



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

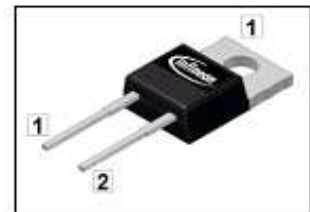


thinQ!™ SiC Schottky Diode
Features

- Revolutionary semiconductor material - Silicon Carbide
- Switching behavior benchmark
- No reverse recovery / No forward recovery
- Temperature independent switching behavior
- High surge current capability
- Pb-free lead plating; RoHS compliant
- Qualified according to JEDEC¹⁾ for target applications
- Optimized for high temperature operation
- Lowest Figure of Merit Q_C/I_F

Product Summary

| | | |
|----------------------------|------|----|
| V_{DC} | 1200 | V |
| Q_C | 27 | nC |
| $I_F; T_C < 130\text{ °C}$ | 7.5 | A |

PG-TO220-2

thinQ!™ Diode designed for fast switching applications like:

- SMPS e.g.; CCM PFC
- Motor Drives; Solar Applications; UPS

| Type | Package | Marking | Pin 1 | Pin 2 |
|-----------|------------|---------|-------|-------|
| IDH08S120 | PG-TO220-2 | D08S120 | C | A |

Maximum ratings

| Parameter | Symbol | Conditions | Value | Unit |
|--|----------------|---|-------------|------------------|
| Continuous forward current | I_F | $T_C < 130\text{ °C}$ | 7.5 | A |
| Surge non-repetitive forward current, sine halfwave | $I_{F,SM}$ | $T_C = 25\text{ °C}, t_p = 10\text{ ms}$ | 39 | |
| | | $T_C = 150\text{ °C}, t_p = 10\text{ ms}$ | 33 | |
| Non-repetitive peak forward current | $I_{F,max}$ | $T_C = 25\text{ °C}, t_p = 10\text{ }\mu\text{s}$ | 160 | |
| i^2t value | $\int i^2 dt$ | $T_C = 25\text{ °C}, t_p = 10\text{ ms}$ | 7 | A ² s |
| | | $T_C = 150\text{ °C}, t_p = 10\text{ ms}$ | 5 | |
| Repetitive peak reverse voltage | V_{RRM} | $T_J = 25\text{ °C}$ | 1200 | V |
| Diode dv/dt ruggedness | dv/dt | $V_R = 0 \dots 960\text{ V}$ | 50 | V/ns |
| Power dissipation | P_{tot} | $T_C = 25\text{ °C}$ | 100 | W |
| Operating and storage temperature | T_j, T_{stg} | | -55 ... 175 | °C |
| Soldering temperature, wavesoldering only allowed at leads | T_{sold} | 1.6mm (0.063 in.) from case for 10s | 260 | |
| Mounting torque | | M3 and M3.5 screws | 60 | Mcm |

| Parameter | Symbol | Conditions | Values | | | Unit |
|-----------|--------|------------|--------|------|------|------|
| | | | min. | typ. | max. | |

Thermal characteristics

| | | | | | | |
|--|------------|---|---|---|-----|-----|
| Thermal resistance, junction - case | R_{thJC} | | - | - | 1,5 | K/W |
| Thermal resistance, junction - ambient | R_{thJA} | Thermal resistance, junction- ambient, leaded | - | - | 62 | |

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

| | | | | | | |
|-----------------------|----------|--|------|------|------|---------------|
| DC blocking voltage | V_{DC} | $I_R=0.05\text{ mA}, T_j=25\text{ }^\circ\text{C}$ | 1200 | - | - | V |
| Diode forward voltage | V_F | $I_F=7.5\text{ A}, T_j=25\text{ }^\circ\text{C}$ | - | 1,65 | 1,8 | |
| | | $I_F=7.5\text{ A}, T_j=150\text{ }^\circ\text{C}$ | - | 2,55 | - | |
| Reverse current | I_R | $V_R=1200\text{ V}, T_j=25\text{ }^\circ\text{C}$ | - | 8 | 180 | μA |
| | | $V_R=1200\text{ V}, T_j=150\text{ }^\circ\text{C}$ | - | 30 | 1000 | |

