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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.

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Diode

Silicon Carbide Schottky Diode

IDH20G120C5

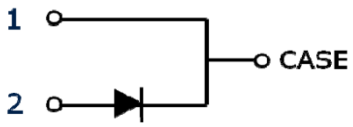
5th Generation thinQ!™ 1200 V SiC Schottky Diode

IDH20G120C5

Rev. 2.0 2015-09-03

Industrial Power Control

thinQ!™ SiC Schottky Diode



Features:

- Revolutionary semiconductor material - Silicon Carbide
- No reverse recovery current / No forward recovery
- Temperature independent switching behavior
- Low forward voltage even at high operating temperature
- Tight forward voltage distribution
- Excellent thermal performance
- Extended surge current capability
- Specified dv/dt ruggedness
- Qualified according to JEDEC[1)] for target applications
- Pb-free lead plating; RoHS compliant

Benefits

- System efficiency improvement over Si diodes
- Enabling higher frequency / increased power density solutions
- System size / cost savings due to reduced heatsink requirements and smaller magnetics
- Reduced EMI
- Highest efficiency across the entire load range
- Robust diode operation during surge events
- High reliability
- RelatedLinks: www.infineon.com/sic

Applications

- Solar inverters
- Uninterruptable power supplies
- Motor drives
- Power Factor Correction

Package pin definitions

- Pin 1 and backside – cathode
- Pin 2 – anode

Key Performance and Package Parameters

Type	V_{DC}	I_F	Q_C	$T_{j,max}$	Marking	Package
IDH20G120C5	1200V	20A	82nC	175°C	D2012C5	PG-TO220-2-1

1) J-STD20 and JESD22

Table of Contents

Maximum ratings

Parameter	Symbol	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	1200	V
Continues forward current for $R_{th(j-c,max)}$ T_C = 150°C, D=1 T_C = 135°C, D=1 T_C = 25°C, D=1	I_F	 20 27 56	A
Surge non-repetitive forward current, sine halfwave T_C=25°C, t_p=10ms T_C=150°C, t_p=10ms	$I_{F,SM}$	 198 168	A
Non-repetitive peak forward current T_C = 25°C, t_p=10 µs	$I_{F,max}$	1200	A
i²t value T_C = 25°C, t_p=10 ms T_C = 150°C, t_p=10 ms	$\int i^2dt$	 195 140	A²s
Diode dv/dt ruggedness V_R=0…960V	dv/dt	80	V/ns
Power dissipation T_C = 25°C	P_{tot}	330	W
Operating and storage temperature	T_j;T_{stg}	-55…175	°C
Soldering temperature, wavesoldering only allowed at leads, 1.6mm (0.063 in.) from case for 10 s	T_{sold}	260	°C
Mounting torque M3 and M4 screws	M	0.7	Nm

Thermal Resistances

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Characteristic						
Diode thermal resistance, junction – case	$R_{th(j-c)}$		-	0.35	0.46	K/W
Thermal resistance, junction – ambient	$R_{th(j-a)}$	leaded	-	-	62	K/W

Electrical Characteristics

Static Characteristics, at T_j=25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Static Characteristic						
DC blocking voltage	V_{DC}	T_j = 25°C	1200	-	-	V
Diode forward voltage	V_F	I_F= 20A, T_j=25°C I_F= 20A, T_j=150°C	- -	1.5 2.0	1.8 2.6	V
Reverse current	I_R	V_R=1200V, T_j=25°C V_R=1200V, T_j=150°C		8.5 44	123 630	µA

Dynamic Characteristics, at T_j=25°C, unless otherwise specified

Parameter	Symbol	Conditions	Value			Unit
			min.	typ.	max.	
Dynamic Characteristics						
Total capacitive charge	Q_C	V_R=800V, T_j=150°C $Q_C = \int_0^{V_R} C(V)dV$	-	82	-	nC
Total Capacitance	C	V_R=1 V, f=1 MHz V_R=400 V, f=1 MHz V_R=800 V, f=1 MHz	- - -	1050 74 59	- - -	pF

