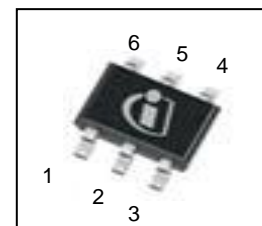
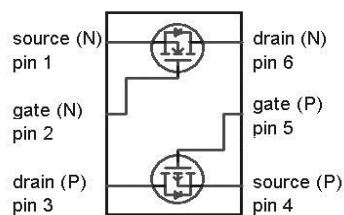


**OptiMOS™ 2 + OptiMOS™-P 2 Small Signal Transistor**
**Features**

- Complementary P + N channel
- Enhancement mode
- Super Logic level (2.5V rated)
- Avalanche rated
- Qualified according to AEC Q101
- 100% lead-free; RoHS compliant
- Halogen-free according to IEC61249-2-21


**Product Summary**

		<b>P</b>	<b>N</b>	
$V_{DS}$		-20	20	V
$R_{DS(on),max}$	$V_{GS}=\pm 4.5\text{ V}$	1200	350	mΩ
	$V_{GS}=\pm 2.5\text{ V}$	2100	600	
$I_D$		-0.53	0.95	A

**PG-SOT-363**


Type	Package	Tape and Reel Information	Marking	Lead Free	Packing
BSD235C	PG-SOT-363	H6327: 3000 pcs / reel	X9s	Yes	Non dry

**Maximum ratings, at  $T_j=25\text{ °C}$ , unless otherwise specified <sup>1)</sup>**

Parameter	Symbol	Conditions	Value		Unit
			P	N	
Continuous drain current	$I_D$	$T_A=25\text{ °C}$	-0.53	0.95	A
		$T_A=70\text{ °C}$	-0.46	0.76	
Pulsed drain current	$I_{D,pulse}$	$T_A=25\text{ °C}$	-2.1	3.8	
Avalanche energy, single pulse	$E_{AS}$	P: $I_D=-0.53\text{ A}$ , N: $I_D=0.95\text{ A}$ , $R_{GS}=25\text{ Ω}$	1.4	1.6	mJ
Gate source voltage	$V_{GS}$		±12		V
Power dissipation	$P_{tot}$	$T_A=25\text{ °C}$	0.5		W
Operating and storage temperature	$T_j, T_{stg}$		-55 ... 150		°C
ESD class		JESD22-A114-HBM	0 (<250V)		°C
Soldering temperature	$T_{solder}$		260		°C
IEC climatic category; DIN IEC 68-1			55/150/56		

<sup>1)</sup> Remark: only one of both transistors active

Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

**Thermal characteristics**

Thermal resistance, junction - ambient	P	$R_{thJA}$	minimal footprint <sup>2)</sup>	-	-	250	K/W
	N						

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

Drain-source breakdown voltage	P	$V_{(BR)DSS}$	$V_{GS}=0\text{ V}, I_D=-250\text{ }\mu\text{A}$	-	-	-20	V
	N		$V_{GS}=0\text{ V}, I_D=250\text{ }\mu\text{A}$	20	-	-	
Gate threshold voltage	P	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-1.5\text{ }\mu\text{A}$	-1.2	-0.9	-0.6	
	N		$V_{DS}=V_{GS}, I_D=1.6\text{ }\mu\text{A}$	0.7	0.95	1.2	
Zero gate voltage drain current	P	$I_{DSS}$	$V_{DS}=-20\text{ V}, V_{GS}=0\text{ V}, T_j=25\text{ }^\circ\text{C}$	-	-	-1	$\mu\text{A}$
	N		$V_{DS}=20\text{ V}, V_{GS}=0\text{ V}, T_j=25\text{ }^\circ\text{C}$	-	-	1	
	P		$V_{DS}=-20\text{ V}, V_{GS}=0\text{ V}, T_j=150\text{ }^\circ\text{C}$	-	-	-100	
	N		$V_{DS}=20\text{ V}, V_{GS}=0\text{ V}, T_j=150\text{ }^\circ\text{C}$	-	-	100	
Gate-source leakage current	P	$I_{GSS}$	$V_{GS}=\pm 12\text{ V}, V_{DS}=0\text{ V}$	-	-	$\pm 100$	nA
	N						
Drain-source on-state resistance	P	$R_{DS(on)}$	$V_{GS}=-2.5\text{ V}, I_D=-0.17\text{ A}$	-	1221	2100	m $\Omega$
	N		$V_{GS}=2.5\text{ V}, I_D=0.29\text{ A}$	-	415	600	
	P		$V_{GS}=-4.5\text{ V}, I_D=-0.53\text{ A}$	-	745	1200	
	N		$V_{GS}=4.5\text{ V}, I_D=0.95\text{ A}$	-	266	350	
Transconductance	P	$g_{fs}$	$ V_{DS} >2 I_D R_{DS(on)max}, I_D=-0.46\text{ A}$	-	0.7	-	S
	N		$ V_{DS} >2 I_D R_{DS(on)max}, I_D=0.76\text{ A}$	-	2	-	

<sup>2)</sup> Performed on 40mm<sup>2</sup> FR4 PCB. The traces are 1mm wide, 70 $\mu\text{m}$  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	P	$C_{iss}$	$V_{GS}=0\text{ V}$ , P: $V_{DS}=-10\text{ V}$ , N: $V_{DS}=10\text{ V}$ , $f=1\text{ MHz}$	-	37	-	pF			
	N			-	47	-				
Output capacitance	P	$C_{oss}$		$V_{GS}=0\text{ V}$ , P: $V_{DS}=-10\text{ V}$ , N: $V_{DS}=10\text{ V}$ , $f=1\text{ MHz}$	-	17	-			
	N				-	24	-			
Reverse transfer capacitance	P	$C_{rss}$			$V_{GS}=0\text{ V}$ , P: $V_{DS}=-10\text{ V}$ , N: $V_{DS}=10\text{ V}$ , $f=1\text{ MHz}$	-	14	-		
	N					-	3	-		
Turn-on delay time	P	$t_{d(on)}$				P: $V_{DD}=-10\text{ V}$ , $V_{GS}=-4.5\text{ V}$ , $R_G=6\ \Omega$ , $I_D=-0.53\text{ A}$	-	3.8	-	ns
	N						-	3.8	-	
Rise time	P	$t_r$	P: $V_{DD}=-10\text{ V}$ , $V_{GS}=-4.5\text{ V}$ , $R_G=6\ \Omega$ , $I_D=-0.53\text{ A}$				-	5.0	-	
	N						-	3.6	-	
Turn-off delay time	P	$t_{d(off)}$		N: $V_{DD}=10\text{ V}$ , $V_{GS}=4.5\text{ V}$ , $R_G=6\ \Omega$ , $I_D=0.95\text{ A}$			-	5.1	-	
	N						-	4.5	-	
Fall time	P	$t_f$			N: $V_{DD}=10\text{ V}$ , $V_{GS}=4.5\text{ V}$ , $R_G=6\ \Omega$ , $I_D=0.95\text{ A}$		-	3.2	-	
	N						-	1.2	-	