AC characteristics

| | | | | | | |
|------------------------------|-------|--|---|-----|-----|----|
| Total capacitive charge | Q_c | $V_R=400\text{ V}, I_F \leq I_{F,max},$ $di_F/dt=200\text{ A}/\mu\text{s},$ | - | 27 | - | nC |
| Switching time ²⁾ | t_c | $T_j=150\text{ }^\circ\text{C}$ | - | - | <10 | |
| Total capacitance | C | $V_R=1\text{ V}, f=1\text{ MHz}$ | - | 380 | - | pF |
| | | $V_R=300\text{ V}, f=1\text{ MHz}$ | - | 30 | - | |
| | | $V_R=600\text{ V}, f=1\text{ MHz}$ | - | 27 | - | |

¹⁾ J-STD20 and JESD22

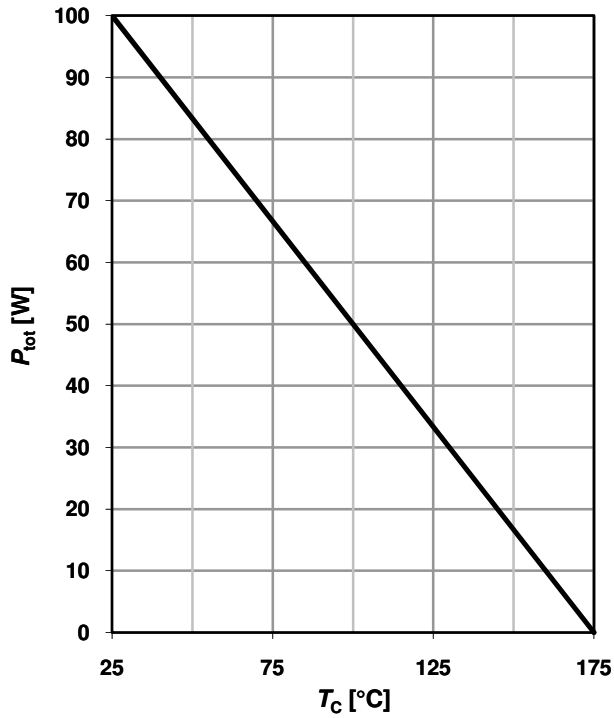
²⁾ t_c is the time constant for the capacitive displacement current waveform (independent from T_j , I_{LOAD} and di/dt), different from t_{rr} which is dependent on T_j , I_{LOAD} and di/dt . No reverse recovery time constant t_{rr} due to absence of minority carrier injection

³⁾ Under worst case Z_{th} conditions.