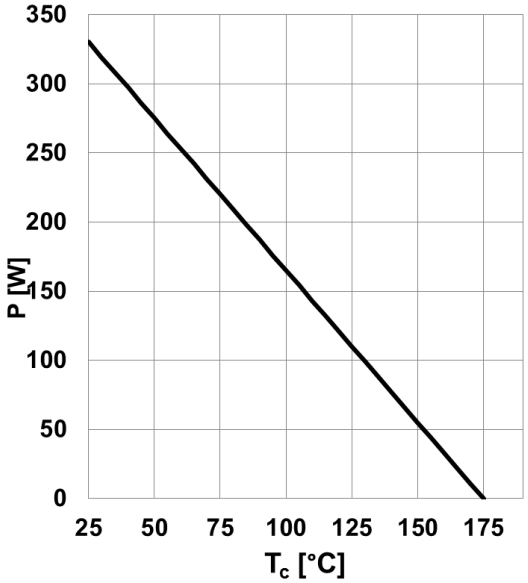


Figure 1. **Power dissipation as a function of case temperature,** $P_{tot}=f(T_C, R_{th(j-c),max})$

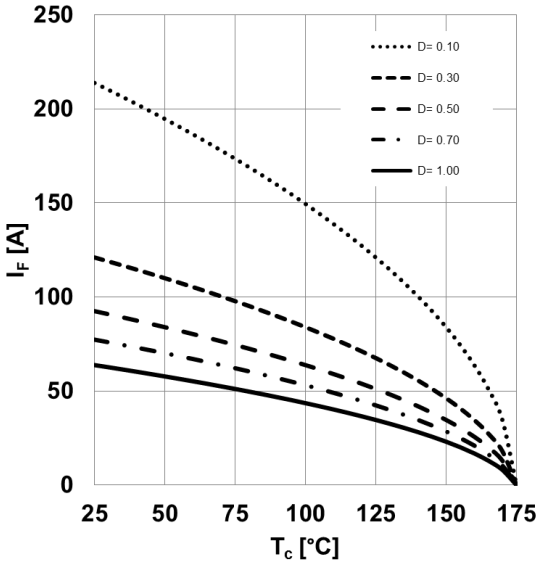


Figure 2. **Diode forward current as function of temperature,** $T_j \leq 175°C$, $R_{th(j-c),max}$, parameter D=duty cycle, V_{th}, R_{diff} @ T_j=175°C

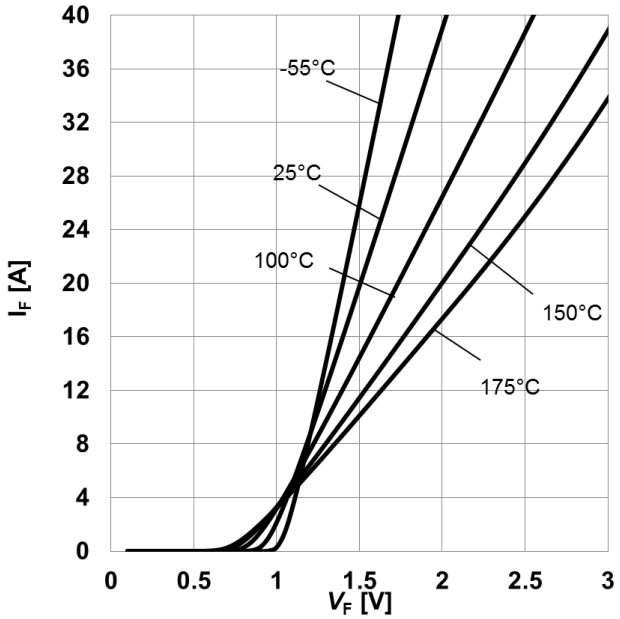


Figure 3. **Typical forward characteristics,** $I_F=f(V_F)$, t_p= 10 µs, parameter: T_j

