# WN3S40170CBT

## Dual power Schottky diode

Rev.02 - 03 June 2026 Product data sheet

## 1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO263 (D2PAK) plastic package.

## 2. Features and benefits

- High junction temperature up to 175 °C
- Low forward voltage drop, negligible switching losses
- High efficiency

## 3. Applications

- DC to DC converters
- Freewheeling diode
- OR-ing diode
- Switched mode power supply rectifier

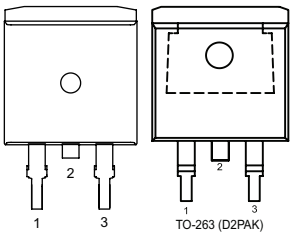
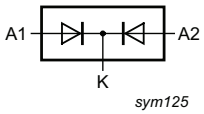
## 4. Quick reference data

**Table 1. Quick reference data**

| Symbol | Parameter | Conditions | Notes | Values | | | Unit |
|---|---|---|---|---|---|---|---|
| **Absolute maximum rating** | | | | | | | |
| $V_{RRM}$ | repetitive peak reverse voltage | | | 170 | | | V |
| $I_{F(AV)}$ | average forward current | δ = 0.5 ; square-wave pulse; $T_{mb} \leq 149$ °C; per diode; Fig. 1; Fig. 2; Fig. 3 | | 20 | | | A |
| $I_{O(AV)}$ | average output current | δ = 0.5 ; square-wave pulse; $T_{mb} \leq 149$ °C; both diodes conducting | | 40 | | | A |
| **Symbol** | **Parameter** | **Conditions** | **Notes** | **Min** | **Typ** | **Max** | **Unit** |
| **Static characteristics** | | | | | | | |
| $V_F$ | forward voltage | $I_F$ = 20 A; $T_j$ = 25 °C; per diode; Fig. 6 | | - | 0.84 | 0.95 | V |
| $I_R$ | reverse current | $V_R$ = 170 V; $T_j$ = 25 °C; per diode; Fig. 7; Fig. 8 | | - | 0.2 | 10 | µA |

## 5. Pinning information

**Table 2. Pinning information**

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|---|---|---|---|---|
| 1 | A1 | anode 1 |  |  |
| 2 | K | cathode | | |
| 3 | A2 | anode 2 | | |
| mb | K | mounting base; connected to cathode | | |

## 6. Ordering information

**Table 3. Ordering information**

| Type number | Package name | Orderable part number | Packing method | Small packing quantity | Package version | Package issue date |
|---|---|---|---|---|---|---|
| WN3S40170CBT | TO263 | WN3S40170CBTJ | Reel | 800 | TO263d | 17-Mar-2023 |
| | | | | | TO263N | 26-Sep-2016 |

## 7. Marking

**Table 4. Marking codes**

| Type number | Marking codes |
|---|---|
| WN3S40170CBT | WN3S40<br>170CBT |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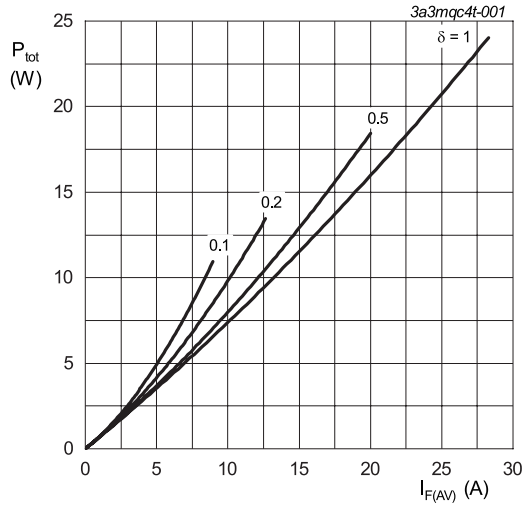
# 8. Limiting values

