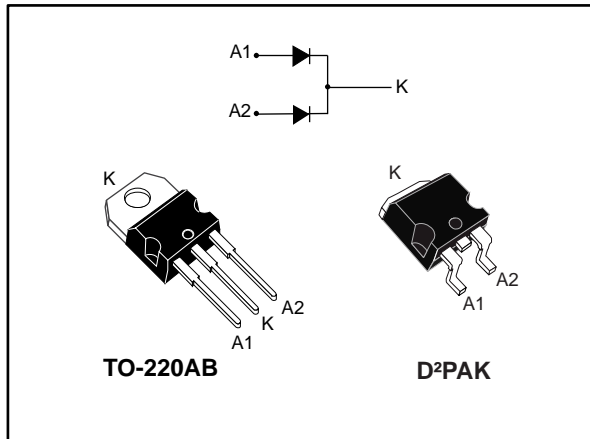


60 V field-effect rectifier diode

Datasheet - production data



Description

The device is based on a proprietary technology that achieves the best in class V_F/I_R trade-off for a given silicon surface.

This 60 V rectifier has been optimized for use in confined applications where both efficiency and thermal performance are key.

This device is suitable for use in adapters and chargers.

Table 1: Device summary

| Symbol | Value |
|--------------|----------|
| $I_{F(AV)}$ | 2 x 10 A |
| V_{RRM} | 60 V |
| V_F (typ.) | 0.39 V |
| T_j (max.) | 175 °C |

Features

- ST advanced rectifier process
- Stable leakage current over reverse voltage
- Reduced leakage current
- Low forward voltage drop
- High frequency operation

1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, per diode, unless otherwise specified)

| Symbol | Parameter | | Value | Unit | |
|---------------------|---|-----------------------------------|-------------|------|---|
| V _{RRM} | Repetitive peak reverse voltage | | 60 | V | |
| I _{F(RMS)} | Forward rms current | | 30 | A | |
| I _{F(AV)} | Average forward current $\delta = 0.5$, square wave | T _C = 155 °C | Per diode | 10 | A |
| | | | Per device | 20 | |
| I _{FSM} | Surge non repetitive forward current | t _p = 10 ms sinusoidal | 130 | A | |
| T _{stg} | Storage temperature range | | -65 to +175 | °C | |
| T _j | Maximum operating junction temperature ⁽¹⁾ | | +175 | °C | |

Notes:

⁽¹⁾(dP_{tot}/dT_j) < (1/R_{th(j-a)}) condition to avoid thermal runaway for a diode on its own heatsink.

Table 3: Thermal resistance parameters

| Symbol | Parameter | | Max. value | Unit |
|----------------------|------------------|------------|------------|------|
| R _{th(j-c)} | Junction to case | Per diode | 2.2 | °C/W |
| | | Per device | 1.3 | |
| R _{th(c)} | Coupling | | 0.4 | |

Table 4: Static electrical characteristics, per diode

| Symbol | Parameter | Test conditions | | Min. | Typ. | Max. | Unit |
|-------------------------------|-------------------------|-------------------------|-----------------------------------|------|-------|-------|------|
| I _R ⁽¹⁾ | Reverse leakage current | T _j = 25 °C | V _R = V _{RRM} | - | | 200 | μA |
| | | T _j = 125 °C | | - | 10 | 20 | mA |
| | | T _j = 125 °C | V _R = 45 V | - | 6 | 12 | |
| V _F ⁽²⁾ | Forward voltage drop | T _j = 25 °C | I _F = 2 A | - | 0.34 | 0.38 | V |
| | | T _j = 125 °C | | - | 0.28 | 0.315 | |
| | | T _j = 25 °C | I _F = 5 A | - | 0.415 | 0.465 | |
| | | T _j = 125 °C | | - | 0.39 | 0.435 | |
| | | T _j = 25 °C | I _F = 10 A | - | 0.52 | 0.575 | |
| | | T _j = 125 °C | | - | 0.525 | 0.585 | |

Notes:

