

## Fast Switching Diode

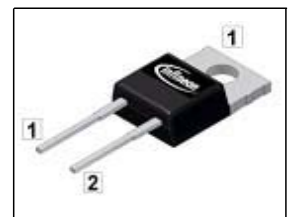
### Features

- 1200 V diode technology
- Fast recovery
- Soft switching
- Low reverse recovery charge
- Low forward voltage
- Easy paralleling
- Pb-free lead plating; RoHS compliant
- Halogen-free according to IEC61249-2-21
- Qualified according to JEDEC for target applications

### Product Summary

$V_{RRM}$	1200	V
$I_F$	30	A
$V_F$	1.65	V
$T_{jmax}$	150	°C

PG-TO220-2



Type	Package	Ordering Code	Marking	Pin 1	PIN 2	PIN 3
IDP30E120	PG-TO220-2	-	D30E120	C	A	-

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

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	$V_{RRM}$	1200	V
Continuous forward current	$I_F$	30	A
$T_C=25\text{ °C}$		50	
$T_C=90\text{ °C}$		30	
Surge non repetitive forward current	$I_{FSM}$	102	
$T_C=25\text{ °C}$ , $t_p=10\text{ ms}$ , sine halfwave			
Maximum repetitive forward current	$I_{FRM}$	76.5	
$T_C=25\text{ °C}$ , $t_p$ limited by $T_{jmax}$ , $D=0.5$			
Power dissipation	$P_{tot}$	138	W
$T_C=25\text{ °C}$		66	
$T_C=90\text{ °C}$			
Operating and storage temperature	$T_j, T_{stg}$	-55...+150	°C
Soldering temperature	$T_S$	260	°C
wavesoldering, 1.6mm (0.063 in.) from case for 10s			

**Thermal Characteristics**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Characteristics</b>					
Thermal resistance, junction - case	$R_{thJC}$	-	-	0.9	K/W
Thermal resistance, junction - ambient, leaded	$R_{thJA}$	-	-	62	
SMD version, device on PCB: @ min. footprint @ 6 cm <sup>2</sup> cooling area <sup>1)</sup>	$R_{thJA}$	-	-	62	
		-	35	-	

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Static Characteristics</b>					
Reverse leakage current $V_R=1200\text{V}$ , $T_j=25^\circ\text{C}$ $V_R=1200\text{V}$ , $T_j=150^\circ\text{C}$	$I_R$	-	-	100 2500	$\mu\text{A}$
Forward voltage drop $I_F=30\text{A}$ , $T_j=25^\circ\text{C}$ $I_F=30\text{A}$ , $T_j=150^\circ\text{C}$	$V_F$	-	1.65 1.7	2.15 -	V

<sup>0</sup>J-STD20 and JESD22

<sup>1</sup>Device on 40mm\*40mm\*1.5mm epoxy PCB FR4 with 6cm<sup>2</sup> (one layer, 70  $\mu\text{m}$  thick) copper area for drain connection. PCB is vertical without blown air.

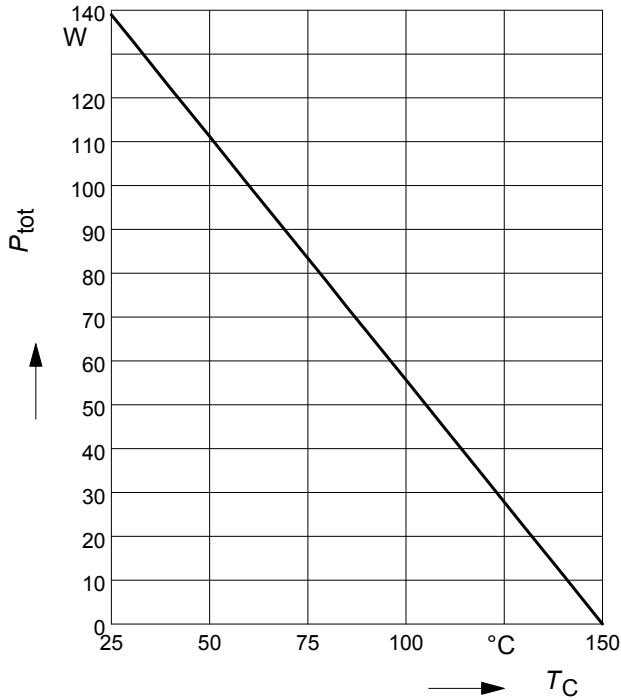
**Electrical Characteristics, at  $T_j = 25\text{ }^\circ\text{C}$ , unless otherwise specified**

