

## N-Channel Enhancement Mode MOSFET

### 1. Product Information

#### 1.1 Features

- Surface-mounted package
- Advanced trench cell design

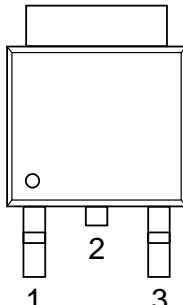
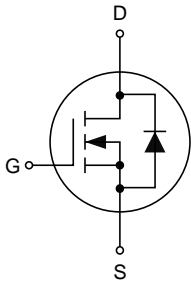
#### 1.2 Applications

- LCD TV appliances
- High power inverter system
- LCDM appliances

#### 1.3 Quick reference

- $BV \geq 45V$
- $R_{DS(ON)} \leq 3.8m\Omega @ V_{GS} = 10V$
- $P_{tot} \leq 50W$
- $R_{DS(ON)} \leq 5.0m\Omega @ V_{GS} = 4.5V$
- $I_D \leq 80A$

### 2. Pin Description

| Pin | Description | Simplified Outline   | Symbol  |
|-----|-------------|--|---|
| 1   | Gate(G)     |  <p>Top View<br/>TO-252</p> |  |
| 2   | Drain(D)    |  |   |
| 3   | Source(S)   |  |   |

## 3. Limiting Values

| Symbol               | Parameter                              | Conditions                     | Min | Max      | Unit          |
|----------------------|--|--------------------------------|-----|----------|---------------|
| $V_{DS}$             | Drain-Source Voltage                   | $T_C=25^{\circ}C$              | 45  | -        | V             |
| $V_{GS}$             | Gate-Source Voltage                    | $T_C=25^{\circ}C$              | -   | $\pm 20$ | V             |
| $I_D^{***}$          | Drain Current (DC)                     | $T_C=25^{\circ}C, V_{GS}=10V$  | -   | 80       | A             |
|                      |  | $T_C=100^{\circ}C, V_{GS}=10V$ | -   | 57       | A             |
| $I_{DM}^{***}$       | Drain Current (Pulsed)                 | $T_C=25^{\circ}C, V_{GS}=10V$  | -   | 120      | A             |
| $P_{tot}$            | Drain power dissipation                | $T_C=25^{\circ}C$              | -   | 50       | W             |
| $T_{stg}$            | Storage Temperature                    |                                | -55 | 150      | $^{\circ}C$   |
| $T_J$                | Junction Temperature                   |                                | -   | 150      | $^{\circ}C$   |
| $I_S$                | Continuous-Source Current              | $T_C=25^{\circ}C$              | -   | 80       | A             |
| $R_{\theta JA}^{**}$ | Thermal Resistance-Junction to Ambient |                                | -   | 50       | $^{\circ}C/W$ |
| $R_{\theta JC}^{**}$ | Thermal Resistance-Junction to Case    |                                | -   | 2.5      |               |

Notes:

- \* Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
- \*\* Mounted on Large Heat Sink
- \*\*\* Limited by bonding wire

## 4. Marking Information

| Product Name | Marking   |
|--------------|---|
| KJ03045KL    | <div style="display: flex; align-items: center;"> <div style="background-color: black; color: white; padding: 5px; margin-right: 10px;"> <b>03045L</b><br/> <b>YWWXXX</b> </div> <div> <b>YWWXXX:</b><br/> <b>Date Code</b> </div> </div> |

## 5. Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|--------------|---------|-----------|------------|----------|------|
| KJ03045KL    | TO-252  |           |            | 2500     |      |

Note: KUIJIEXIN defines "Green" as lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight; Follow IEC 61249-2-21 and IPC/JEDEC J-STD-020C)