**Gate Charge Characteristics**

Gate to source charge	P	$Q_{gs}$	$V_{DD}=-10\text{ V}$ , $I_D=-0.53\text{ A}$ , $V_{GS}=0\text{ to }-4.5\text{ V}$	-	-0.09	-	nC
Gate to drain charge		$Q_{gd}$		-	-0.2	-	
Switching charge		$Q_g$		-	-0.4	-	
Gate plateau voltage		$V_{plateau}$		-	-2.4	-	
Gate to source charge	N	$Q_{gs}$	$V_{DD}=16\text{ V}$ , $I_D=0.95\text{ A}$ , $V_{GS}=0\text{ to }4.5\text{ V}$	-	0.11	-	
Gate to drain charge		$Q_{gd}$		-	0.09	-	
Switching charge		$Q_g$		-	0.34	-	
Gate plateau voltage		$V_{plateau}$		-	2.4	-	

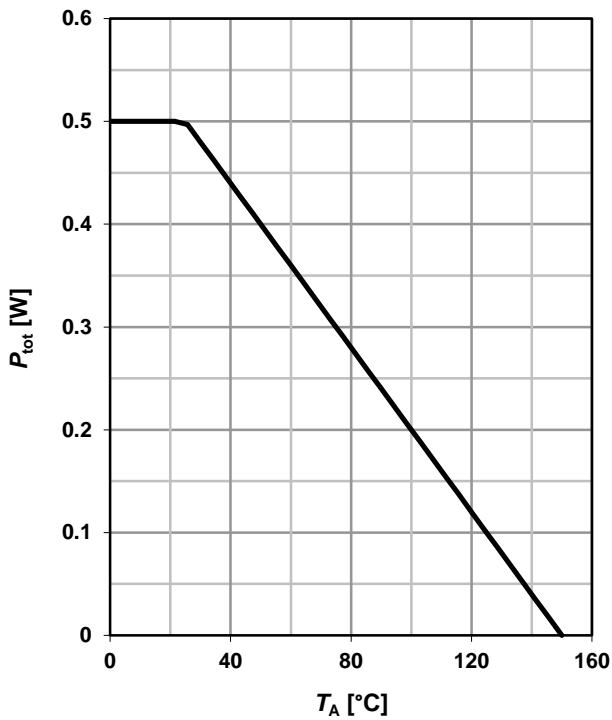
Parameter	Symbol	Conditions	Values			Unit
			min.	typ.	max.	

**Reverse Diode**

Diode continuous forward current	P	$I_S$	$T_C=25\text{ °C}$	-	-	-0.42	A
	N					0.5	
Diode pulse current	P	$I_{S,pulse}$		-	-	-2.1	
	N			-	-	3.8	
Diode forward voltage	P	$V_{SD}$	$V_{GS}=0\text{ V}, I_F=-0.53\text{ A}, T_j=25\text{ °C}$	-	-1	-1.2	V
	N		$V_{GS}=0\text{ V}, I_F=0.95\text{ A}, T_j=25\text{ °C}$	-	0.9	1.1	
Reverse recovery time	P	$t_{rr}$	$V_R=\pm 10\text{ V}, I_F=I_S, di_F/dt=100\text{ A}/\mu\text{s}$	-	7.6	-	ns
	N			-	5.2	-	
Reverse recovery charge	P	$Q_{rr}$		-	1.1	-	nC
	N			-	0.97	-	