**Table 5. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134).*

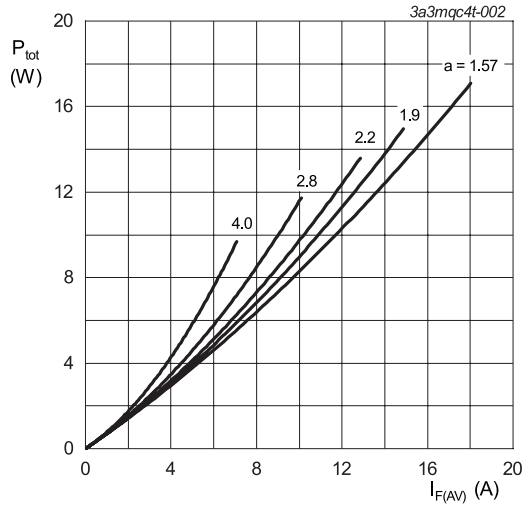
| Symbol | Parameter | Conditions | Notes | Values | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | repetitive peak reverse voltage | | | 170 | V |
| $V_{RWM}$ | crest working reverse voltage | | | 170 | V |
| $V_R$ | reverse voltage | DC | | 170 | V |
| $I_{F(AV)}$ | average forward current | δ = 0.5 ; square-wave pulse; $T_{mb} \leq 149$ °C; per diode; Fig. 1; Fig. 2; Fig. 3 | | 20 | A |
| $I_{O(AV)}$ | average output current | δ = 0.5 ; square-wave pulse; $T_{mb} \leq 149$ °C; both diodes conducting | | 40 | A |
| $I_{FSM}$ | non-repetitive peak forward current | $t_p$ = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode; Fig. 4 | | 300 | A |
| | | $t_p$ = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode | | 330 | A |
| $T_{stg}$ | storage temperature | | | -40 to 175 | °C |
| $T_j$ | junction temperature | | | -40 to 175 | °C |




$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$

$V_o$ = 0.677 V; $R_s$ = 0.0061 Ω

**Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values; per diode**




a = form factor = $I_{F(RMS)} / I_{F(AV)}$

$V_o$ = 0.677 V; $R_s$ = 0.0061 Ω

**Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values; per diode**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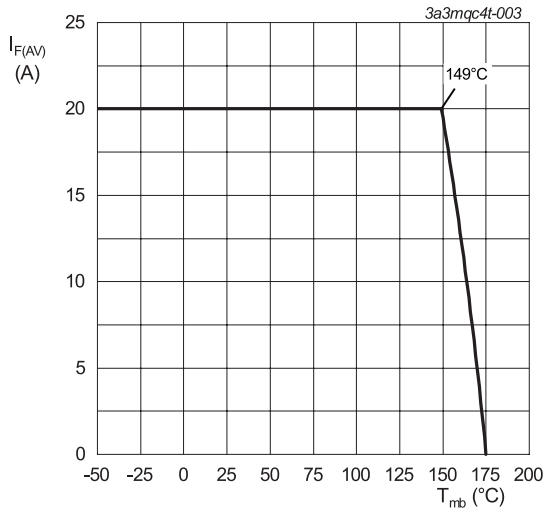


**Fig. 3. Average forward current as a function of mounting base temperature; maximum values; per diode**

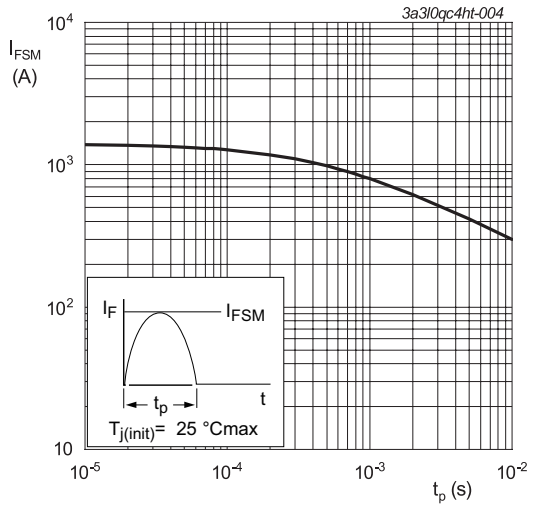


**Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode**


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# 9. Thermal characteristics