⁽¹⁾Pulse test: t_p = 5 ms, δ < 2%

⁽²⁾Pulse test: t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation:

$$P = 0.285 \times I_{F(AV)} + 0.03 \times I_{F(RMS)}^2$$



1.1 Characteristics (curves)

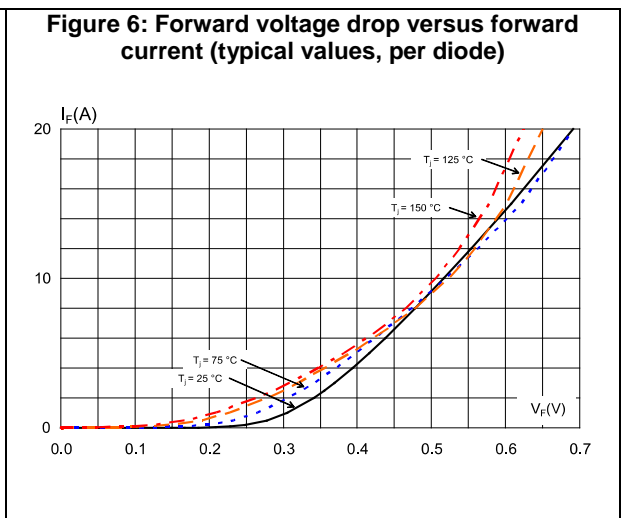
