



ZHEJIANG UNIÜ-NE Technology CO., LTD

浙江宇力微新能源科技有限公司



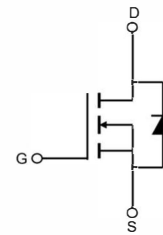
AP30H80K Data Sheet

V 1.1

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Feature

- 30V,80A
 $R_{DS(on)} < 5m\Omega @ V_{GS}=10V$
 $R_{DS(on)} < 8m\Omega @ V_{GS}=4.5V$
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(on)}$ and Low Gate Charge



Schematic Diagram



Marking and pin assignment

Application

- PWM applications
- Load Switch
- Power management

Package Marking and Ordering Information

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity (PCS) |
|----------------|----------|----------------|-----------|------------|----------------|
| 30H80K | AP30H80K | TO-252 | 13 inch | - | 2500 |

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|-----------|---------------------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ($T_a = 25^\circ\text{C}$) | I_D | 80 | A |
| Continuous Drain Current ($T_a = 100^\circ\text{C}$) | I_D | 56 | A |
| Pulsed Drain Current ⁽¹⁾ | I_{DM} | 320 | A |
| Single Pulsed Avalanche Energy ⁽²⁾ | E_{AS} | 88 | mJ |
| Power Dissipation | P_D | 75 | W |
| Thermal Resistance from Junction to Case ⁽⁴⁾ | $R_{\theta JC}$ | 2 | $^\circ\text{C}/\text{W}$ |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | -55~ +150 | $^\circ\text{C}$ |

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|----------------------|--|-----|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 30 | - | - | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = 30V, V _{GS} = 0V | - | - | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | - | - | ±100 | nA |
| Gate threshold voltage ⁽³⁾ | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1 | 1.5 | 2.5 | V |
| Drain-source on-resistance ⁽³⁾ | R _{DS(on)} | V _{GS} = 10V, I _D = 30A | - | 4.1 | 5.0 | mΩ |
| | | V _{GS} = 4.5V, I _D = 20A | - | 6.2 | 8.0 | |
| Dynamic characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = 15V, V _{GS} = 0V, f = 1MHz | - | 1614 | - | pF |
| Output Capacitance | C _{oss} | | - | 245 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 215 | - | |
| Switching characteristics | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{DD} = 15V, I _D = 30A, V _{GS} = 10V, R _G = 3Ω | - | 7.5 | - | ns |
| Turn-on rise time | t _r | | - | 14.5 | - | |
| Turn-off delay time | t _{d(off)} | | - | 35.2 | - | |
| Turn-off fall time | t _f | | - | 9.6 | - | |
| Total Gate Charge | Q _g | V _{DS} = 15V, I _D = 30A, V _{GS} = 10V | - | 33.7 | - | nC |
| Gate-Source Charge | Q _{gs} | | - | 8.5 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 7.5 | - | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward voltage ⁽³⁾ | V _{DS} | V _{GS} = 0V, I _S = 1A | - | - | 1.2 | V |
| Diode Forward current ⁽⁴⁾ | I _S | | - | - | 80 | A |

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition: T_J = 25°C, V_{DD} = 25V, R_G = 25 Ω, L = 0.1mH, I_{AS} = 42A
3. Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%
4. Surface Mounted on FR4 Board, t ≤ 10 sec