**Table 6. Thermal characteristics**

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $R_{th(j-mb)}$ | thermal resistance from junction to mounting base | per diode; Fig. 5 | | - | - | 1.4 | K/W |
| | | both diodes conducting | | - | - | 0.7 | K/W |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient free air | in free air | | - | 60 | - | K/W |

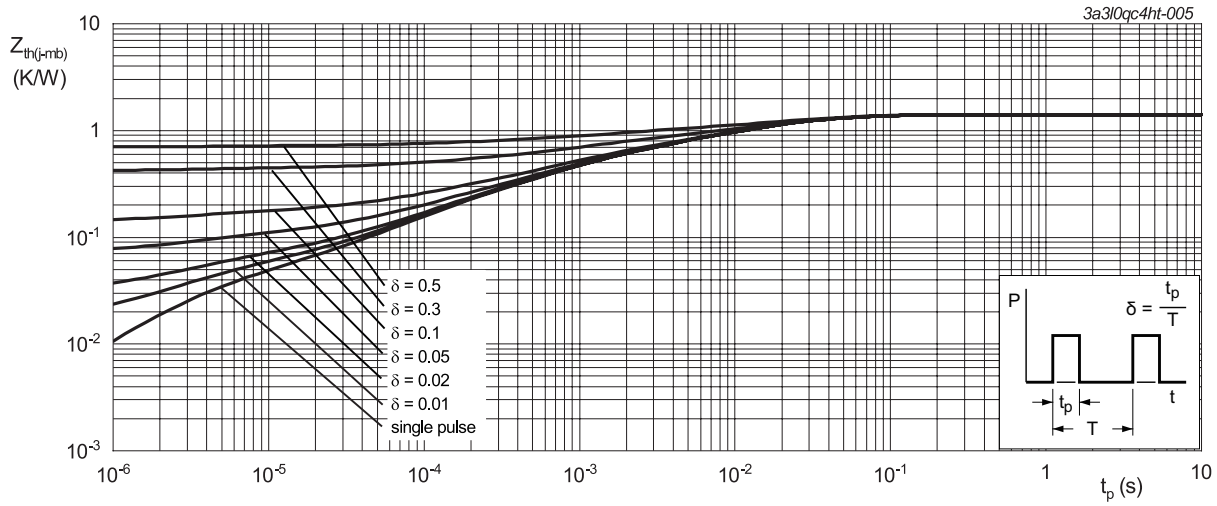


**Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode**


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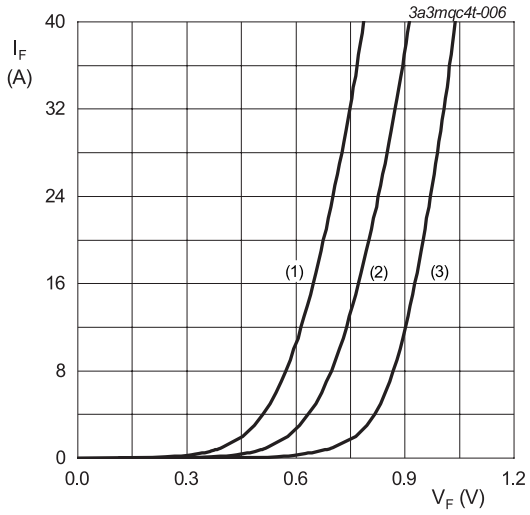
# 10. Characteristics