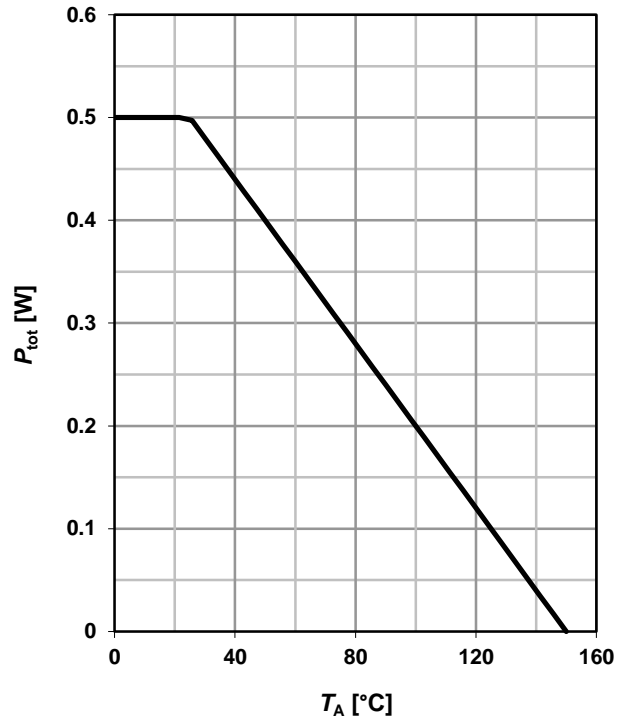
**1 Power dissipation (P)**

$P_{tot}=f(T_A)$



**2 Power dissipation (N)**

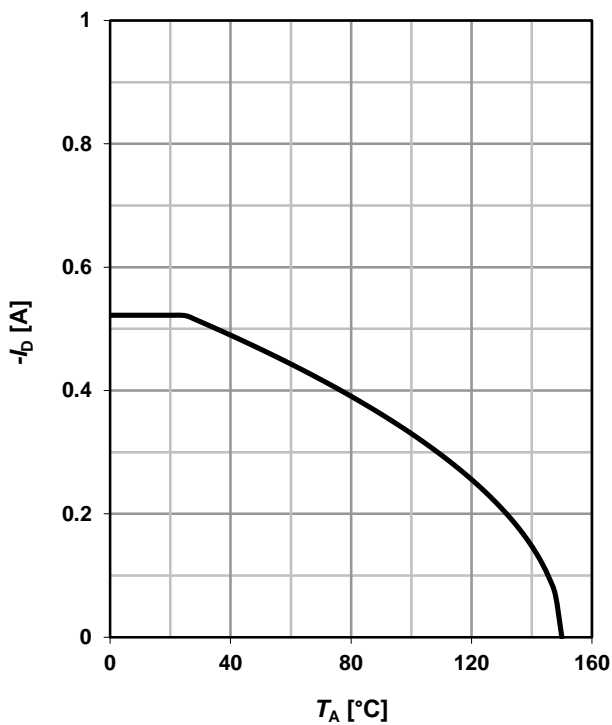
$P_{tot}=f(T_A)$



**3 Drain current (P)**

$I_D=f(T_A)$

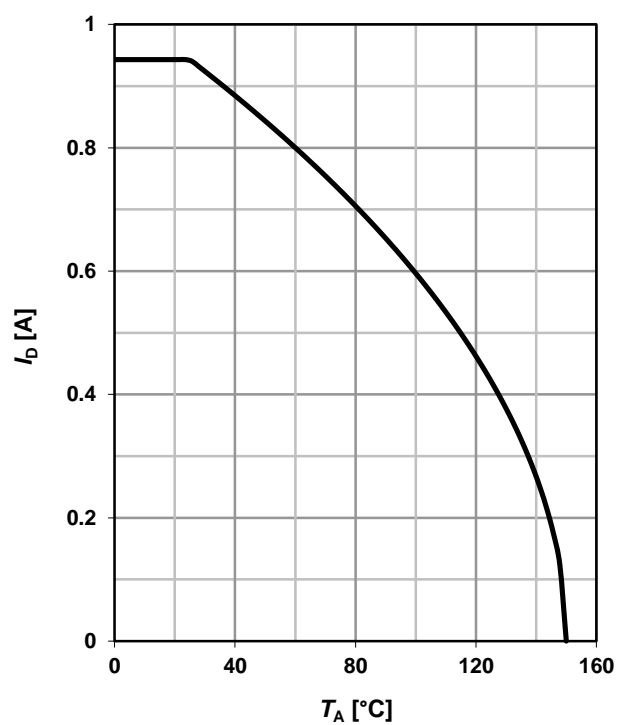
parameter:  $V_{GS} \leq 4.5$  V



**4 Drain current (N)**

$I_D=f(T_A)$

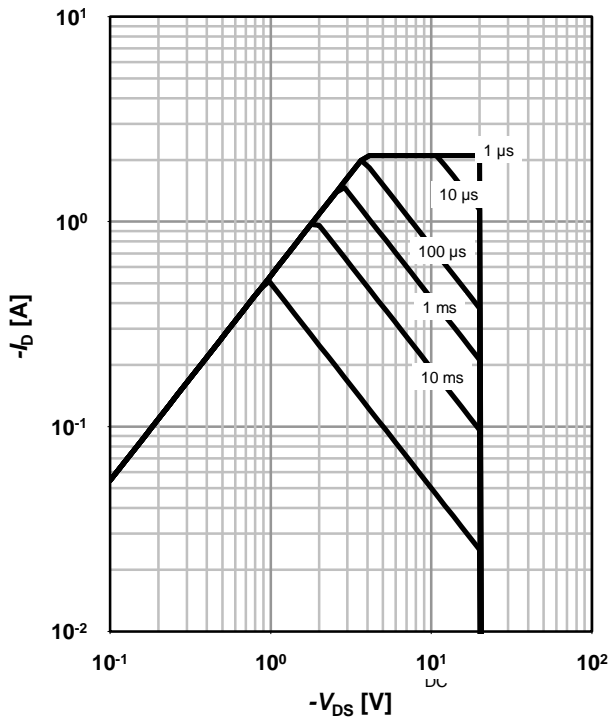
parameter:  $V_{GS} \geq 4.5$  V



**5 Safe operating area (P)**

$I_D=f(V_{DS}); T_A=25\text{ }^\circ\text{C}; D=0$

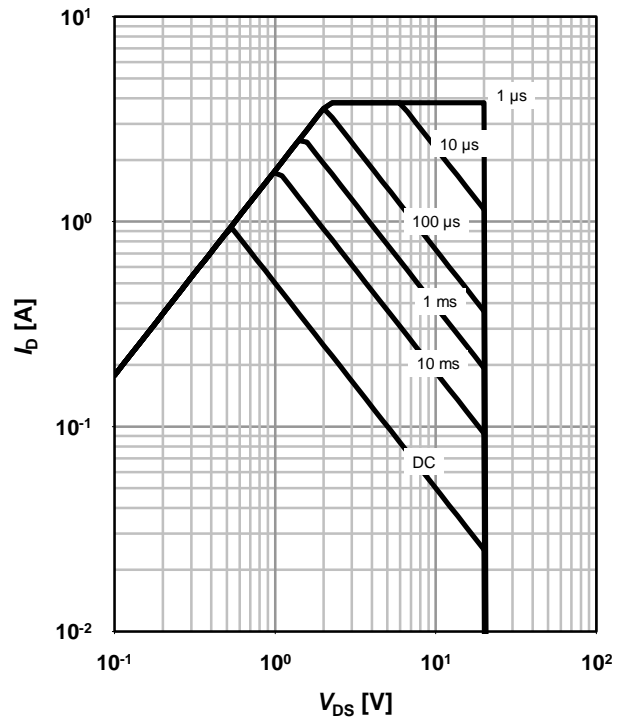
parameter:  $t_p$



**6 Safe operating area (N)**

$I_D=f(V_{DS}); T_A=25\text{ }^\circ\text{C}; D=0$