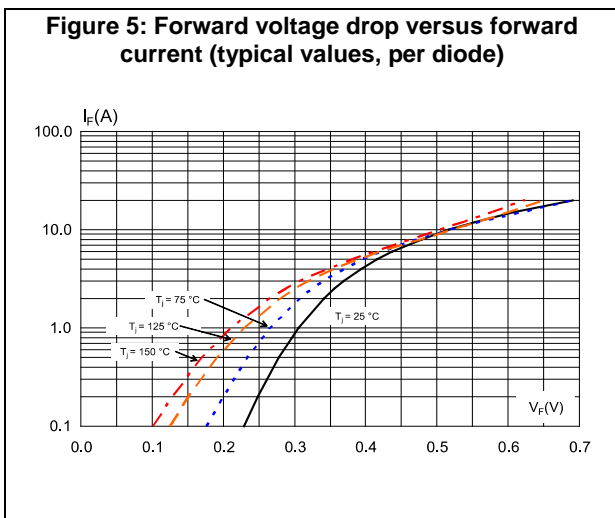
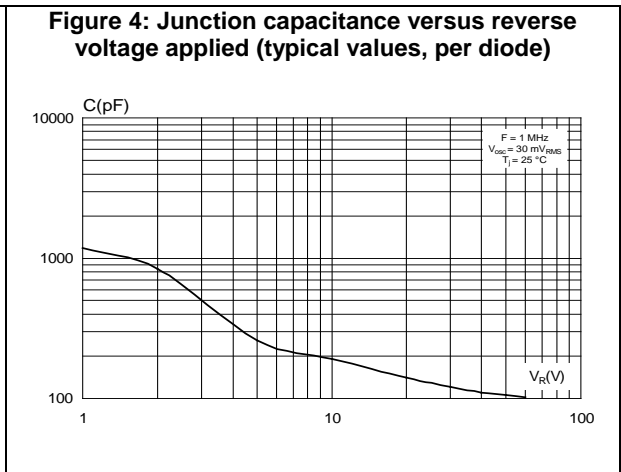
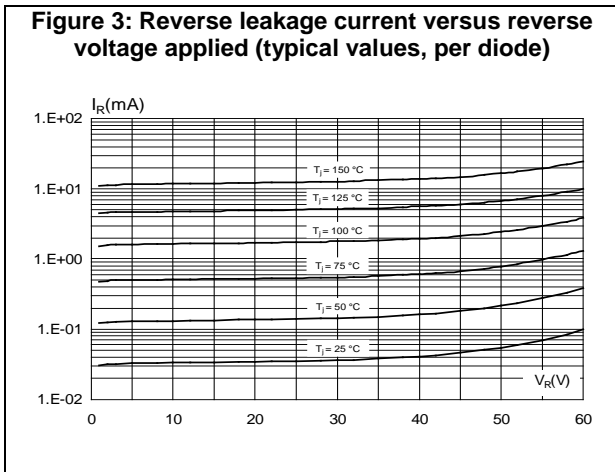
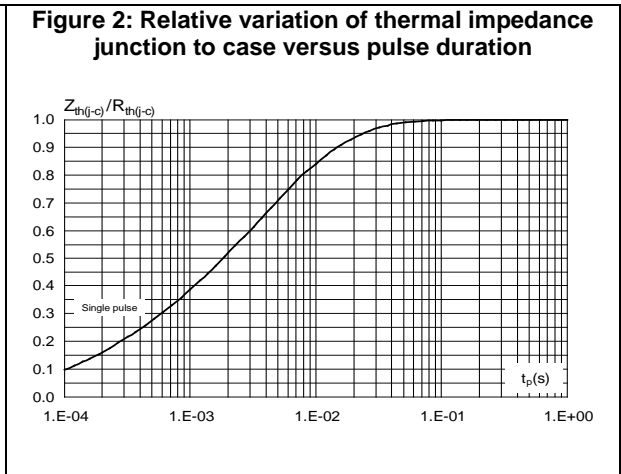
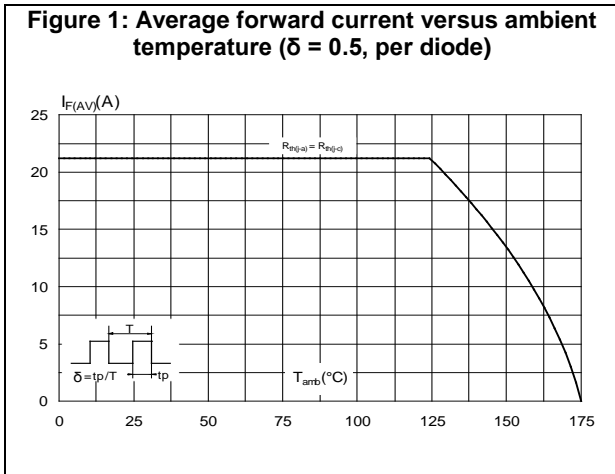
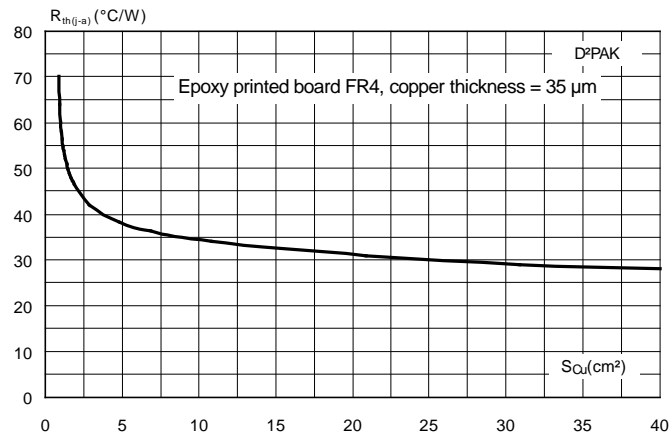