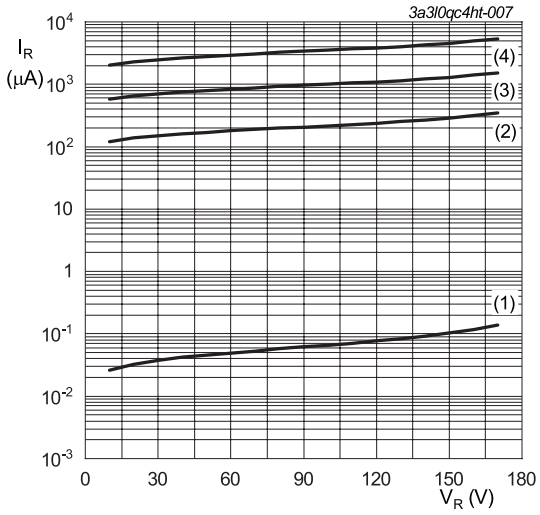
**Table 7. Characteristics**

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Static characteristics** | | | | | | | |
| $V_F$ | forward voltage | $I_F$ = 20 A; $T_j$ = 25 °C; per diode; Fig. 6 | | - | 0.84 | 0.95 | V |
| | | $I_F$ = 20 A; $T_j$ = 125 °C; per diode; Fig. 6 | | - | 0.71 | - | V |
| $I_R$ | reverse current | $V_R$ = 170 V; $T_j$ = 25 °C; per diode; Fig. 7 | | - | 0.2 | 10 | µA |
| | | $V_R$ = 170 V; $T_j$ = 125 °C; per diode; Fig. 7 | | - | 0.4 | 10 | mA |




$V_o$ = 0.677 V; $R_s$ = 0.0061 Ω
(1) $T_j$ = 175 °C; typical values
(2) $T_j$ = 175 °C; maximum values
(3) $T_j$ = 25 °C; maximum values

**Fig. 6. Forward current as a function of forward voltage; per diode**




(1) $T_j$ = 25 °C; typical values
(2) $T_j$ = 125 °C; typical values
(3) $T_j$ = 150 °C; typical values
(4) $T_j$ = 175 °C; typical values

**Fig. 7. Reverse leakage current as a function of reverse voltage; per diode; typical values**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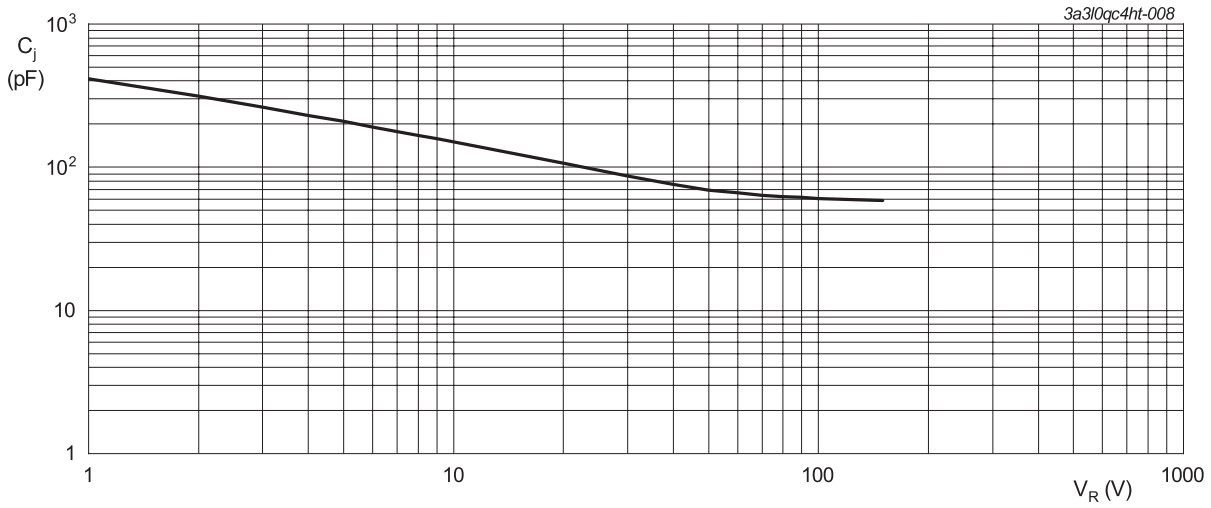