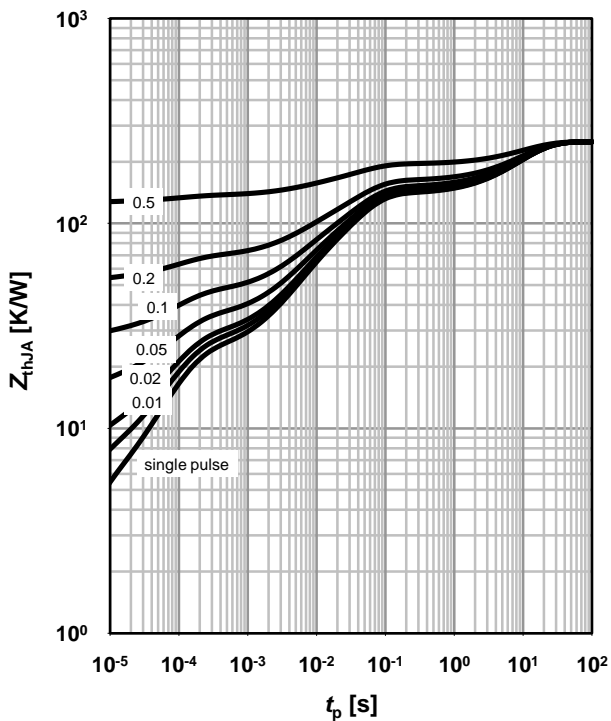
parameter:  $t_p$



**7 Max. transient thermal impedance (P)**

$Z_{thJA}=f(t_p)$

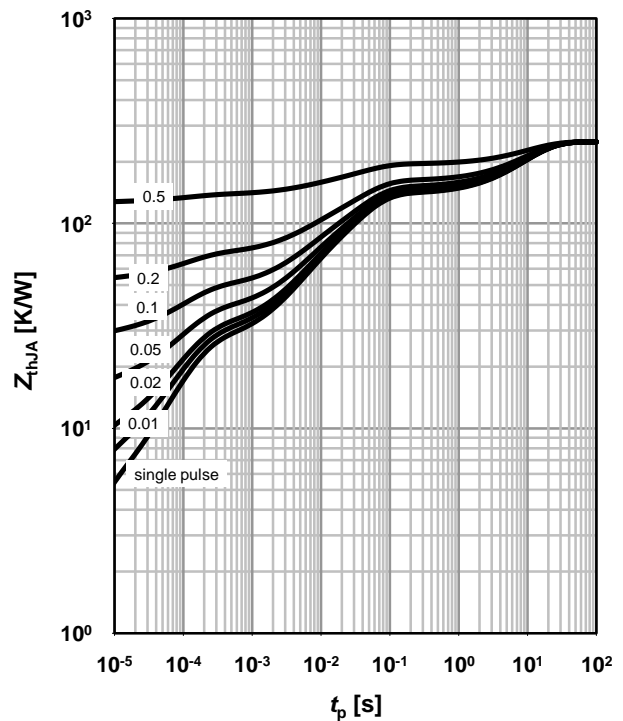
parameter:  $D=t_p/T$



**8 Max. transient thermal impedance (N)**

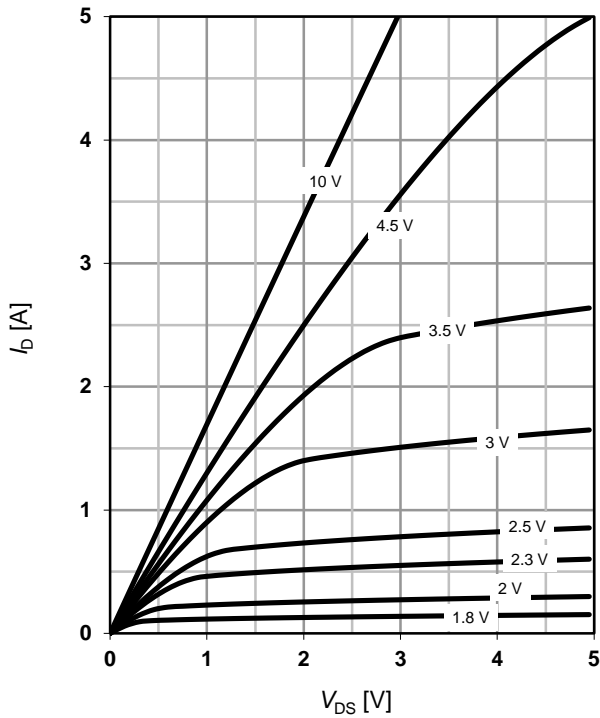
$Z_{thJA}=f(t_p)$

parameter:  $D=t_p/T$

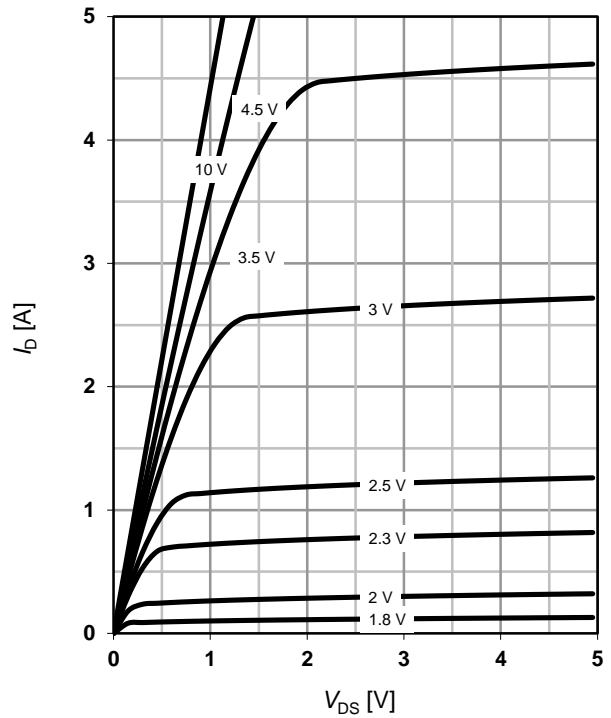


**9 Typ. output characteristics (P)**

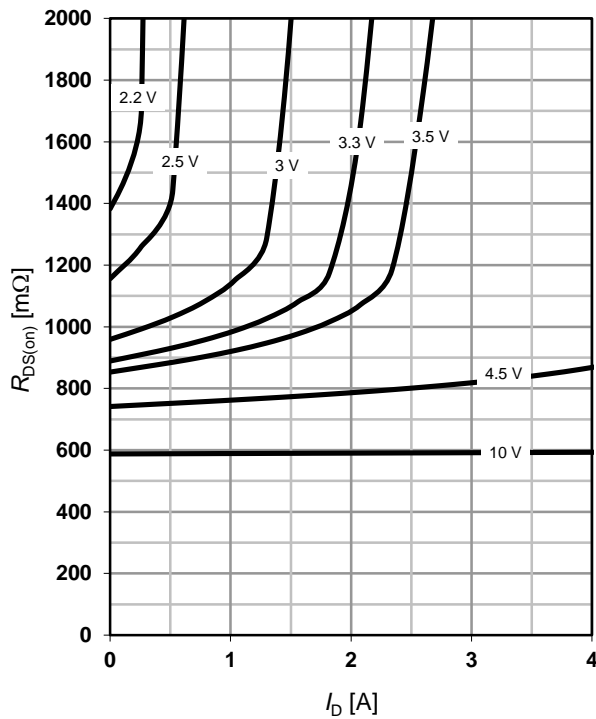
$$I_D = f(V_{DS}); T_j = 25\text{ }^\circ\text{C}$$

 parameter:  $V_{GS}$ 

**10 Typ. output characteristics (N)**

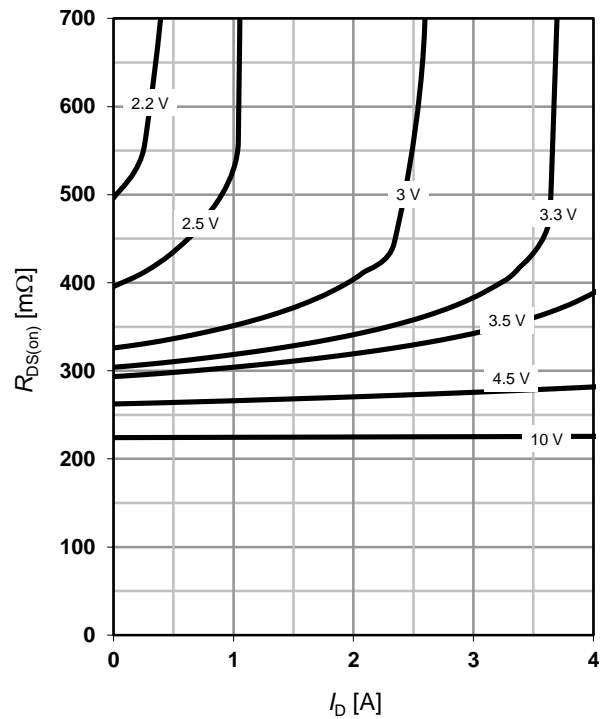
$$I_D = f(V_{DS}); T_j = 25\text{ }^\circ\text{C}$$