Test Circuit

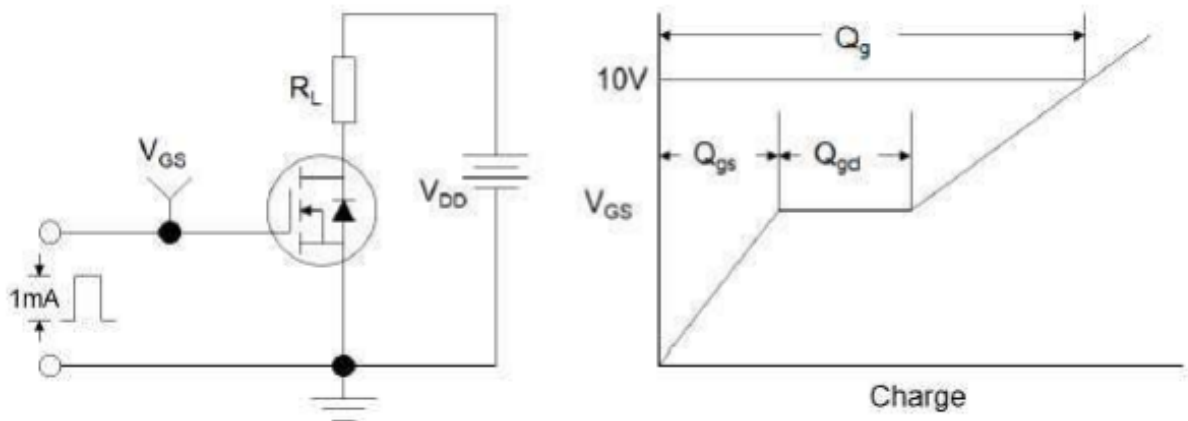


Figure1:Gate Charge Test Circuit & Waveform

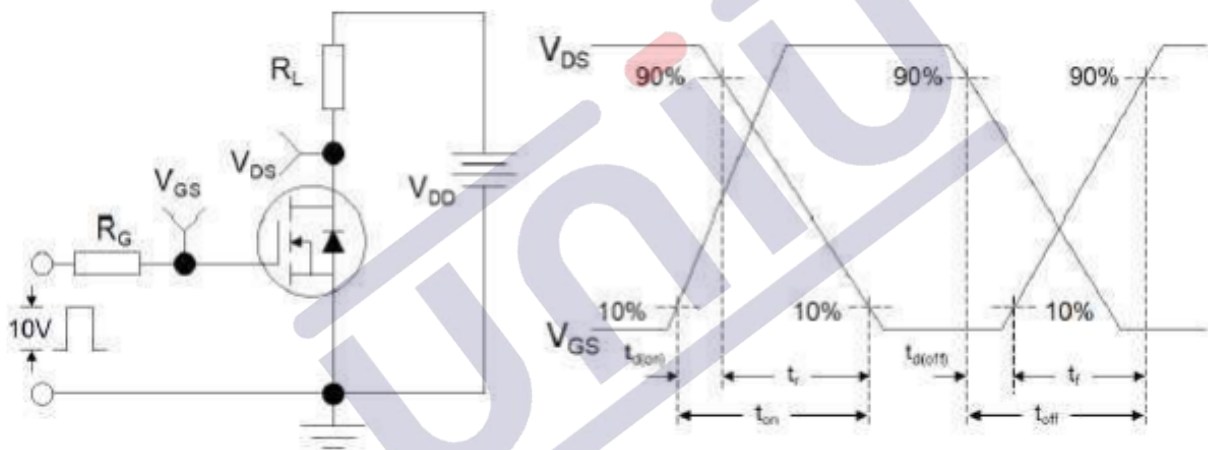


Figure 2: Resistive Switching Test Circuit & Waveforms

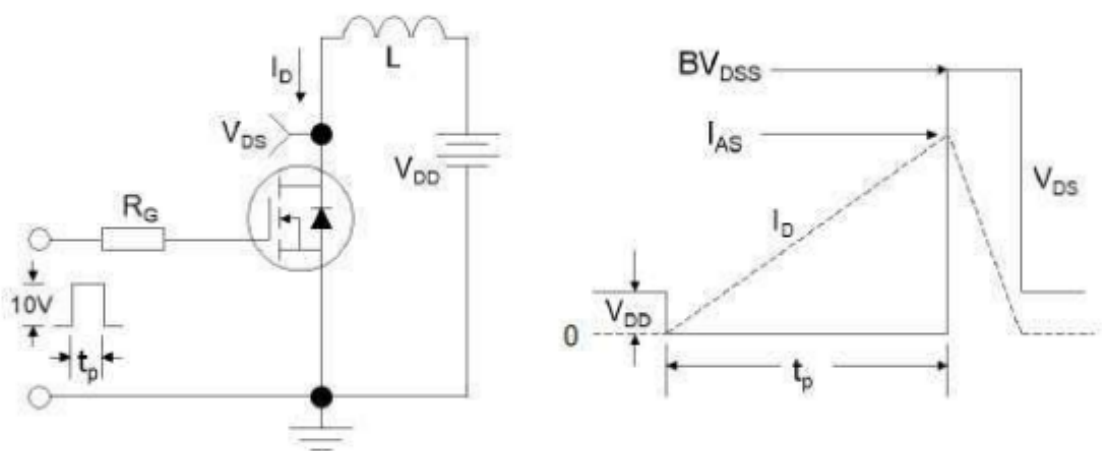


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Typical Performance Characteristics