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>Dynamic Characteristics</b>					
Reverse recovery time $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=25^\circ\text{C}$ $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=125^\circ\text{C}$ $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=150^\circ\text{C}$	$t_{rr}$	-	243 355 380	-	ns
Peak reverse current $V_R=800\text{V}$ , $I_F = 30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=25^\circ\text{C}$ $V_R=800\text{V}$ , $I_F = 30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=125^\circ\text{C}$ $V_R=800\text{V}$ , $I_F = 30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=150^\circ\text{C}$	$I_{rrm}$	-	23.7 28.3 29.5	-	A
Reverse recovery charge $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=25^\circ\text{C}$ $V_R=800\text{V}$ , $I_F = 30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=125^\circ\text{C}$ $V_R=800\text{V}$ , $I_F = 30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=150^\circ\text{C}$	$Q_{rr}$	-	2630 4700 5200	-	nC
Reverse recovery softness factor $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=25^\circ\text{C}$ $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=125^\circ\text{C}$ $V_R=800\text{V}$ , $I_F=30\text{A}$ , $di_F/dt=850\text{A}/\mu\text{s}$ , $T_j=150^\circ\text{C}$	S	-	6 7.4 7.5	-	

**1 Power dissipation**

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

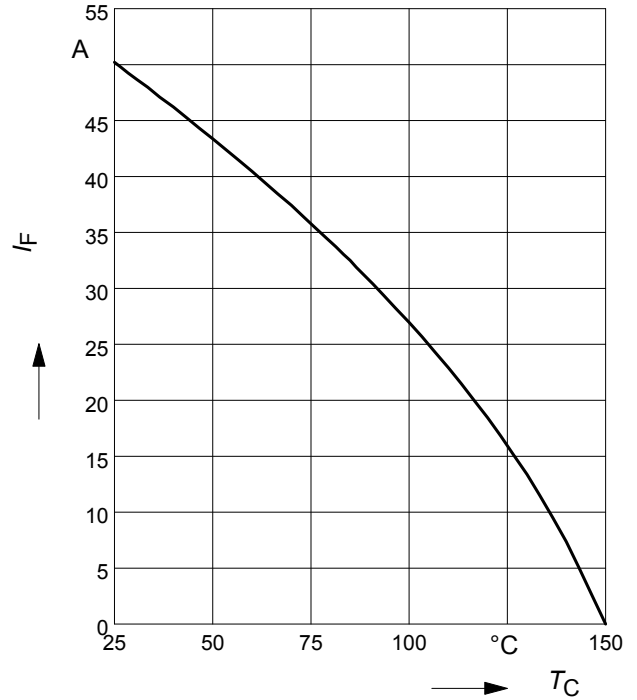
parameter:  $T_j \leq 150^\circ\text{C}$