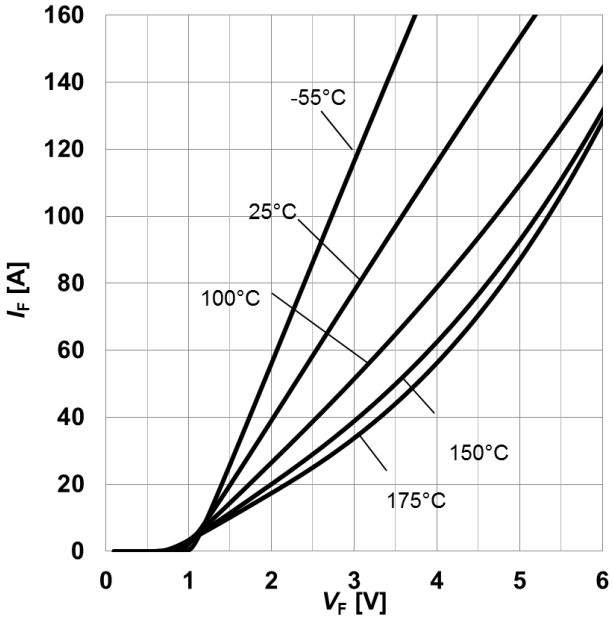


Figure 4. **Typical forward characteristics in surge current,** $I_F=f(V_F)$, t_p= 10 µs, parameter: T_j

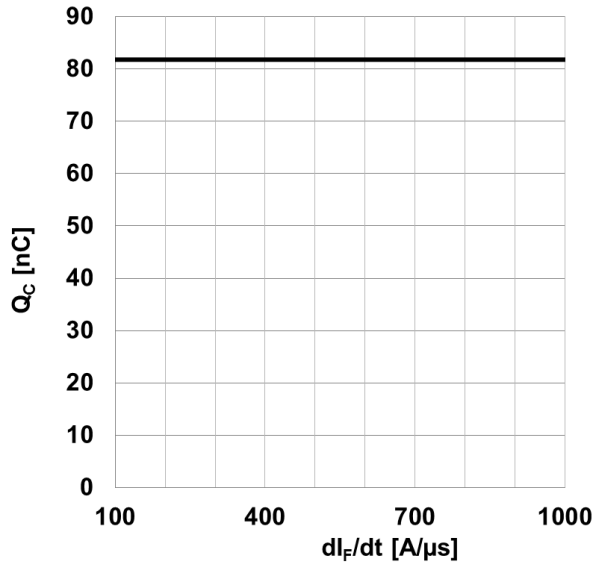


Figure 5. **Typical capacitive charge as function of current slope**[1], Q_C=f(dI_F/dt), T_j=150°C

1) Only capacitive charge, guaranteed by design.

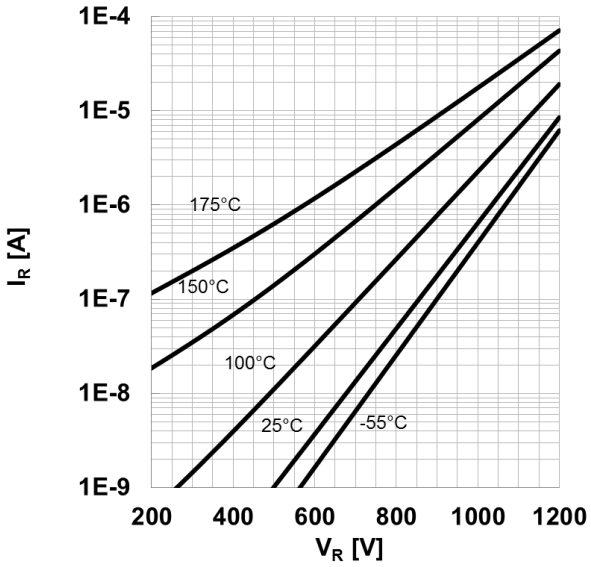


Figure 6. **Typical reverse current as function of reverse voltage,** I_R=f(V_R), parameter: T_j