⁴⁾ Only capacitive charge occurring, guaranteed by design

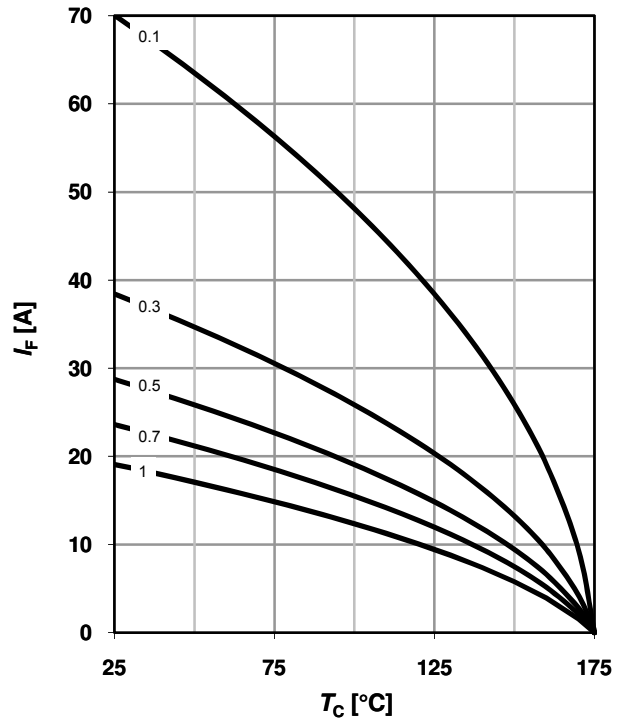
1 Power dissipation

$P_{tot}=f(T_C)$



2 Diode forward current

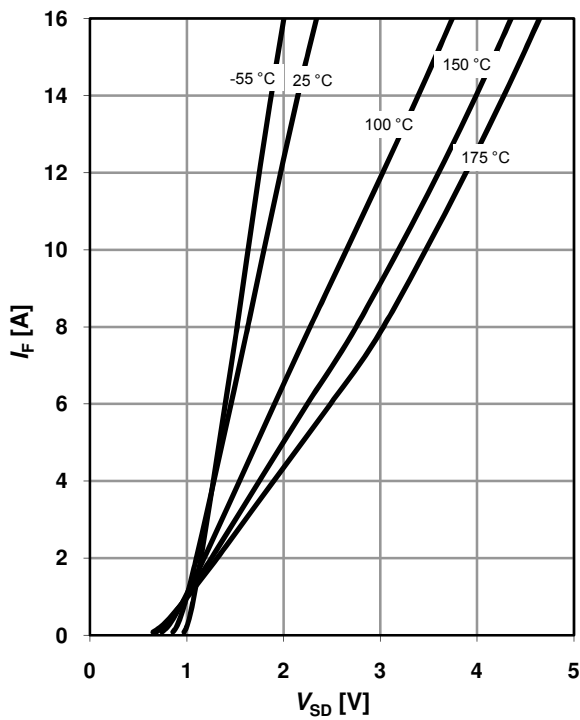
$I_F=f(T_C)^3$; $T_j \leq 175\text{ °C}$; parameter: $D = t_p/T$



3 Typ. forward characteristic

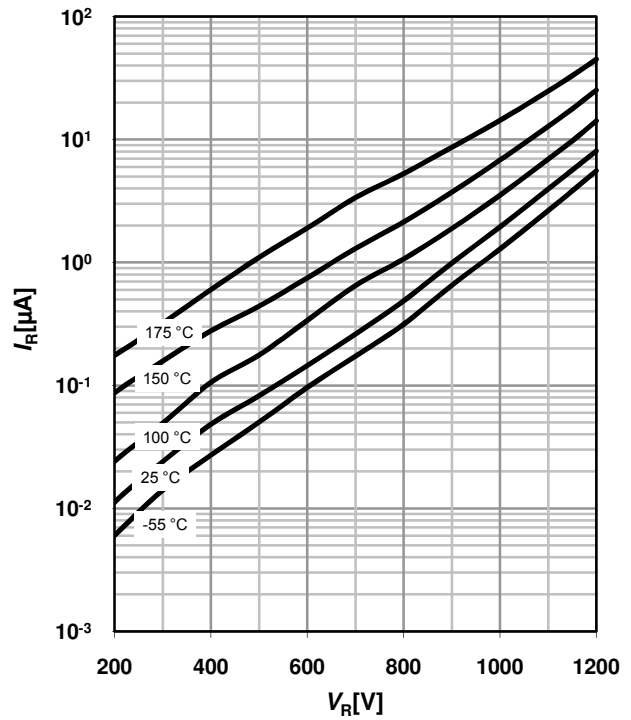
$I_F=f(V_F)$; $t_p=400\text{ }\mu\text{s}$

parameter: T_j



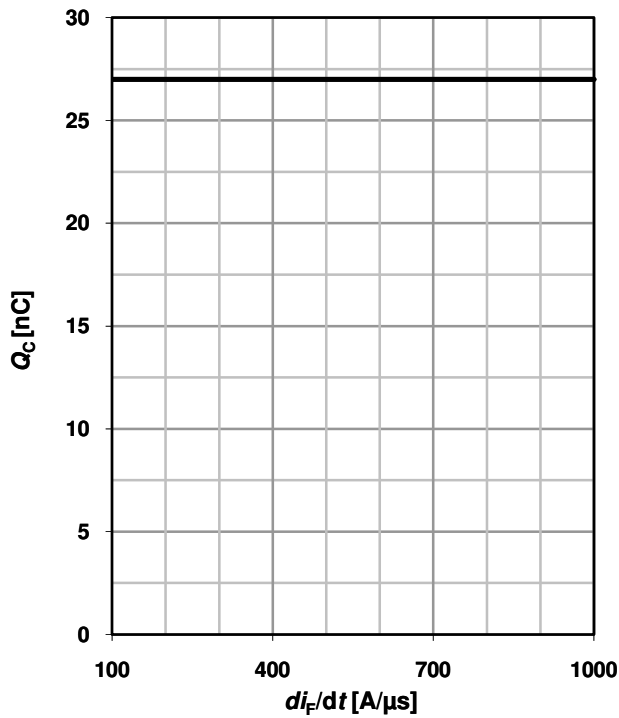
4 Typ. Reverse current vs. reverse voltage