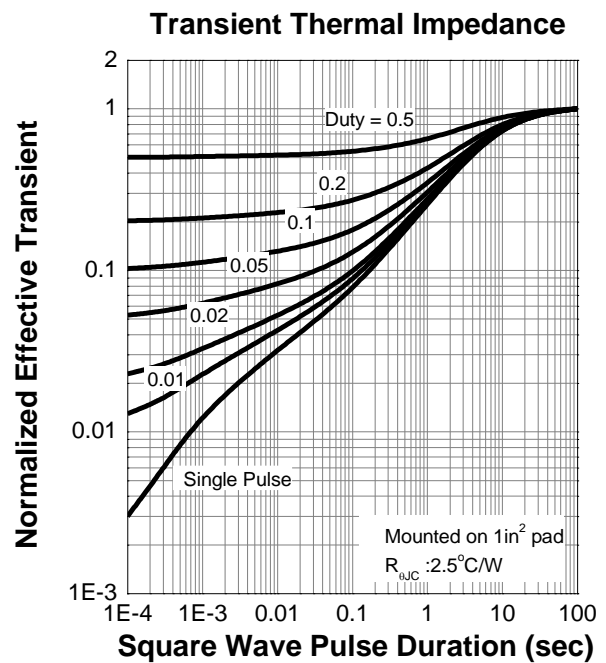
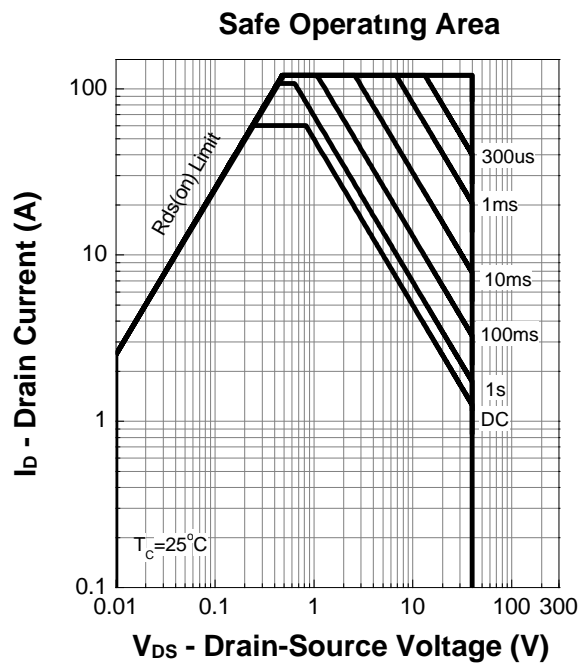
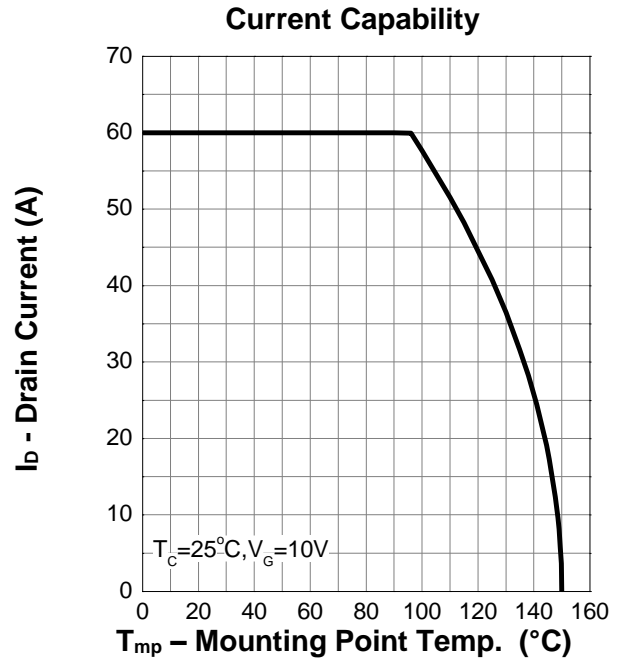
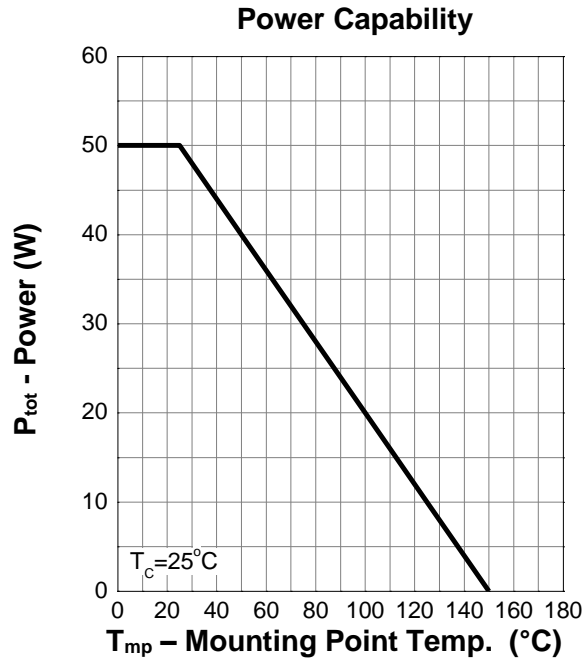
## 6. Electrical Characteristics (T<sub>A</sub>=25°C Unless Otherwise Noted)

