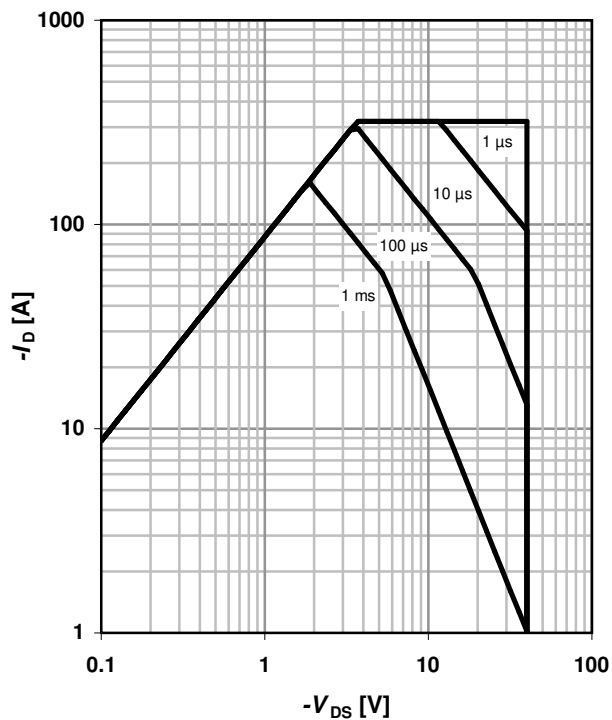P_{tot} = f(T_C); V_{GS} ≤ -6V
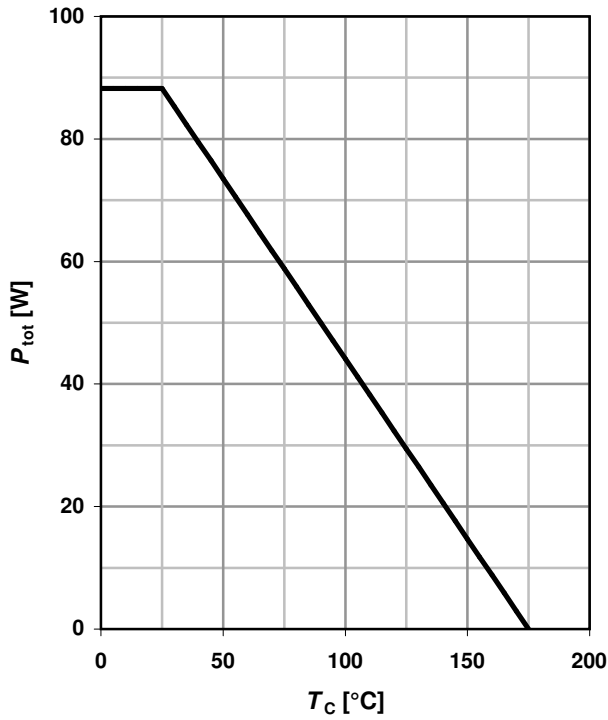
2 Drain current