 parameter:  $V_{GS}$ 

**11 Typ. drain-source on resistance (P)**

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

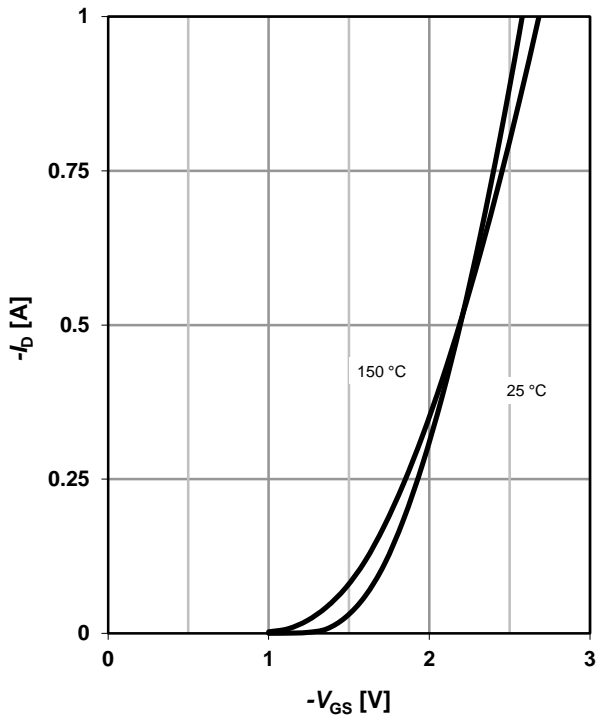
 parameter:  $V_{GS}$ 

**12 Typ. drain-source on resistance (N)**

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

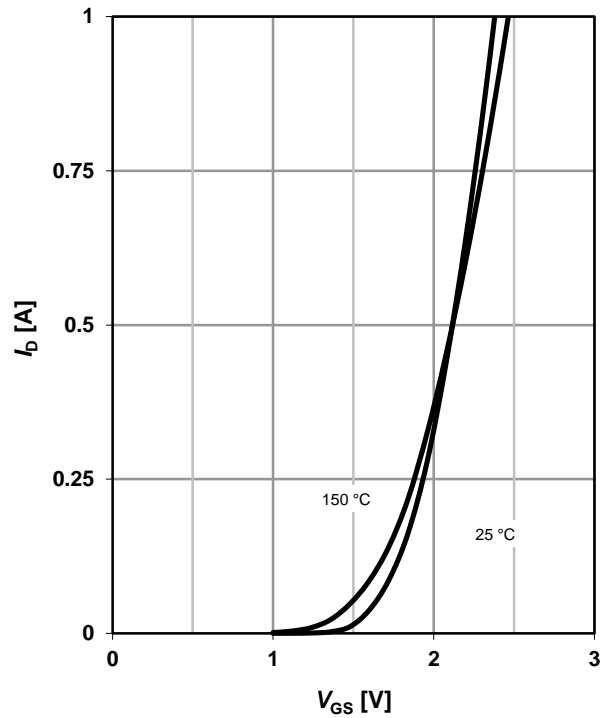
 parameter:  $V_{GS}$ 


**13 Typ. transfer characteristics (P)**

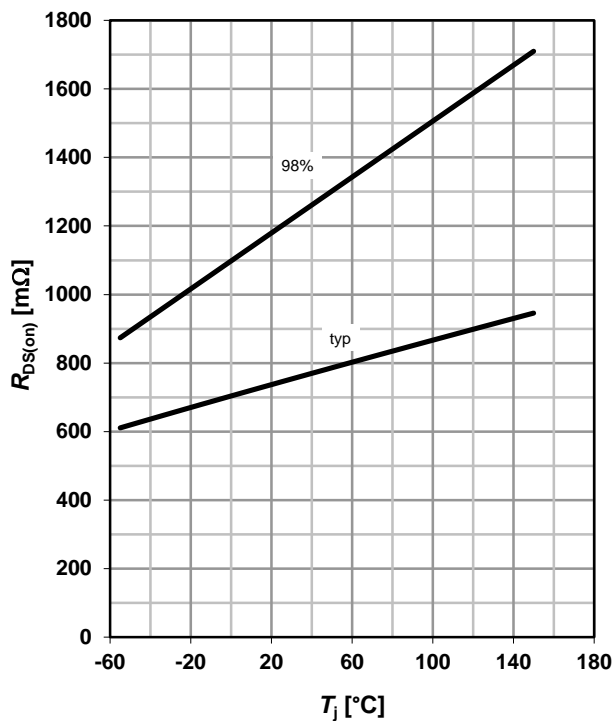
$$I_D = f(V_{GS}); |V_{DS}| > 2 |I_D| R_{DS(on)max}$$

 parameter:  $T_j$ 

**14 Typ. transfer characteristics (N)**

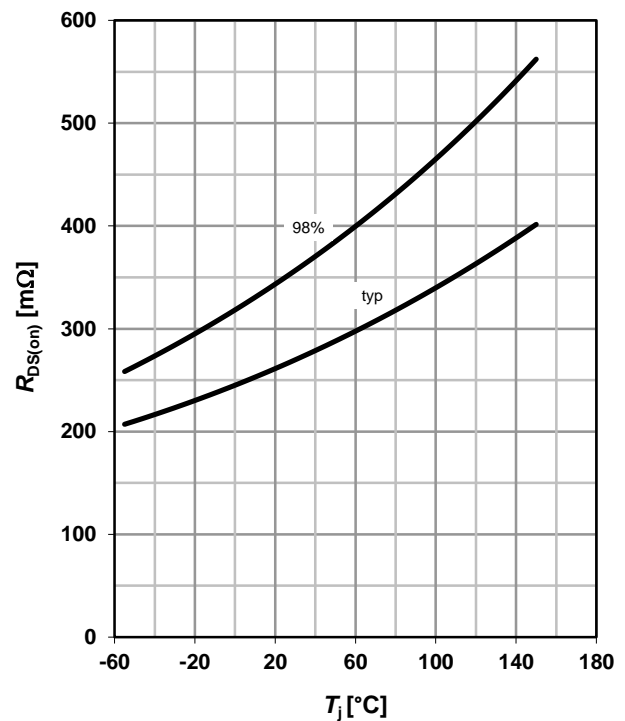
$$I_D = f(V_{GS}); |V_{DS}| > 2 |I_D| R_{DS(on)max}$$