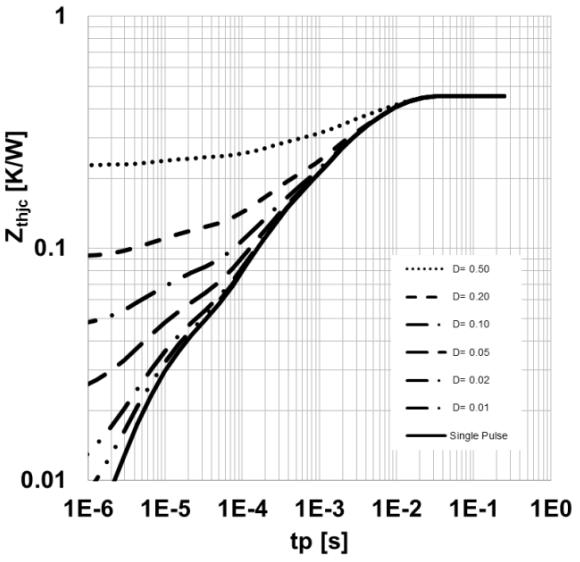


Figure 7. **Max. transient thermal impedance,** $Z_{th,jc}$=f(t_P), parameter: D=t_P/T

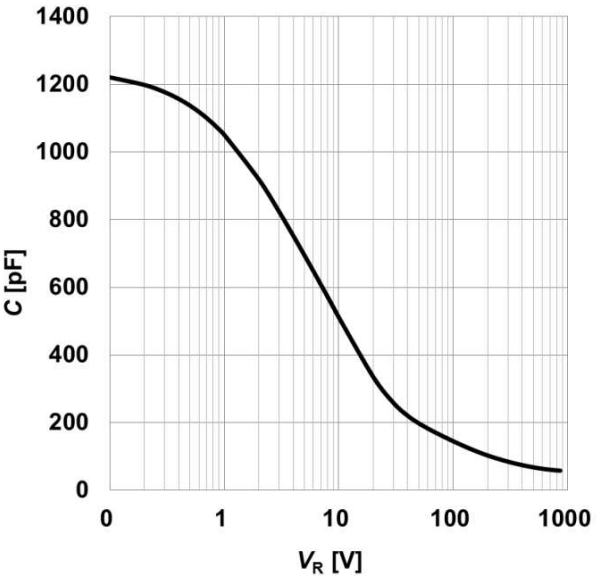


Figure 8. **Typical capacitance as function of reverse voltage**, C=f(V_R); T_j=25°C; f=1 MHz