I_D = f(T_C); V_{GS} ≤ -6V; SMD

3 Safe operating area

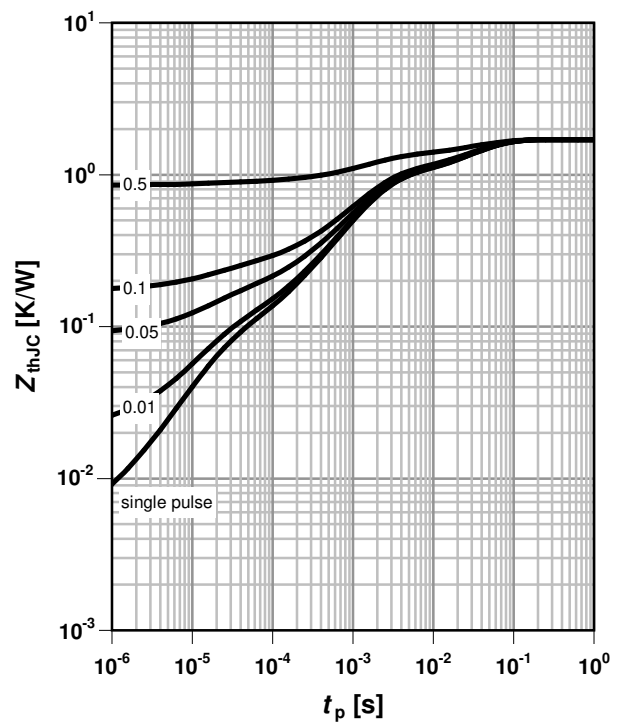I_D = f(V_{DS}); T_C = 25 °C; D = 0; SMD

parameter: t_p

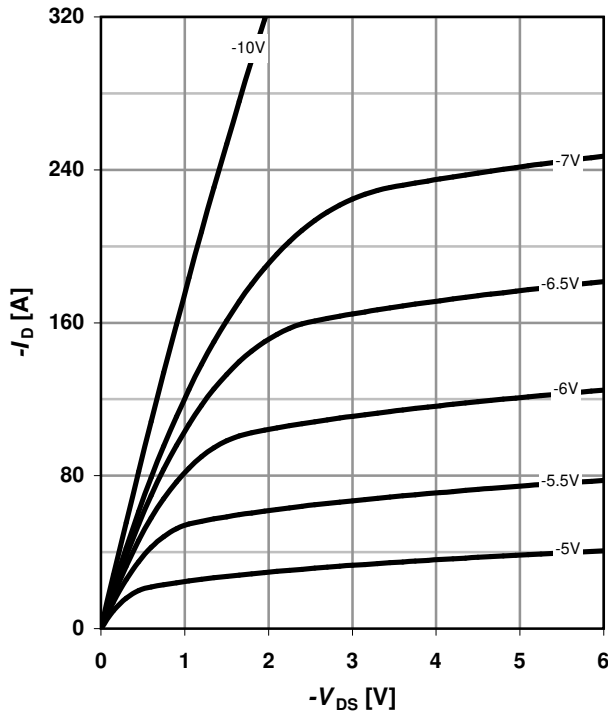## 4 Max. transient thermal impedance

Z_{thJC} = f(t_p)

parameter: D=t_p/T

5 Typ. output characteristics

I_D = f(V_{DS}); T_j = 25 °C; SMD

parameter: V_{GS}

6 Typ. drain-source on-state resistance

$R_{DS(on)}$ = (I_D); T_j = 25 °C; SMD

parameter: V_{GS}
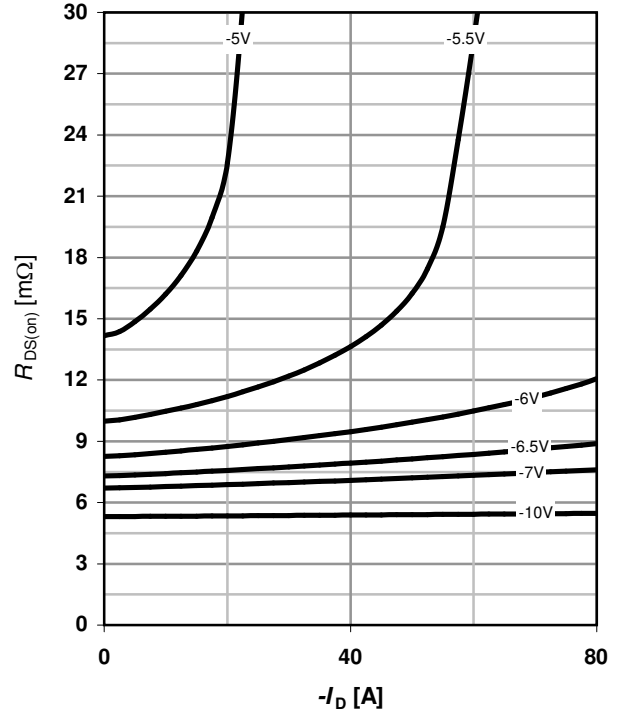
7 Typ. transfer characteristics