 parameter:  $T_j$ 

**15 Drain-source on-state resistance (P)**

$$R_{DS(on)} = f(T_j); I_D = -0.53 \text{ A}; V_{GS} = -4.5 \text{ V}$$


**16 Drain-source on-state resistance (N)**

$$R_{DS(on)} = f(T_j); I_D = 0.95 \text{ A}; V_{GS} = 4.5 \text{ V}$$

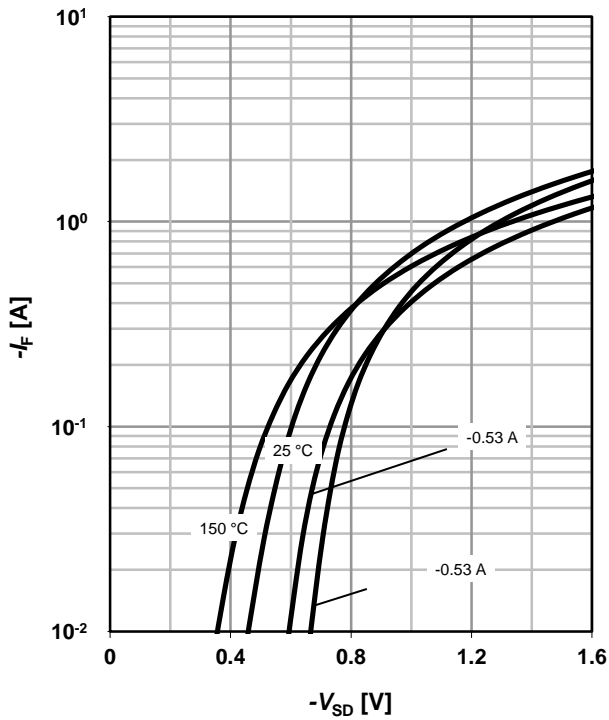




**21 Forward characteristics of reverse diode (P)**

$I_F=f(V_{SD})$

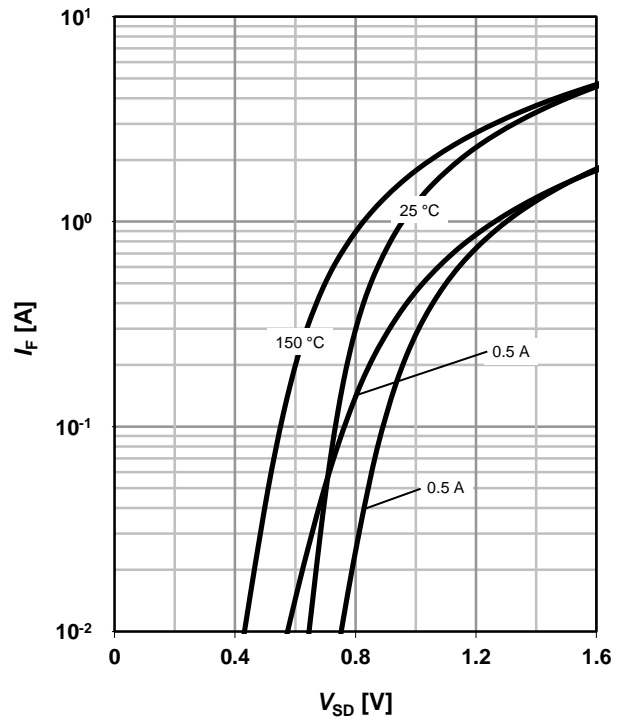
parameter:  $T_j$



**22 Forward characteristics of reverse diode (N)**

$I_F=f(V_{SD})$

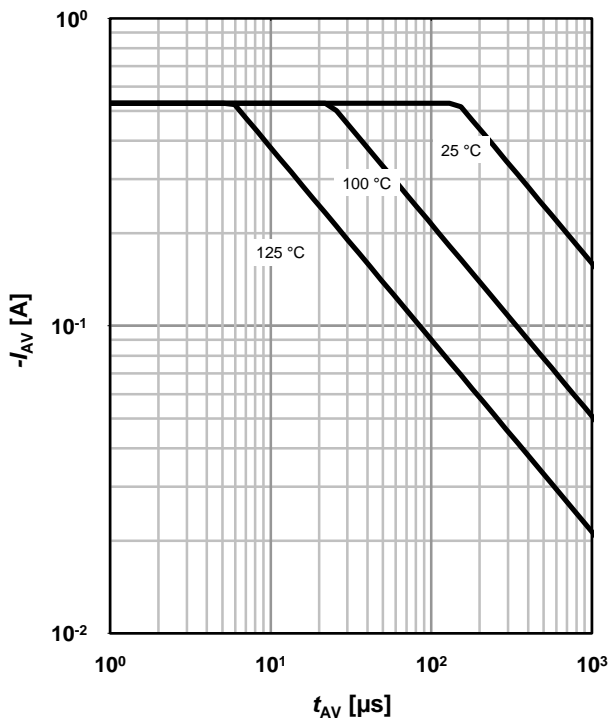
parameter:  $T_j$



**23 Avalanche characteristics (P)**

$I_{AS}=f(t_{AV}); R_{GS}=25 \Omega$

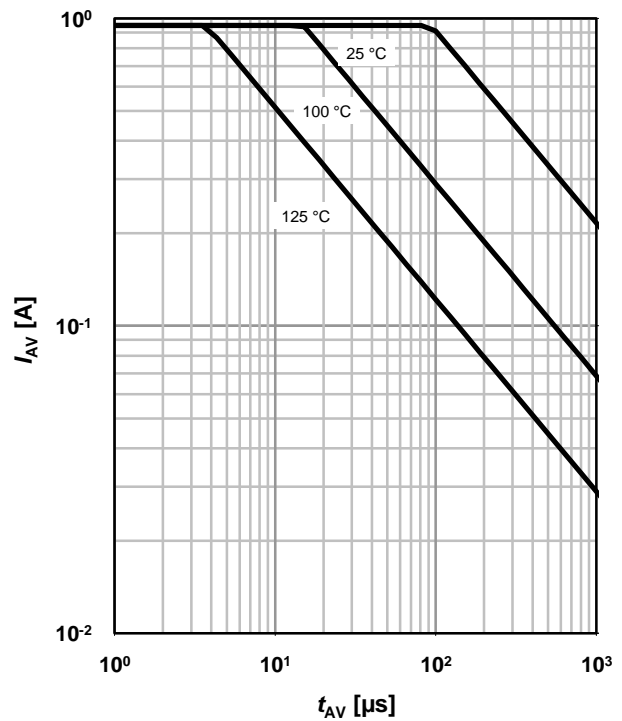
parameter:  $T_{j(start)}$



**24 Avalanche characteristics (N)**

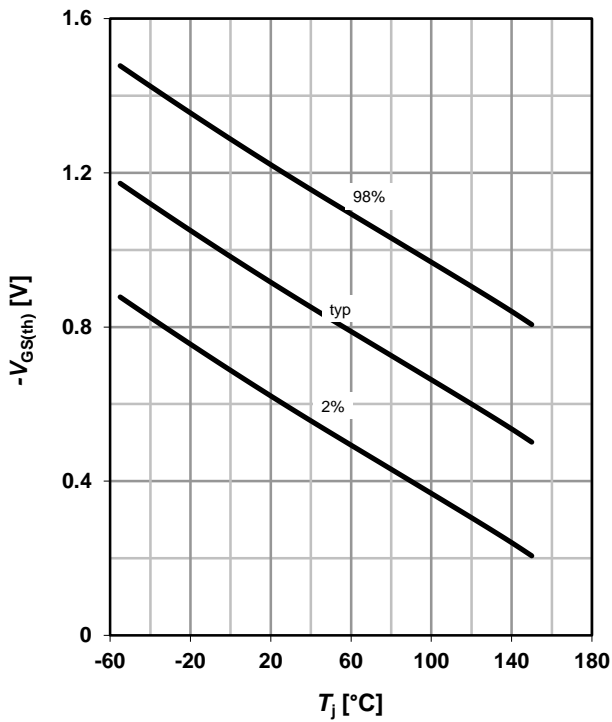