Figure 7: Thermal resistance junction to ambient versus copper surface under tab for D²PAK (typical values)



2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

- Cooling method: by conduction (C)
- Epoxy meets UL94,V0
- Recommended torque value: 0.55 N·m (for TO-220AB)
- Maximum torque value: 0.6 N·m (for TO-220AB)

2.1 TO-220AB package information

Figure 8: TO-220AB package outline

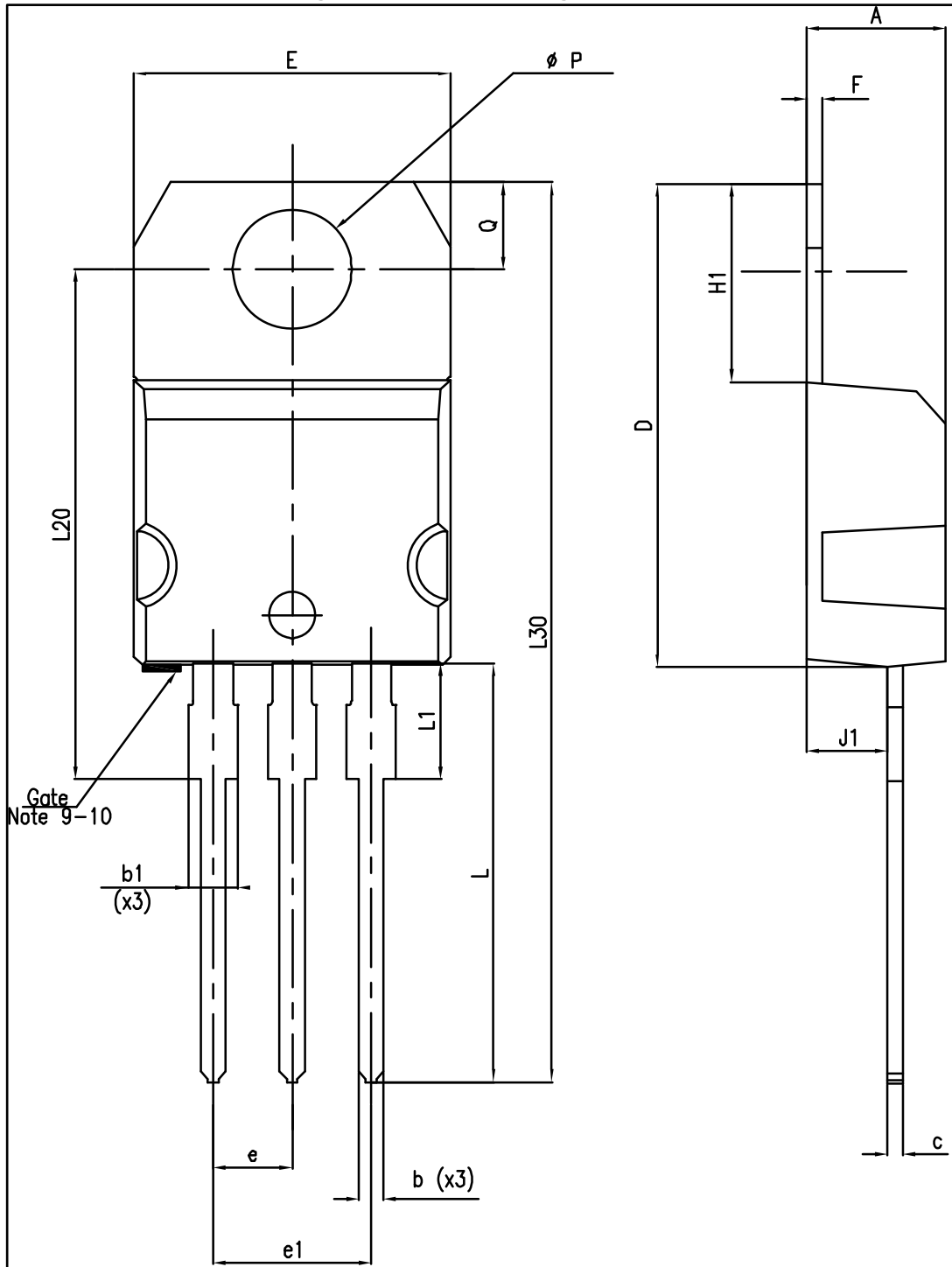


Table 5: TO-220AB package mechanical data

| Ref. | Dimensions | | | |
|------|-------------|-------|------------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| b | 0.61 | 0.88 | 0.024 | 0.035 |
| b1 | 1.14 | 1.70 | 0.045 | 0.067 |
| c | 0.48 | 0.70 | 0.019 | 0.028 |
| D | 15.25 | 15.75 | 0.600 | 0.620 |
| E | 10.00 | 10.40 | 0.394 | 0.409 |
| e | 2.40 | 2.70 | 0.094 | 0.106 |
| e1 | 4.95 | 5.15 | 0.195 | 0.203 |
| F | 0.51 | 0.60 | 0.020 | 0.024 |
| J1 | 2.40 | 2.72 | 0.094 | 0.107 |
| H1 | 6.20 | 6.60 | 0.244 | 0.256 |
| L | 13.00 | 14.00 | 0.512 | 0.551 |
| L1 | 3.50 | 3.93 | 0.138 | 0.155 |
| L20 | 16.40 typ. | | 0.646 typ. | |
| L30 | 28.90 typ. | | 1.138 | |
| Ø P | 3.75 | 3.85 | 0.148 | 0.156 |
| Q | 2.65 | 2.95 | 0.104 | 0.116 |