I_D = f(V_{GS}); V_{DS} = -6V

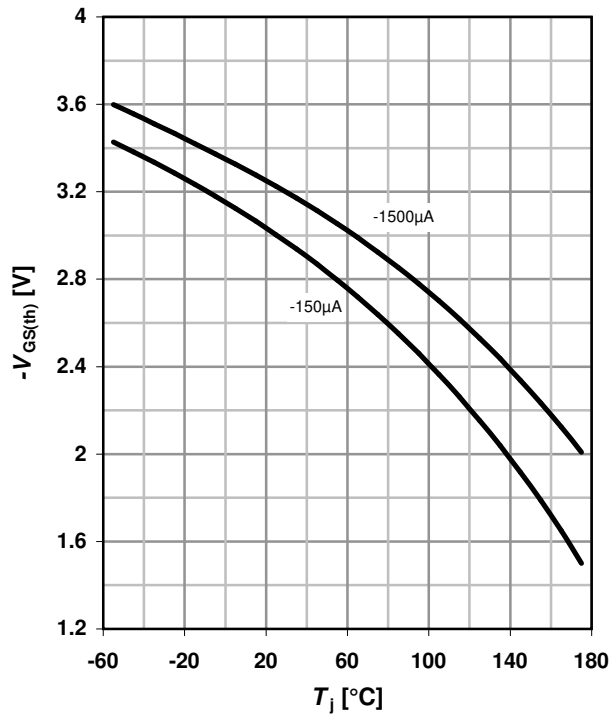parameter: T_j
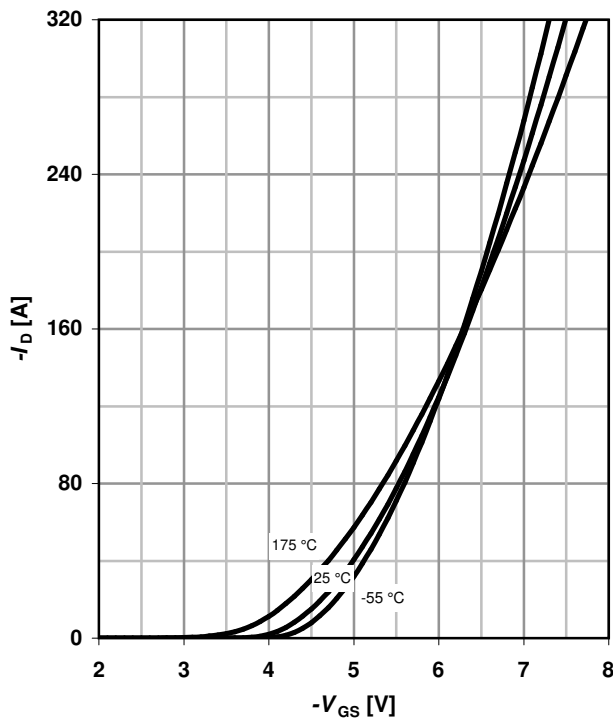
8 Typ. drain-source on-state resistance