$E_C=f(V_R)$



5 Typ. capacitance charge vs. current slope

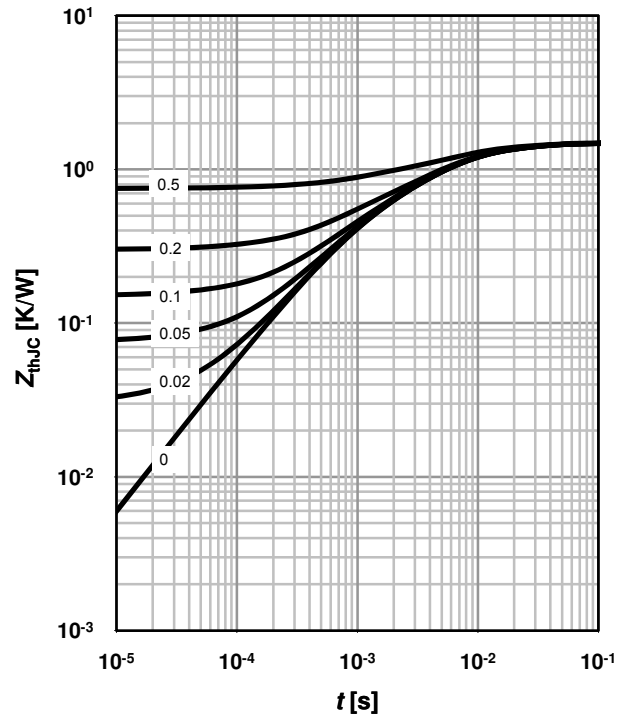
$$Q_C = f(di_F/dt)^4; T_j = 150 \text{ }^\circ\text{C}; I_F \leq I_{F,max}$$