Figure 1: Output Characteristics

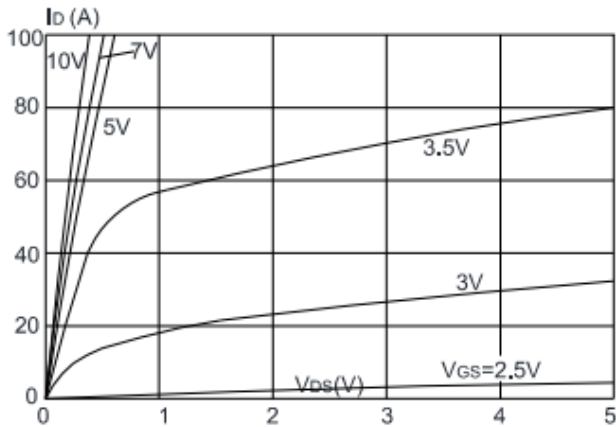


Figure 2: Typical Transfer Characteristics

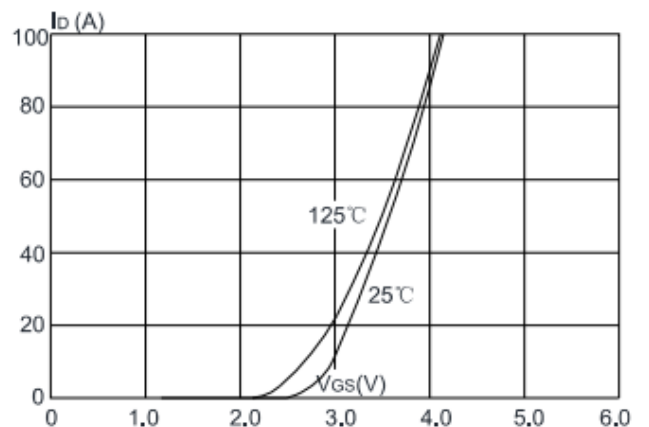


Figure 3: On-resistance vs. Drain Current

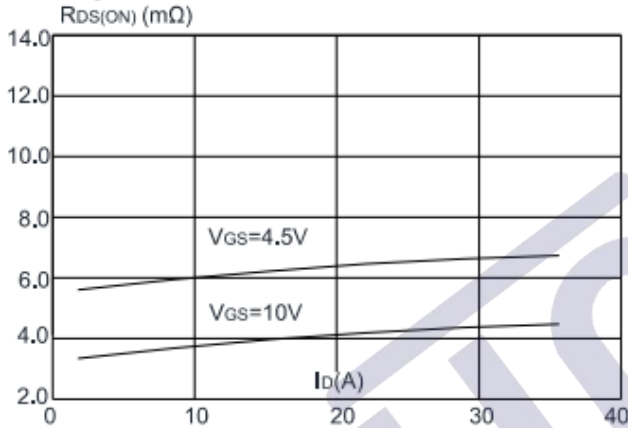


Figure 4: Body Diode Characteristics

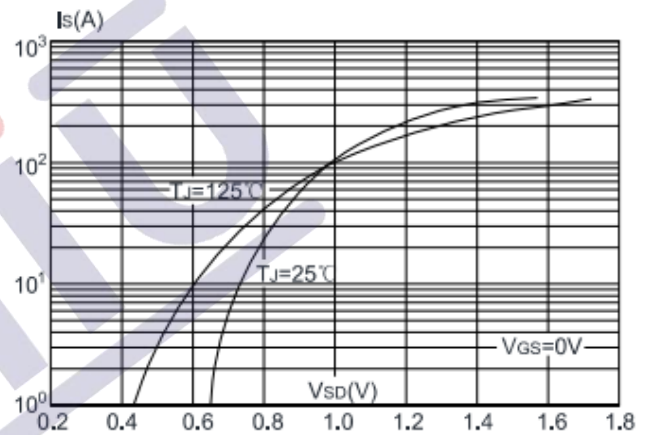