$R_{DS(on)}$ = f(T_j); I_D = -80 A; V_{GS} = -10 V; SMD
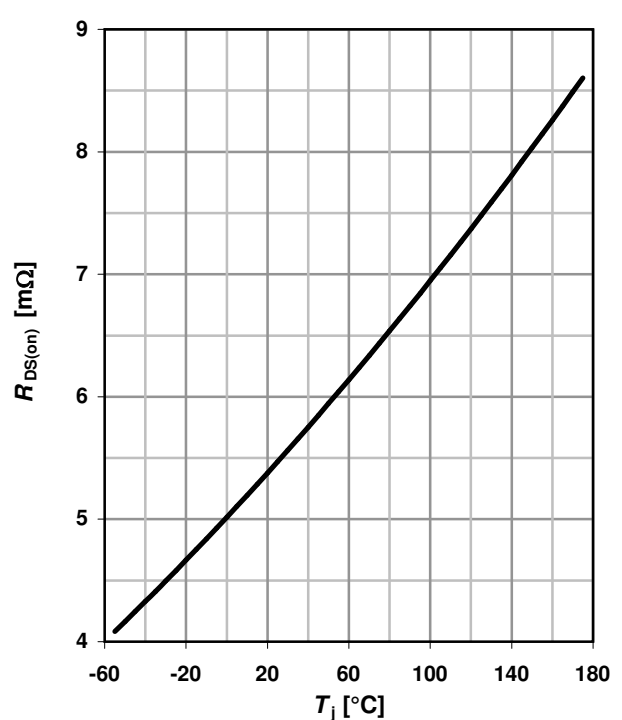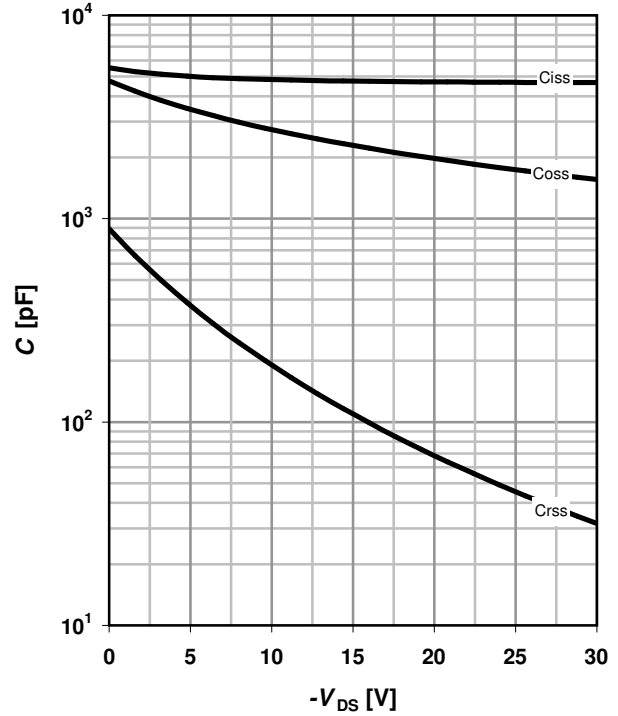
9 Typ. gate threshold voltage