**2 Diode forward current**

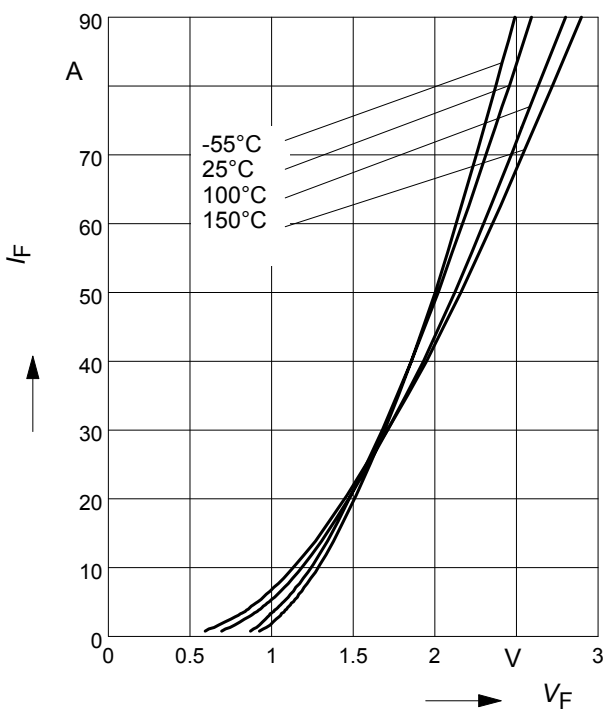
$$I_F = f(T_C)$$

parameter:  $T_j \leq 150^\circ\text{C}$



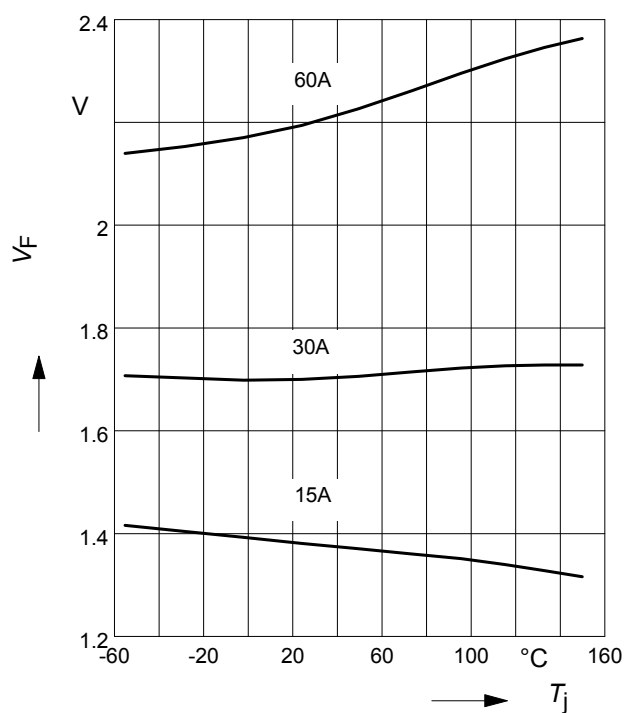
**3 Typ. diode forward current**

$$I_F = f(V_F)$$



**4 Typ. diode forward voltage**

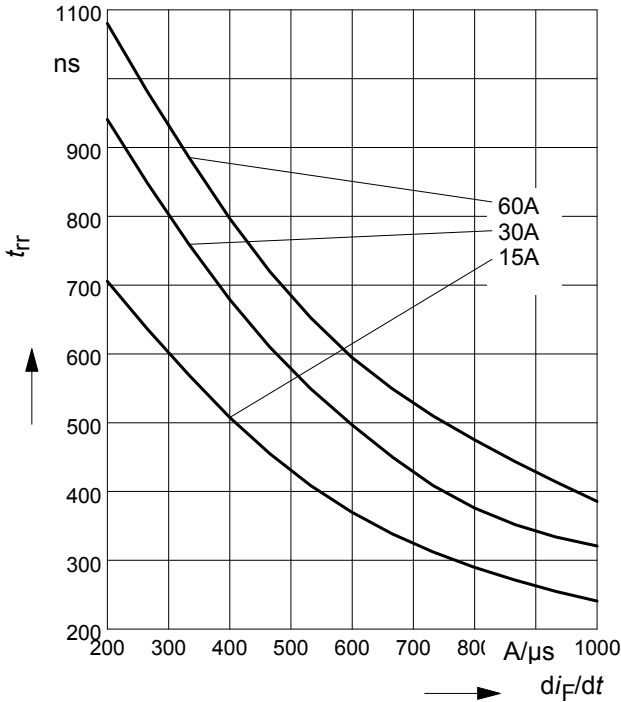