| Symbol   | Parameter                      | Conditions  | Min | Typ  | Max | Unit |
|--|--------------------------------|---|-----|------|-----|------|
| <b>Static Characteristics</b>                  |                                |   |     |      |     |      |
| BV <sub>DSS</sub>                              | Drain-Source Breakdown Voltage | V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA   | 45  | -    | -   | V    |
| V <sub>GS(th)</sub>                            | Gate Threshold Voltage         | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA   | 1.0 | -    | 2.0 | V    |
| I <sub>DSS</sub>                               | Drain Leakage Current          | V <sub>DS</sub> =32V, V <sub>GS</sub> =0V   | -   | -    | 1   | μA   |
| I <sub>GSS</sub>                               | Gate Leakage Current           | V <sub>GS</sub> =0V, V <sub>GS</sub> =±20V  | -   | -    | ±10 | uA   |
| R <sub>DS(ON)</sub> <sup>a</sup>               | On-State Resistance            | V <sub>GS</sub> =10V, I <sub>DS</sub> =20A  | -   | 3.1  | 3.8 | mΩ   |
|  |                                | V <sub>GS</sub> =4.5V, I <sub>DS</sub> =10A   | -   | 4.2  | 5.0 |      |
| <b>Diode Characteristics</b>                   |                                |   |     |      |     |      |
| V <sub>SD</sub> <sup>a</sup>                   | Diode Forward Voltage          | I <sub>SD</sub> =20A, V <sub>GS</sub> =0V   | -   | -    | 1.3 | V    |
| t <sub>rr</sub>                                | Reverse Recovery Time          | I <sub>SD</sub> =20A, V <sub>GS</sub> =0V<br>dI <sub>SD</sub> /dt=100A/μs   | -   | 48   | -   | ns   |
| Q <sub>rr</sub>                                | Reverse Recovery Charge        |   | -   | 39.8 | -   | nC   |
| <b>Dynamic Characteristics<sup>b</sup></b>     |                                |   |     |      |     |      |
| C <sub>iss</sub>                               | Input Capacitance              | V <sub>GS</sub> =0V, V <sub>DS</sub> =20V<br>Frequency=1MHz   | -   | 2562 | -   | pF   |
| C <sub>oss</sub>                               | Output Capacitance             |   | -   | 754  | -   |      |
| C <sub>rss</sub>                               | Reverse Transfer Capacitance   |   | -   | 50   | -   |      |
| t <sub>d(on)</sub>                             | Turn-on Delay Time             | V <sub>DS</sub> =20V, V <sub>GEN</sub> =10V,<br>R <sub>G</sub> =4.5Ω, R <sub>L</sub> =1Ω,<br>I <sub>DS</sub> =20A | -   | 11.2 | -   | ns   |
| t <sub>r</sub>                                 | Turn-on Rise Time              |   | -   | 46.4 | -   |      |
| t <sub>d(off)</sub>                            | Turn-off Delay Time            |   | -   | 46.2 | -   |      |
| t <sub>f</sub>                                 | Turn-off Fall Time             |   | -   | 32   | -   |      |
| <b>Gate Charge Characteristics<sup>b</sup></b> |                                |   |     |      |     |      |
| Q <sub>g</sub>                                 | Total Gate Charge              | V <sub>DS</sub> =20V, V <sub>GS</sub> =10V,<br>I <sub>DS</sub> =20A   | -   | 48   | -   | nC   |
| Q <sub>gs</sub>                                | Gate-Source Charge             |   | -   | 9.3  | -   |      |
| Q <sub>gd</sub>                                | Gate-Drain Charge              |   | -   | 8.2  | -   |      |