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

parameter: I_D
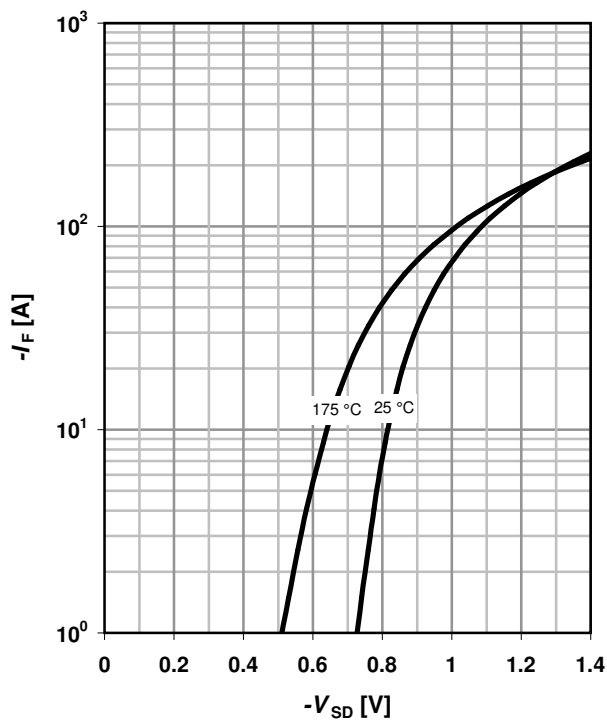

10 Typ. capacitances

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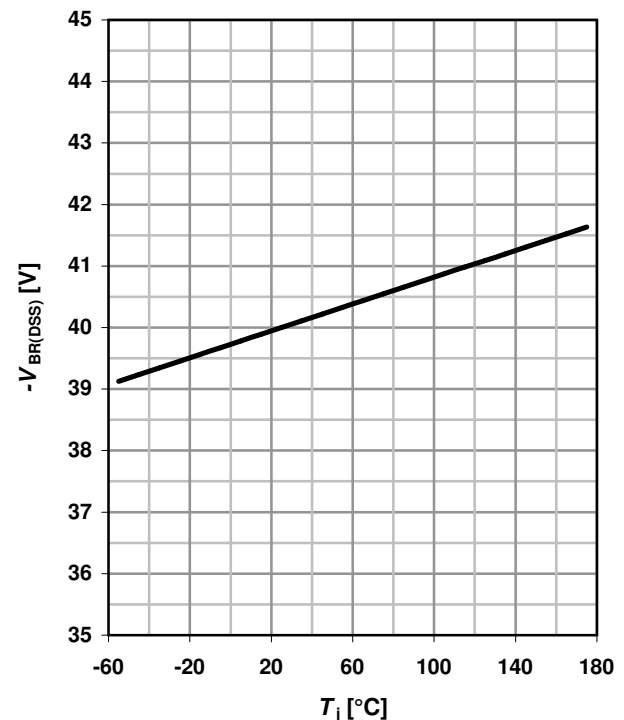

11 Typical forward diode characteristicis

I_F = f(V_{SD})

parameter: T_j

12 Drain-source breakdown voltage
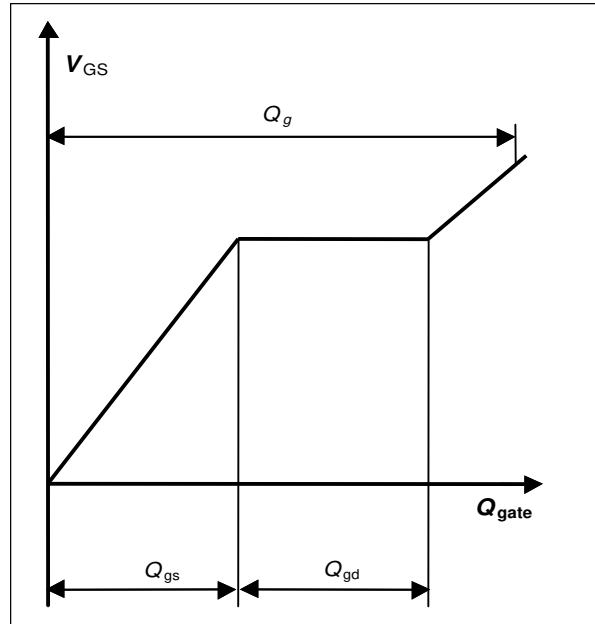
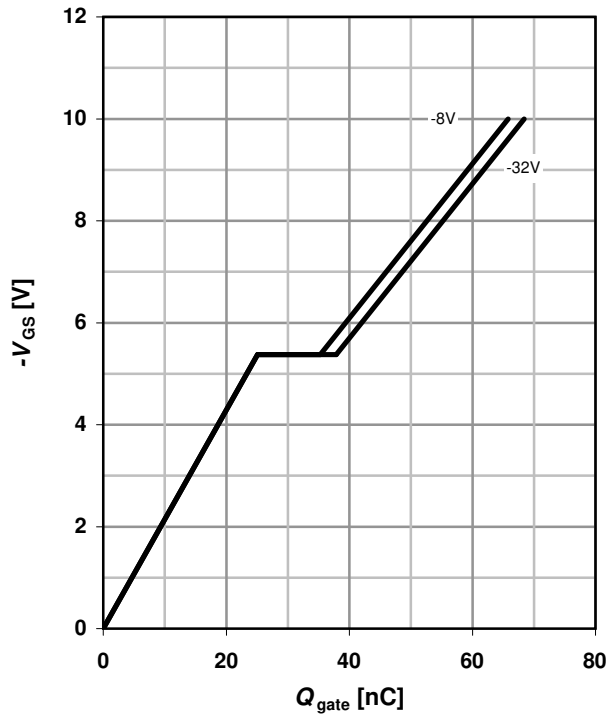$V_{BR(DSS)}$ = f(T_j); I_D = -1 mA

15 Typ. gate charge

16 Gate charge waveforms

$V_{\text{GS}} = \text{f}(Q_{\text{gate}}); I_{\text{D}} = -80$ A pulsed

parameter: V_{DD}

Published by
Infineon Technologies AG
81726 Munich, Germany

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.

Revision History

Version	Date	Changes
0.1	29.01.2010	Initial Target Data Sheet
1.0	10.02.2011	Final Data Sheet