2.2 D²PAK package information

Figure 9: D²PAK package outline

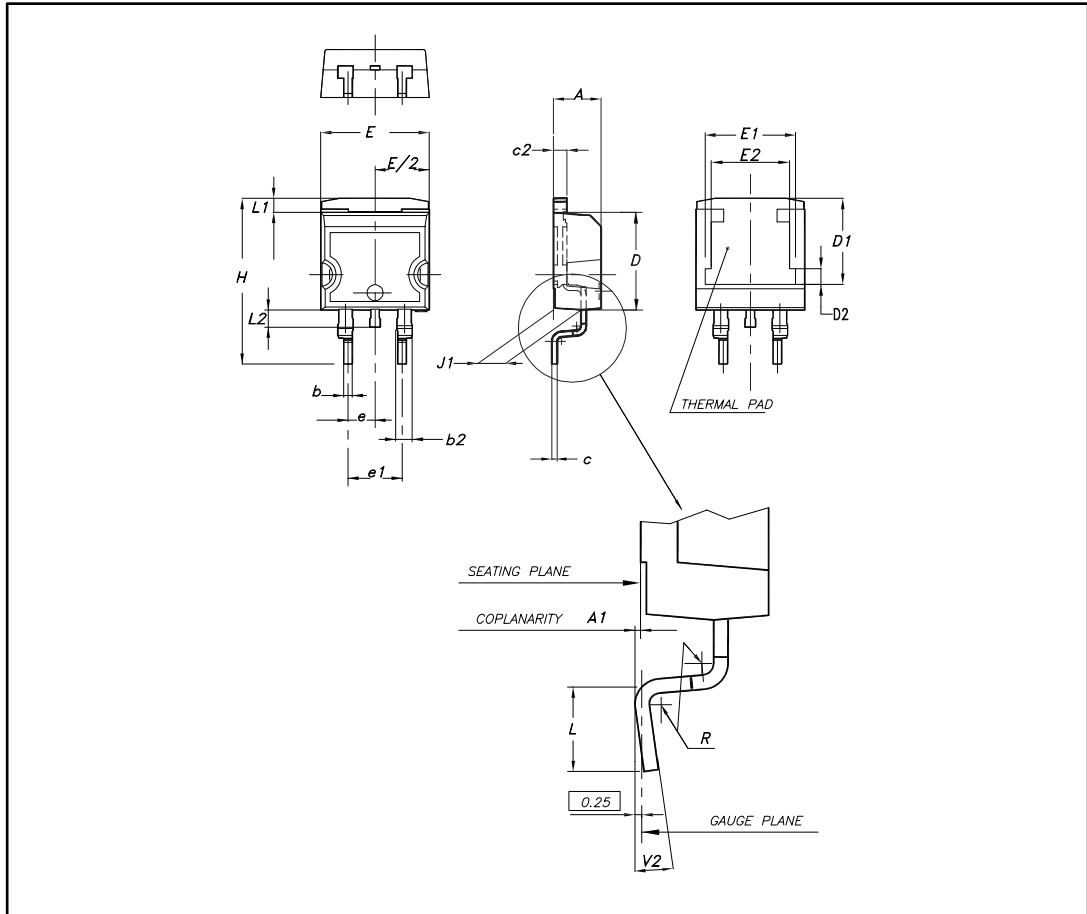
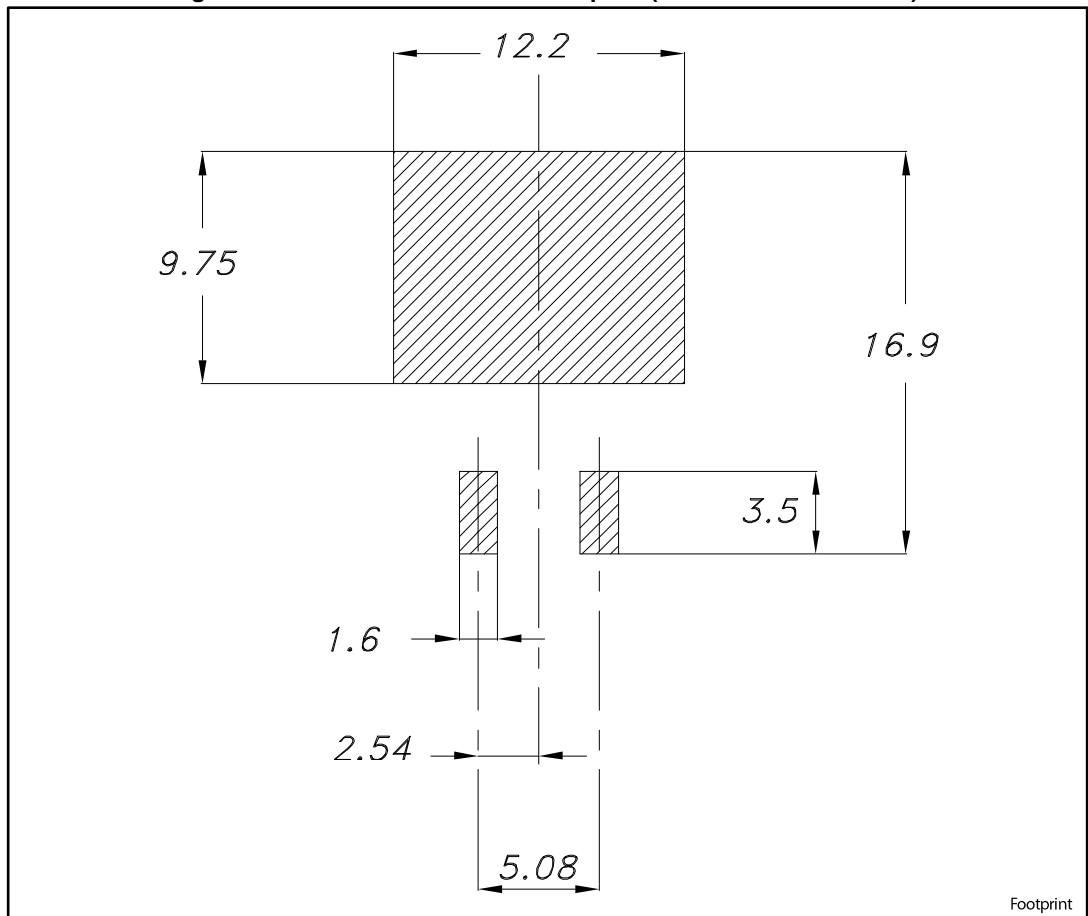