$$V_F = f(T_j)$$



**5 Typ. reverse recovery time**

$$t_{rr} = f(di_F/dt)$$

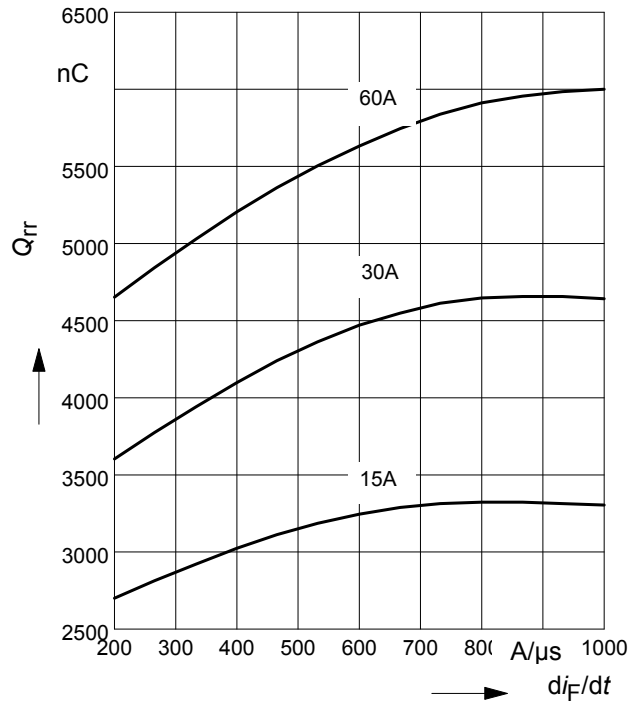
parameter:  $V_R = 800V, T_j = 125^\circ C$



**6 Typ. reverse recovery charge**

$$Q_{rr} = f(di_F/dt)$$

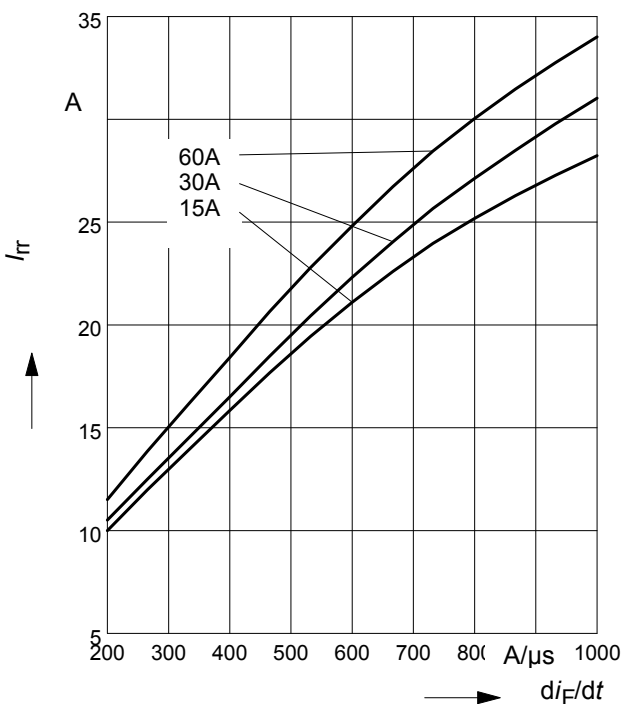
parameter:  $V_R = 800V, T_j = 125^\circ C$