Figure 5: Gate Charge Characteristics

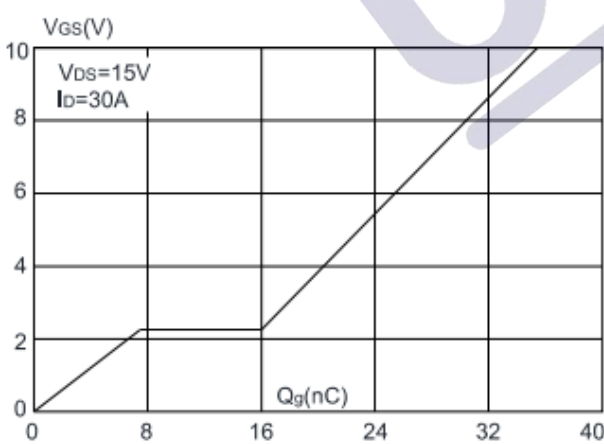


Figure 6: Capacitance Characteristics

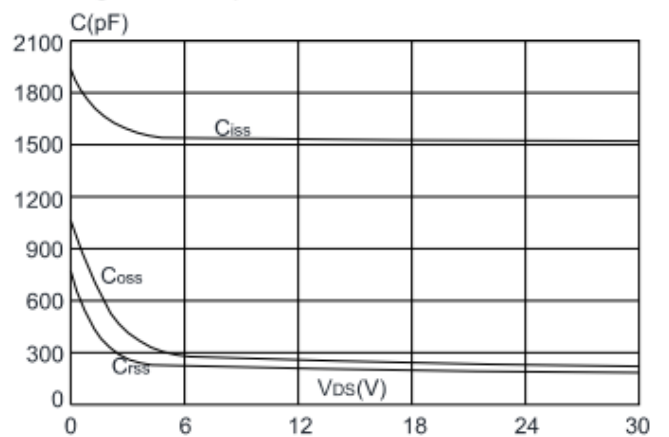


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

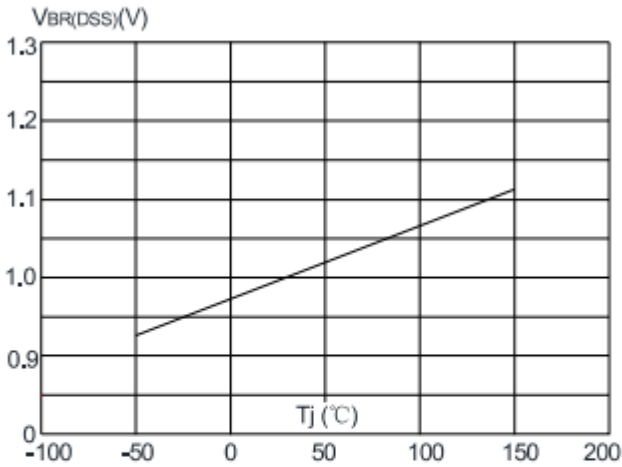


Figure 8: Normalized on Resistance vs. Junction Temperature