6 Transient thermal impedance

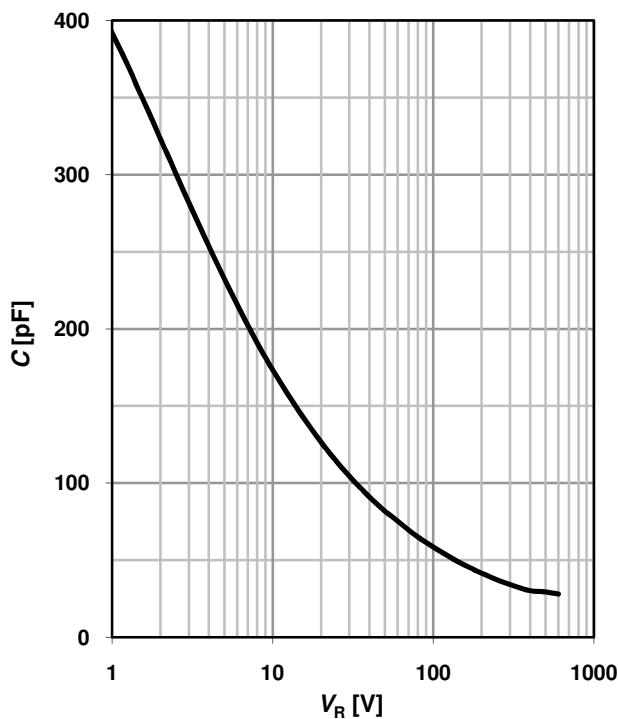
$$Z_{thJC} = f(t_p)$$

parameter: $D = t_p/T$



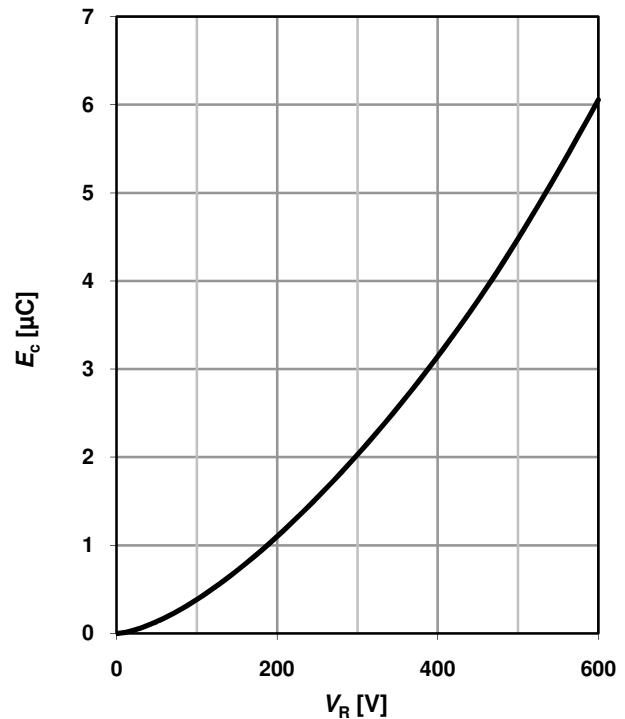
7 Typ. capacitance vs. reverse voltage

$$C = f(V_R); T_C = 25 \text{ }^\circ\text{C}, f = 1 \text{ MHz}$$

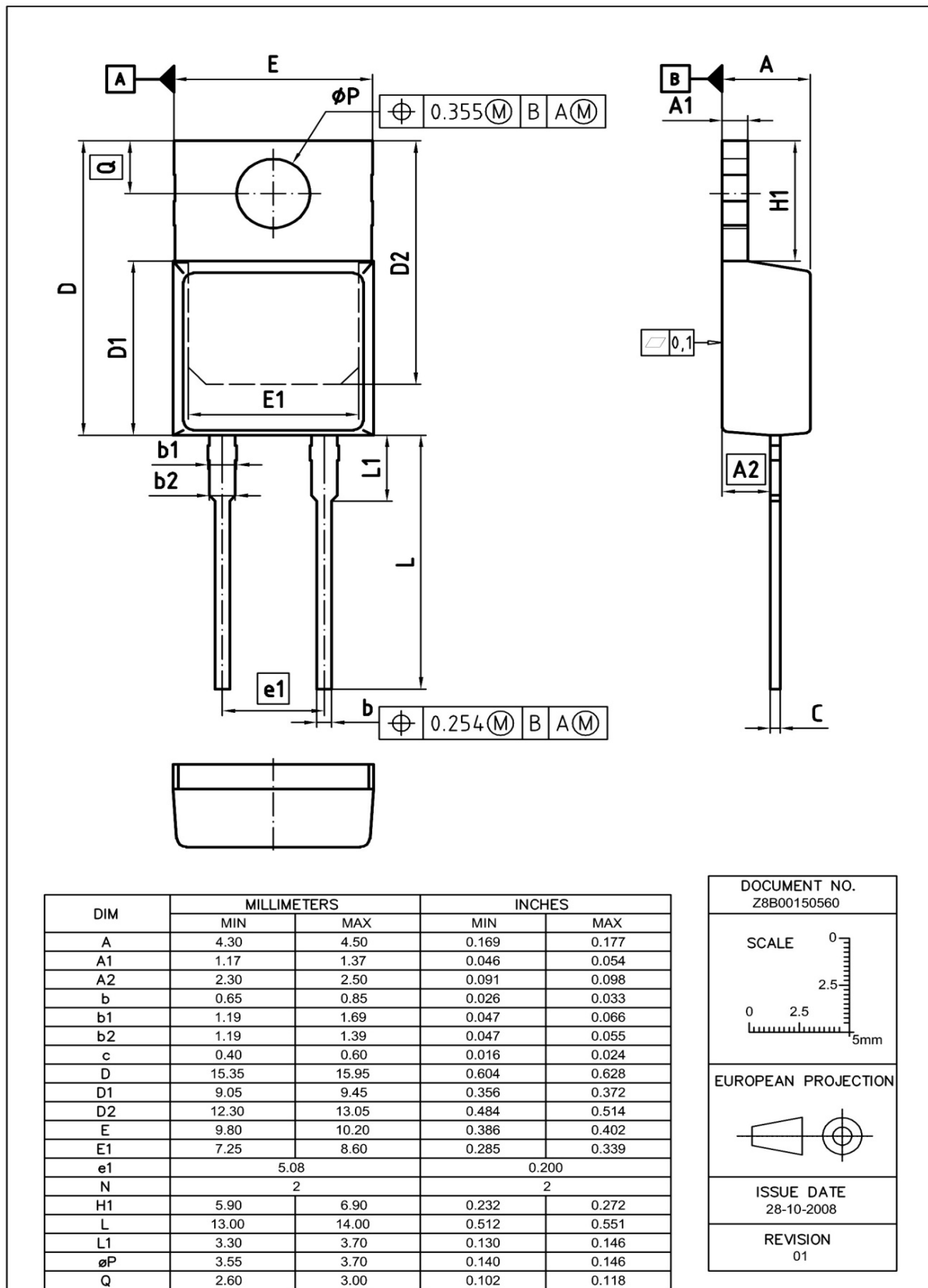


8 Typ. C stored energy

$$E_C = f(V_R)$$



PG-TO220-2: Outline



Dimensions in mm/inches

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thinQ!™ 2G Diode designed for fast switching applications like:

Information

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