Table 6: D²PAK package mechanical data

| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| A1 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| b | 0.70 | | 0.93 | 0.028 | | 0.037 |
| b2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| c | 0.45 | | 0.60 | 0.018 | | 0.024 |
| c2 | 1.23 | | 1.36 | 0.048 | | 0.053 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| D1 | 7.50 | 7.75 | 8.00 | 0.295 | 0.305 | 0.315 |
| D2 | 1.10 | 1.30 | 1.50 | 0.043 | 0.051 | 0.060 |
| E | 10 | | 10.40 | 0.394 | | 0.409 |
| E1 | 8.50 | 8.70 | 8.90 | 0.335 | 0.343 | 0.346 |
| E2 | 6.85 | 7.05 | 7.25 | 0.266 | 0.278 | 0.282 |
| e | | 2.54 | | | 0.100 | |
| e1 | 4.88 | | 5.28 | 0.190 | | 0.205 |
| H | 15 | | 15.85 | 0.591 | | 0.624 |
| J1 | 2.49 | | 2.69 | 0.097 | | 0.106 |
| L | 2.29 | | 2.79 | 0.090 | | 0.110 |
| L1 | 1.27 | | 1.40 | 0.049 | | 0.055 |
| L2 | 1.30 | | 1.75 | 0.050 | | 0.069 |
| R | | 0.4 | | | 0.015 | |
| V2 | 0° | | 8° | 0° | | 8° |

Figure 10: D²PAK recommended footprint (dimensions are in mm)



3 Ordering information

Table 7: Ordering information

| Order code | Marking | Package | Weight | Base qty. | Delivery mode |
|----------------|------------|--------------------|--------|-----------|---------------|
| FERD20H60CTS | FD20H60CTS | TO-220AB | 1.38 g | 50 | Tube |
| FERD20H60CG-TR | FD20H60CG | D ² PAK | 1.43 g | 1000 | Tape and reel |

4 Revision history

Table 8: Document revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 01-Sep-2017 | 1 | Initial release. |

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2017 STMicroelectronics – All rights reserved

单击下面可查看定价，库存，交付和生命周期等信息

[>>STMicro\(意法半导体\)](#)