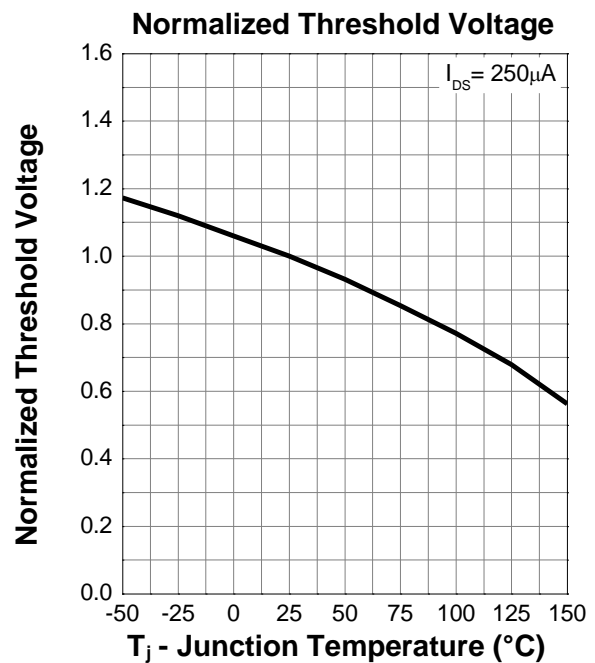
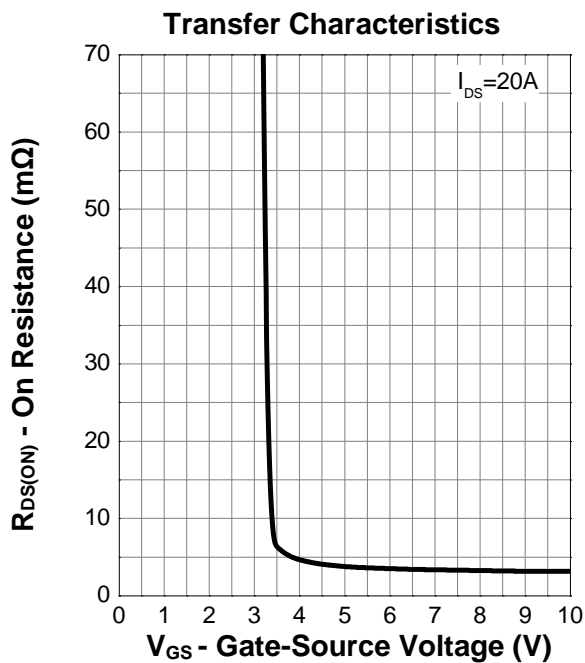
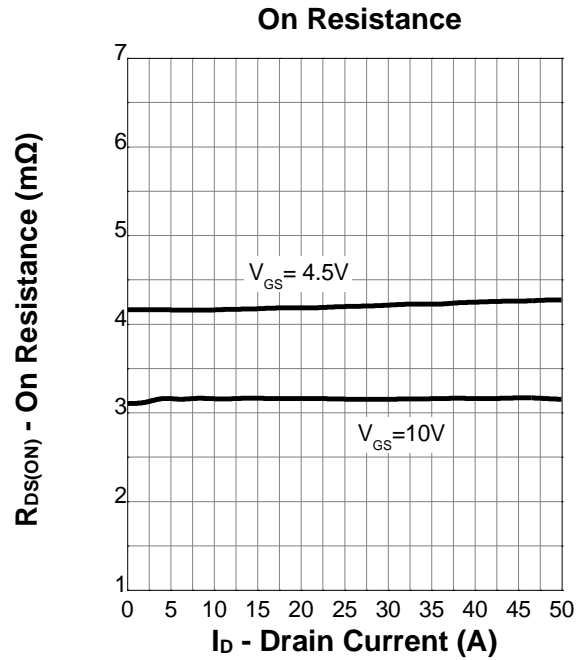
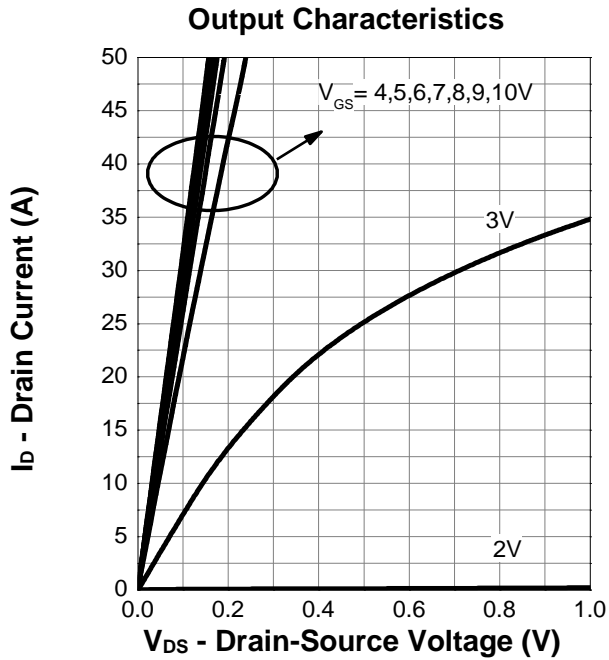
Notes:

- Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

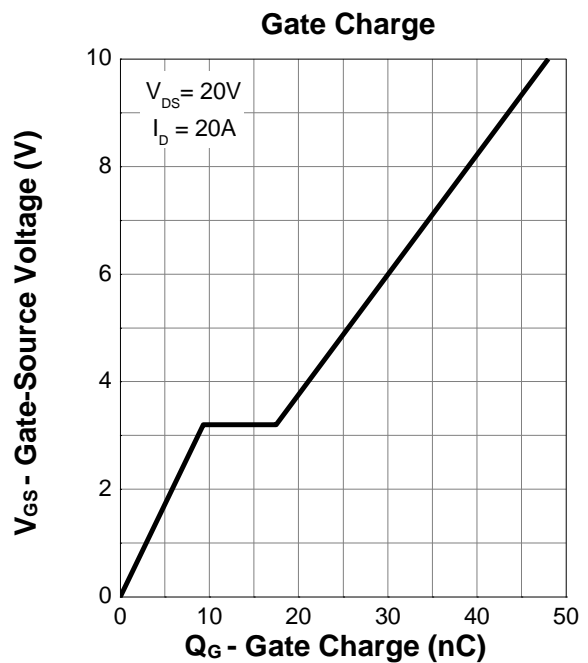
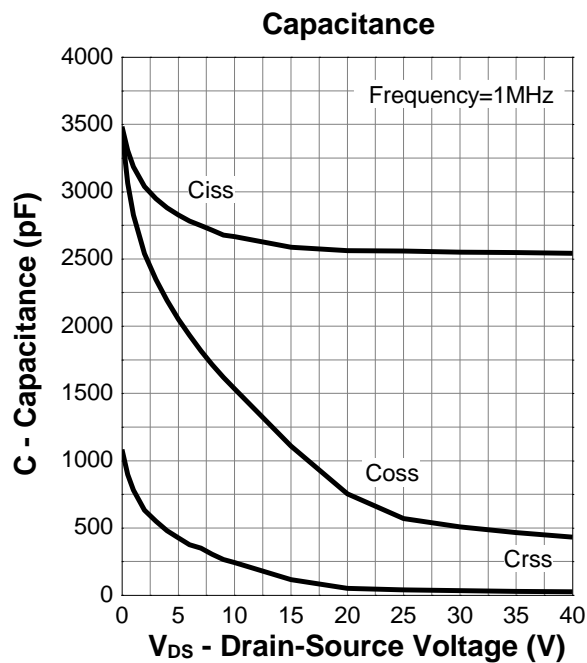
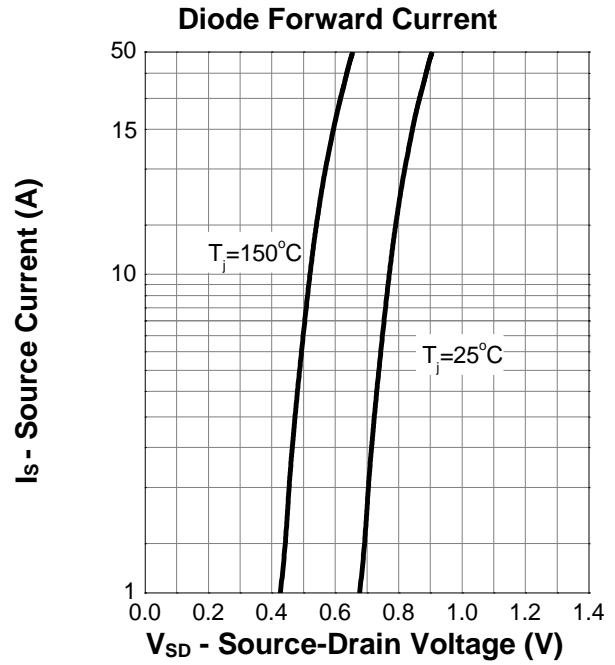
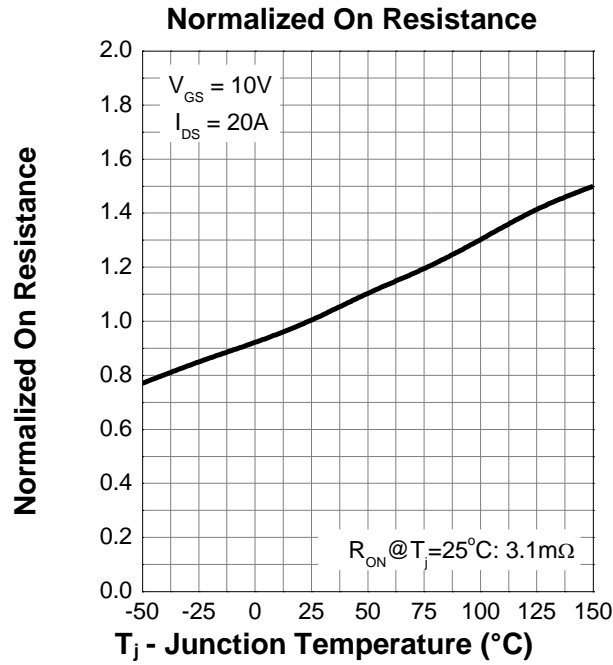
## 7. Typical Characteristics