$I_{AS}=f(t_{AV}); R_{GS}=25 \Omega$

parameter:  $T_{j(start)}$



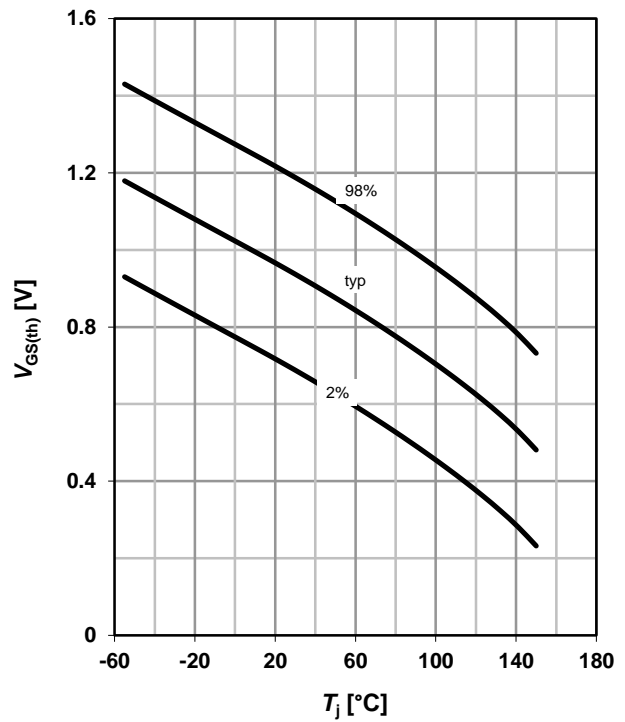
**17 Typ. gate threshold voltage (P)**

$V_{GS(th)}=f(T_j); V_{GS}=V_{DS}; I_D=-1.5 \mu A$



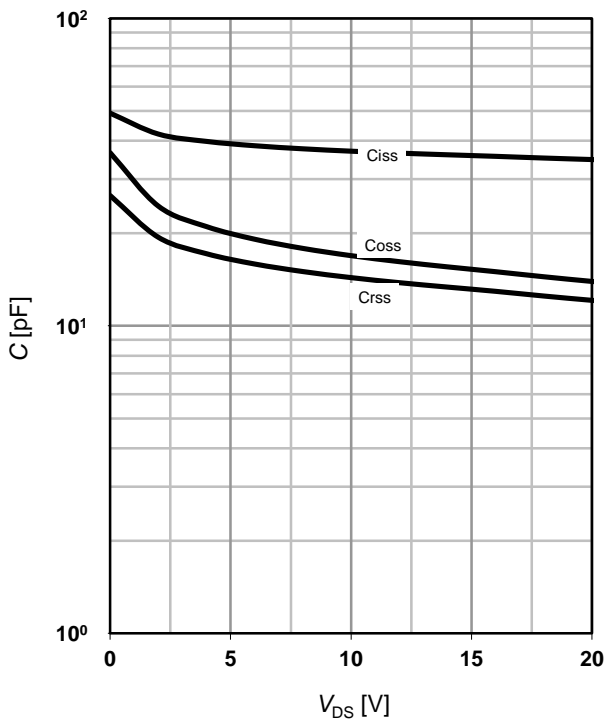
**18 Typ. gate threshold voltage (N)**

$V_{GS(th)}=f(T_j); V_{GS}=V_{DS}; I_D=1.6 \mu A$



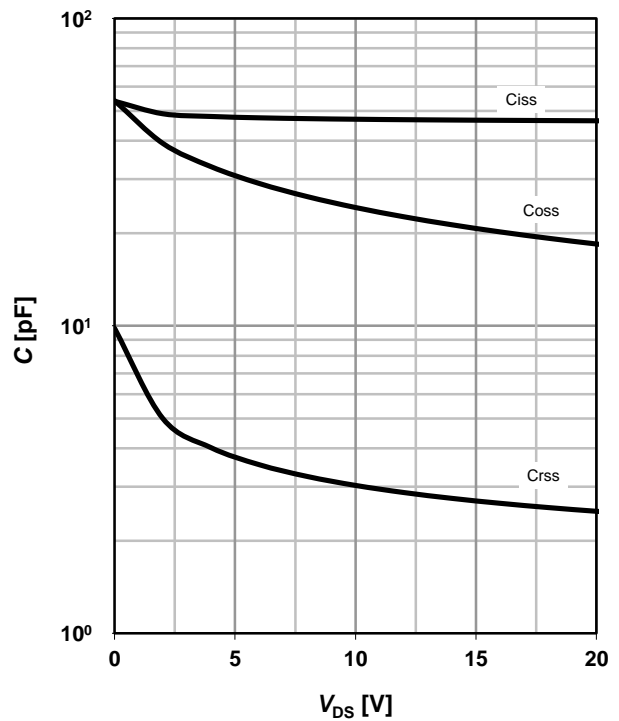
**19 Typ. capacitances (P)**

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

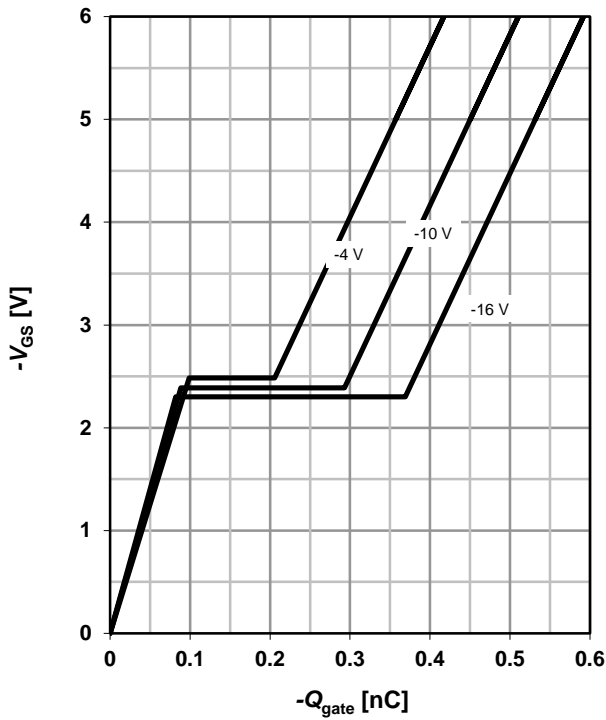


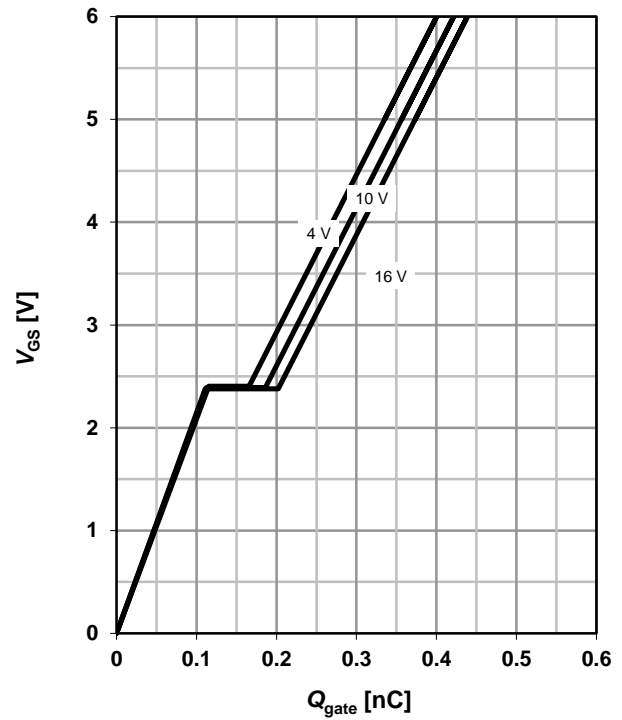
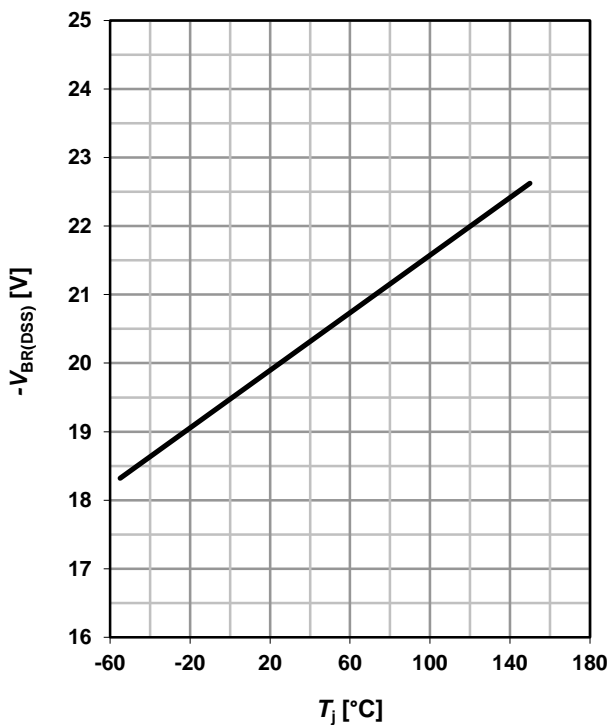
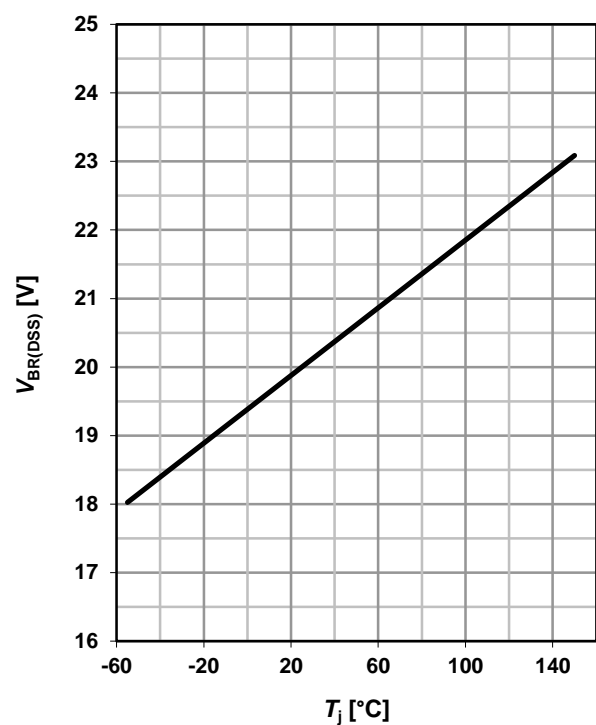
**20 Typ. capacitances (N)**

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