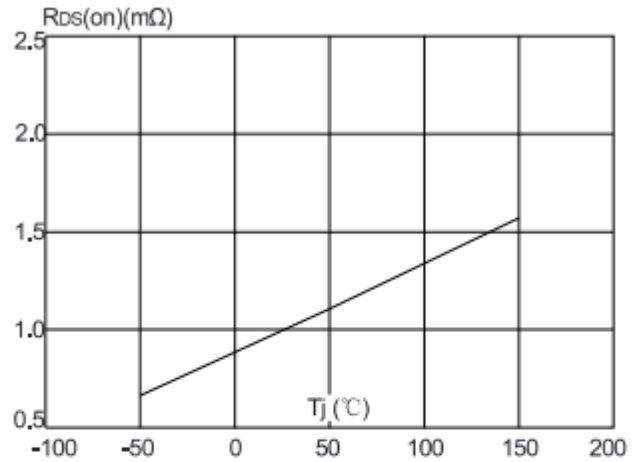


Figure 9: Maximum Safe Operating Area

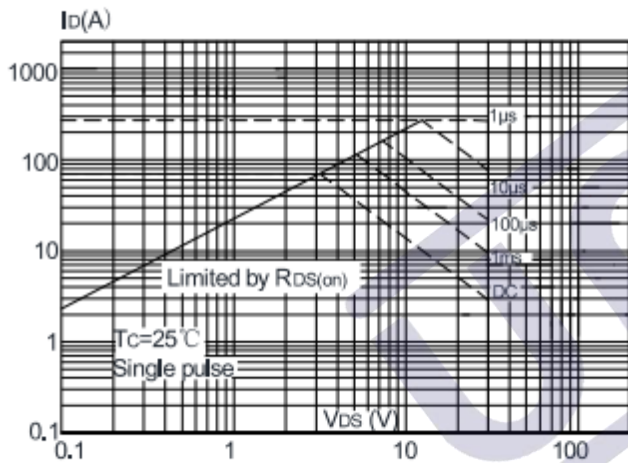


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

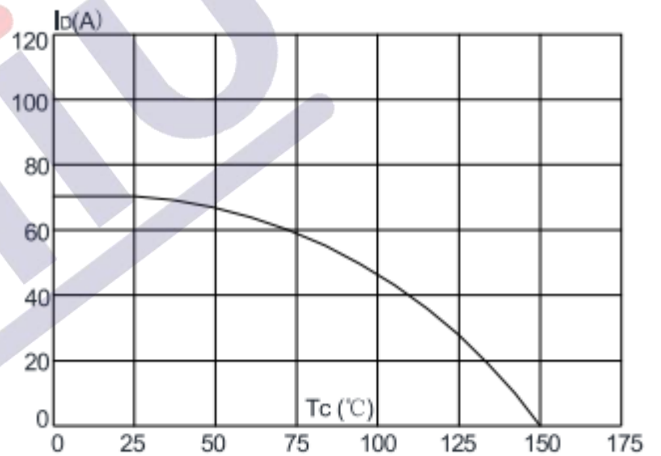
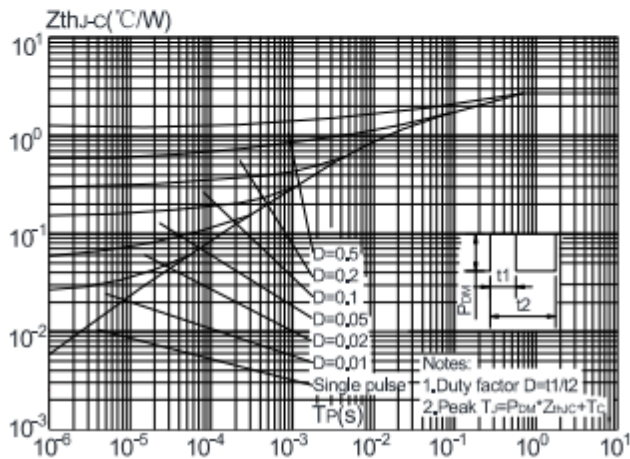
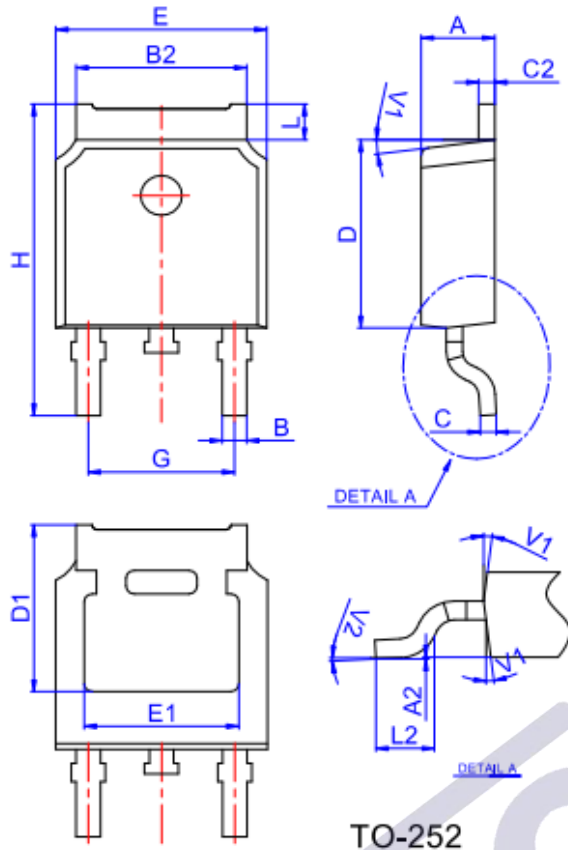