f = 1 MHz; $T_j$ = 25 °C

**Fig. 8. Junction capacitance as a function of applied reverse voltage; per diode; typical values**


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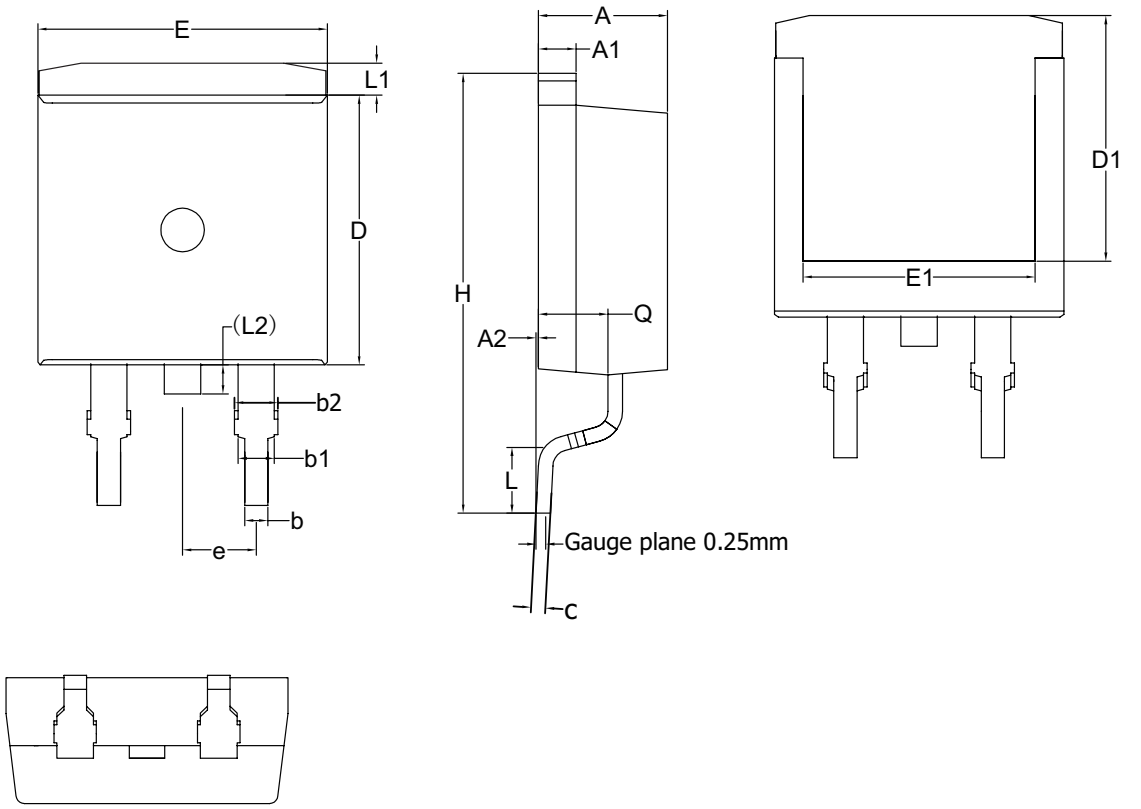
## 11. Package outline

*Assembly factory: d*

Plastic single-ended surface-mounted package (D2PAK); TO263






Note:
All dimensions do not include mold flash or protrusion.