## 7. Typical Characteristics (cont.)

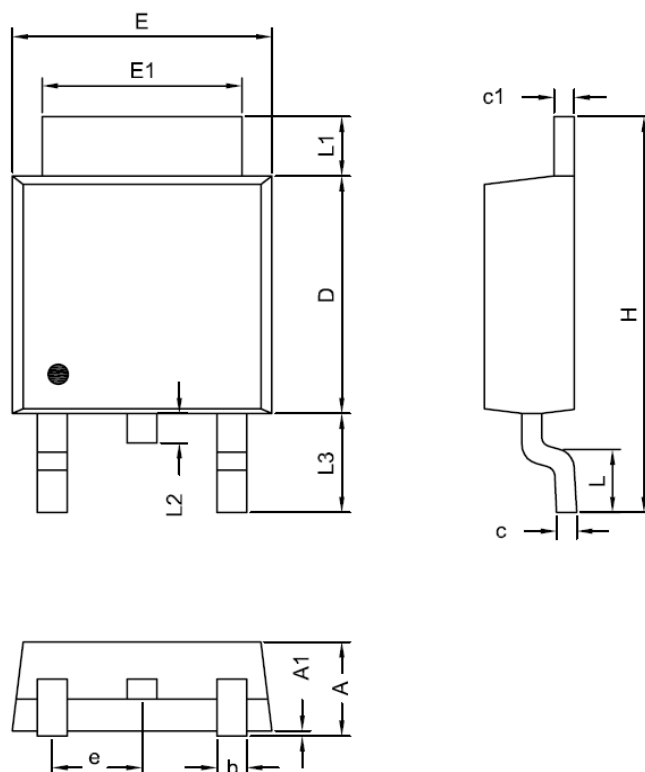


## 7. Typical Characteristics (cont.)



## 8. Package Dimensions

### TO-252 Package



| Symbol | Dimensions In Millimeters |       |
|--------|---------------------------|-------|
|        | MIN.                      | MAX.  |
| A      | 2.19                      | 2.38  |
| A1     | 0.02                      | 0.13  |
| D      | 5.30                      | 6.40  |
| E      | 6.35                      | 6.80  |
| E1     | 5.20                      | 5.50  |
| c      | 0.40                      | 0.60  |
| c1     | 0.40                      | 0.60  |
| b      | 0.55                      | 0.85  |
| e      | 2.30 BCS                  |       |
| L      | 1.00                      | 1.80  |
| L1     | 0.70                      | 1.80  |
| L2     | 0.70 BCS                  |       |
| L3     | 2.40                      | 2.80  |
| H      | 9.20                      | 10.40 |