**7 Typ. reverse recovery current**

$$I_{rr} = f(di_F/dt)$$

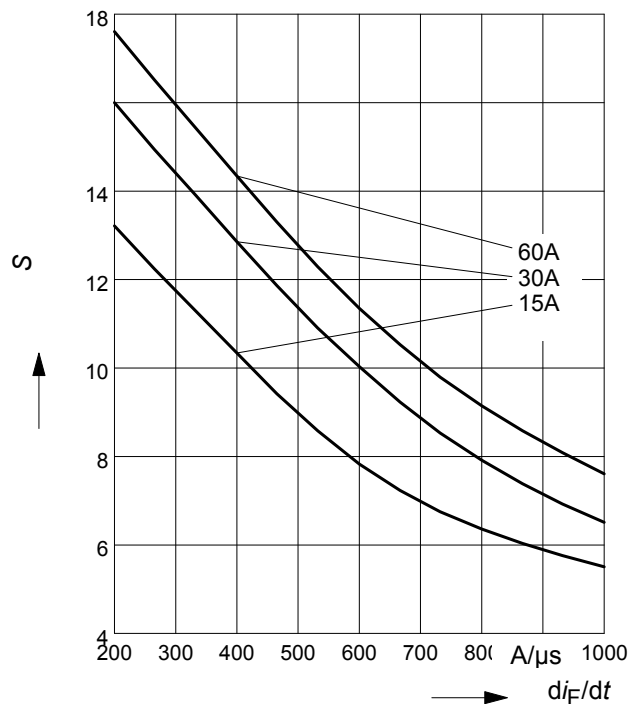
parameter:  $V_R = 800V, T_j = 125^\circ C$



**8 Typ. reverse recovery softness factor**

$$S = f(di_F/dt)$$

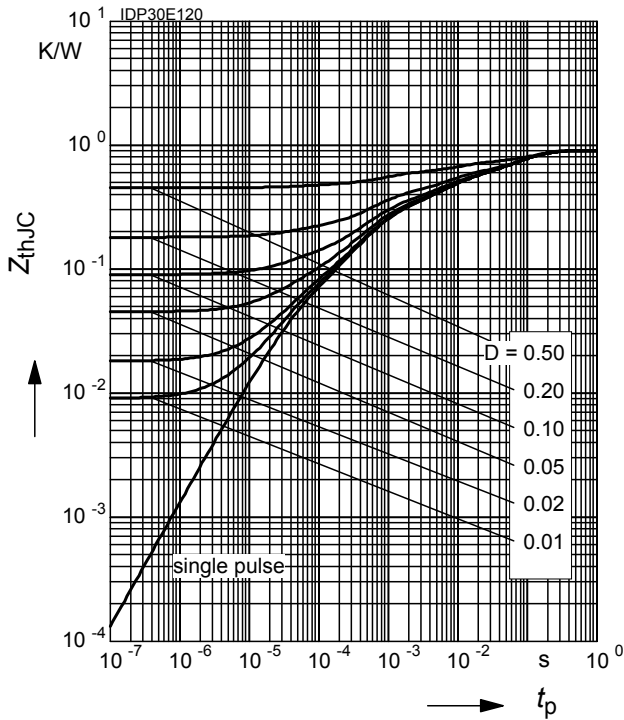
parameter:  $V_R = 800V, T_j = 125^\circ C$