| Unit | | A | A1 | A2 | b | b1 | c | D | D1 | e | E | E1 | H | L | L1 | L2 | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM | min | 4.30 | 1.27 | 0.00 | 0.75 | 1.20 | 0.45 | 9.00 | 7.65 | 2.54 (BSC) | 9.85 | 7.80 | 14.84 | 1.90 | 0.90 | -- | 2.20 |
| | max | 4.60 | 1.37 | 0.25 | 0.90 | 1.36 | 0.60 | 9.45 | 8.05 | | 10.10 | 8.20 | 15.64 | 2.60 | 1.35 | 1.50 | 2.40 |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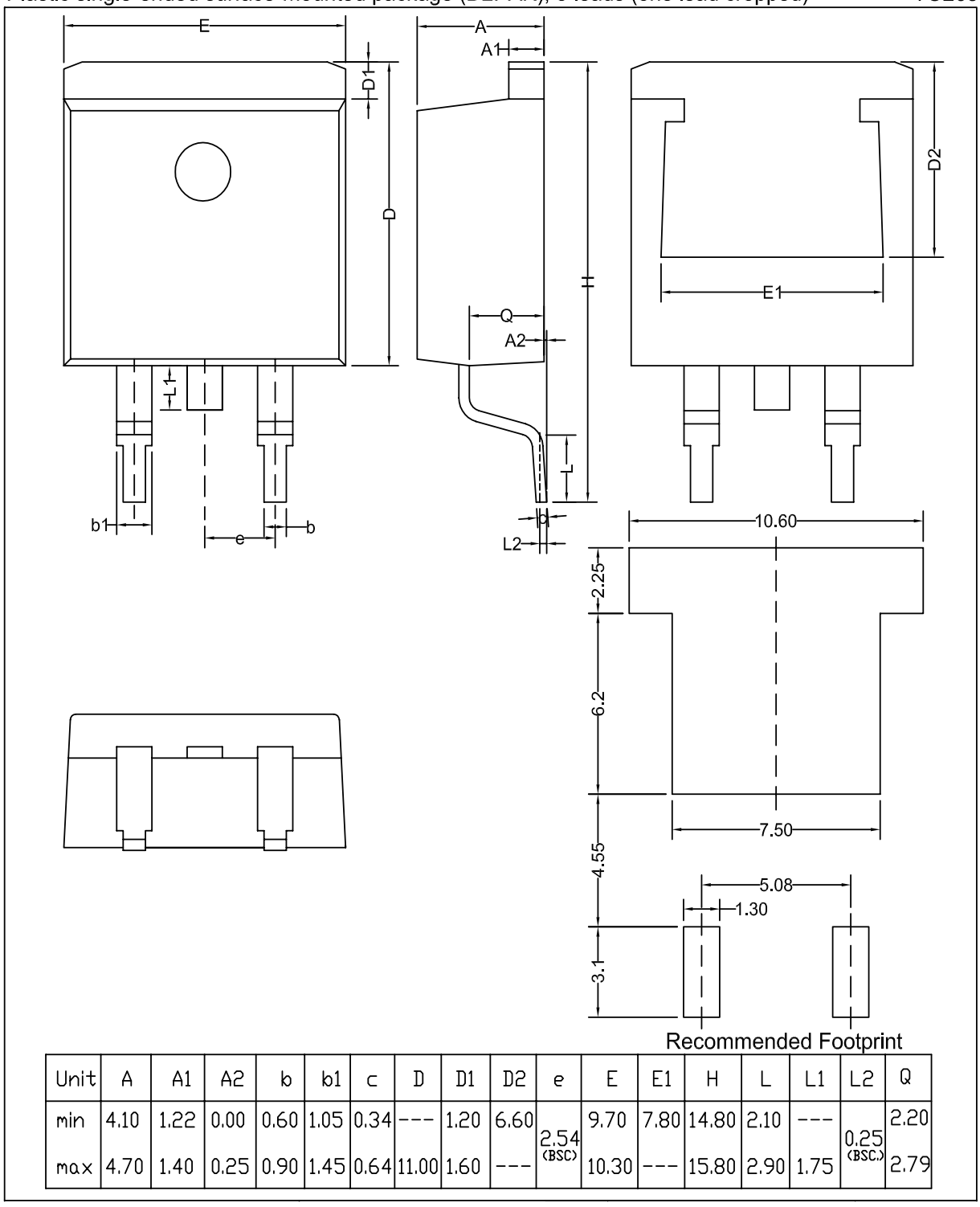
*Assembly factory: N*

Plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped) TO263




| Unit | A | A1 | A2 | b | b1 | c | D | D1 | D2 | e | E | E1 | H | L | L1 | L2 | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| min | 4.10 | 1.22 | 0.00 | 0.60 | 1.05 | 0.34 | --- | 1.20 | 6.60 | 2.54 (BSC) | 9.70 | 7.80 | 14.80 | 2.10 | --- | 0.25 (BSC.) | 2.20 |
| max | 4.70 | 1.40 | 0.25 | 0.90 | 1.45 | 0.64 | 11.00 | 1.60 | --- | | 10.30 | --- | 15.80 | 2.90 | 1.75 | | 2.79 |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