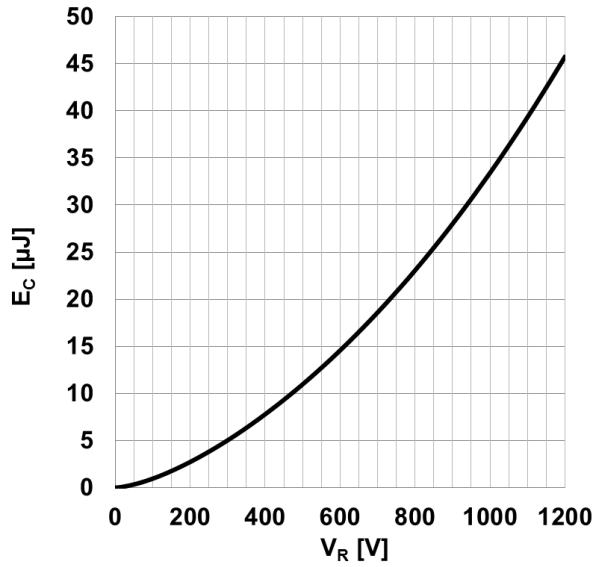
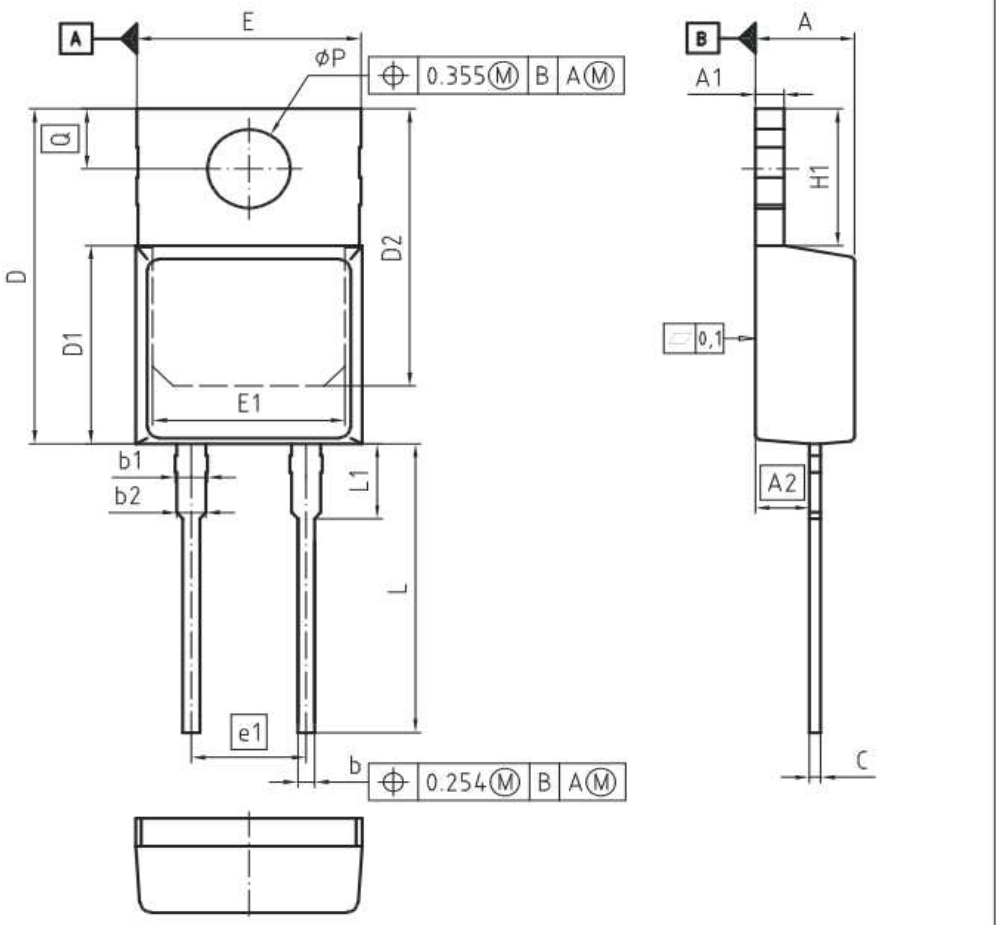


Figure 9. **Typical capacitively stored energy as function of reverse voltage,**

$$E_C = \int_0^{V_R} C(V)VdV$$

PG-TO220-2-1



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
øP	3.55	3.70	0.140	0.146
Q	2.60	3.00	0.102	0.118

DOCUMENT NO.
Z8B00150560

SCALE 0 2.5 0 2.5 5mm

EUROPEAN PROJECTION

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28-10-2008

REVISION
01

Revision History

IDH20G120C5

Revision: 2015-09-03, Rev. 2.0

Previous Revision:

Revision	Date	Subjects (major changes since last version)
2.0	-	Final data sheet

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