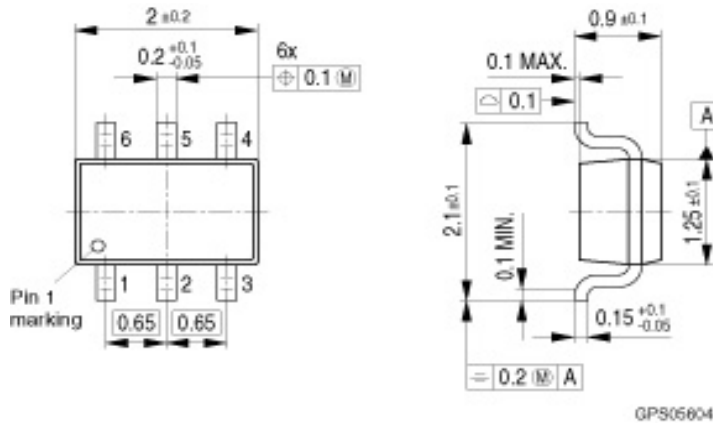
**25 Typ. gate charge (P)**
 $V_{GS}=f(Q_{gate}); I_D=-0.53 \text{ A pulsed}$ 

 parameter:  $V_{DD}$ 

**26 Typ. gate charge (N)**
 $V_{GS}=f(Q_{gate}); I_D=0.95 \text{ A pulsed}$ 

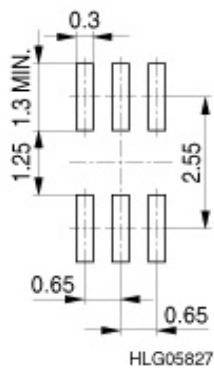
 parameter:  $V_{DD}$ 

**27 Drain-source breakdown voltage (P)**
 $V_{BR(DSS)}=f(T_j); I_D=-250 \mu\text{A}$ 

**28 Drain-source breakdown voltage (N)**
 $V_{BR(DSS)}=f(T_j); I_D=250 \mu\text{A}$ 


SOT-363

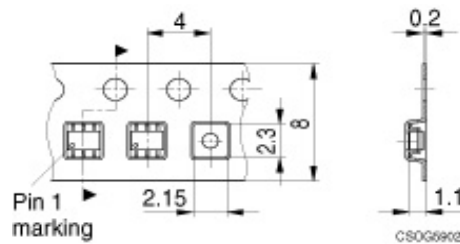
Package Outline:



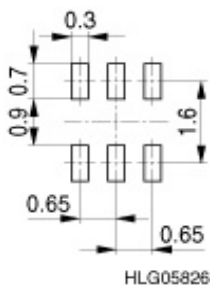
Footprint:



Packing:



Reflow soldering:



Dimensions in mm

**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](http://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 Technologies\(英飞凌\)](#)