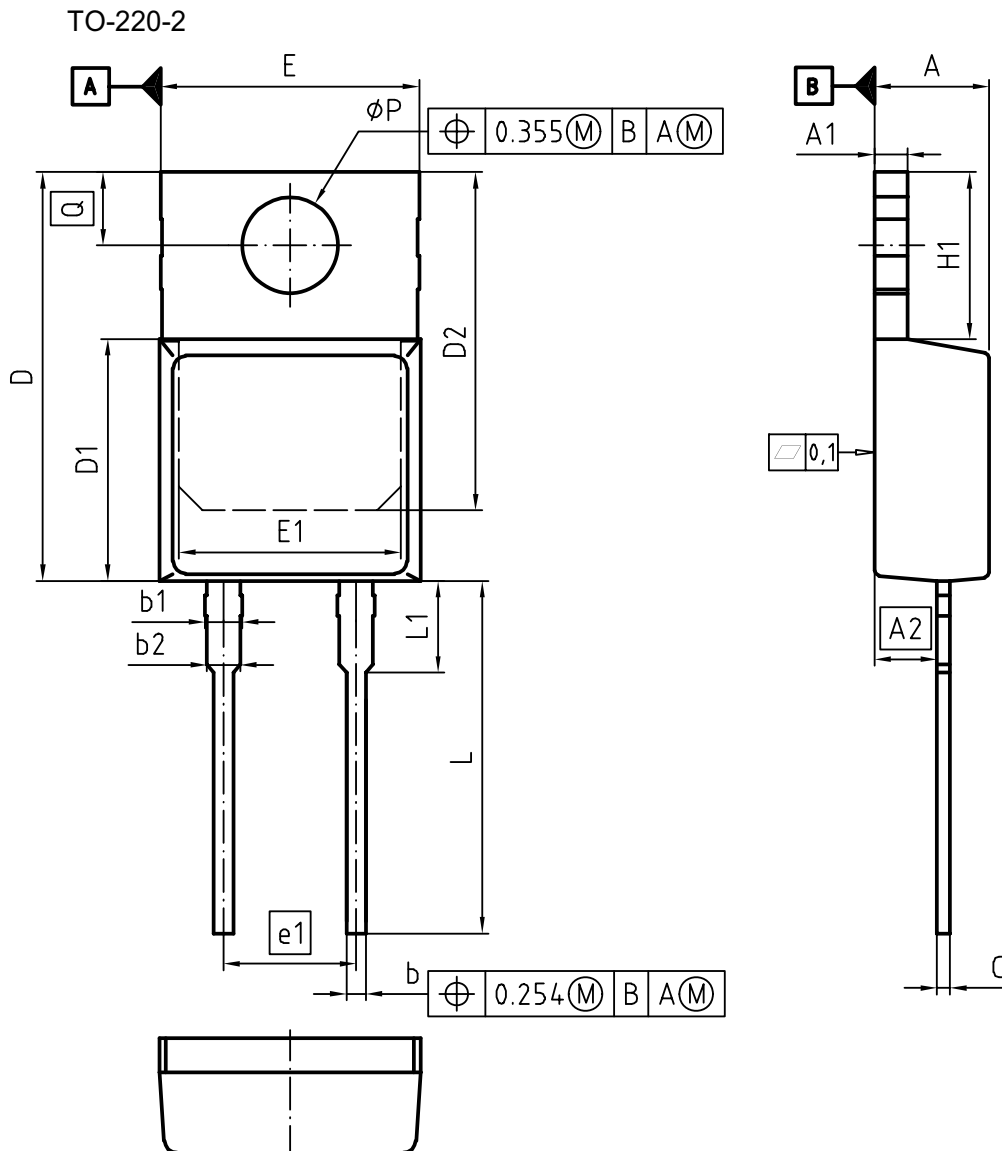


**9 Max. transient thermal impedance**

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

parameter :  $D = t_p/T$





DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.50	0.169	0.177
A1	1.17	1.37	0.046	0.054
A2	2.30	2.50	0.091	0.098
b	0.65	0.85	0.026	0.033
b1	1.19	1.69	0.047	0.066
b2	1.19	1.39	0.047	0.055
c	0.40	0.60	0.016	0.024
D	15.35	15.95	0.604	0.628
D1	9.05	9.45	0.356	0.372
D2	12.30	13.05	0.484	0.514
E	9.80	10.20	0.386	0.402
E1	7.25	8.60	0.285	0.339
e1	5.08		0.200	
N	2		2	
H1	5.90	6.90	0.232	0.272
L	13.00	14.00	0.512	0.551
L1	3.30	3.70	0.130	0.146
$\phi P$	3.55	3.70	0.140	0.146
Q	2.60	3.00	0.102	0.118

DOCUMENT NO.  
Z8B00150560

SCALE

EUROPEAN PROJECTION

ISSUE DATE  
28-10-2008

REVISION  
01

**Published by**  
**Infineon Technologies AG**  
**81726 Munich, Germany**  
**81726 München, Germany**  
**© 2009 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.