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

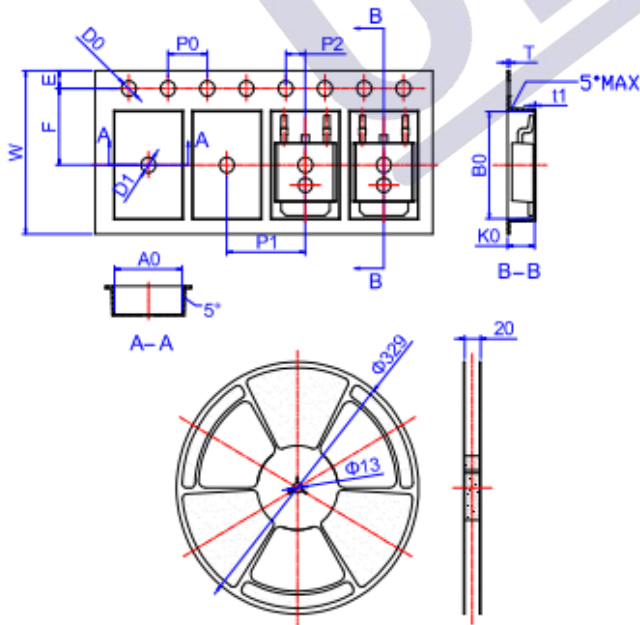


TO-252 Package Information



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|----------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 5.48 | 0.202 | | 0.216 |
| C | 0.40 | | 0.60 | 0.016 | | 0.024 |
| C2 | 0.44 | | 0.58 | 0.017 | | 0.023 |
| D | 5.90 | | 6.30 | 0.232 | | 0.248 |
| D1 | 5.30REF | | | 0.209REF | | |
| E | 6.40 | | 6.80 | 0.252 | | 0.268 |
| E1 | 4.63 | | | 0.182 | | |
| G | 4.47 | | 4.67 | 0.176 | | 0.184 |
| H | 9.50 | | 10.70 | 0.374 | | 0.421 |
| L | 1.09 | | 1.21 | 0.043 | | 0.048 |
| L2 | 1.35 | | 1.65 | 0.053 | | 0.065 |
| V1 | | 7° | | | 7° | |
| V2 | 0° | | 6° | 0° | | 6° |

Reel Specification-TO-252



| Ref. | Dimensions | | | | | |
|------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| W | 15.90 | 16.00 | 16.10 | 0.626 | 0.630 | 0.634 |
| E | 1.65 | 1.75 | 1.85 | 0.065 | 0.069 | 0.073 |
| F | 7.40 | 7.50 | 7.60 | 0.291 | 0.295 | 0.299 |
| D0 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| D1 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 7.90 | 8.00 | 8.10 | 0.311 | 0.315 | 0.319 |
| P2 | 1.90 | 2.00 | 2.10 | 0.075 | 0.079 | 0.083 |
| A0 | 6.85 | 6.90 | 7.00 | 0.270 | 0.271 | 0.276 |
| B0 | 10.45 | 10.50 | 10.60 | 0.411 | 0.413 | 0.417 |
| K0 | 2.68 | 2.78 | 2.88 | 0.105 | 0.109 | 0.113 |
| T | 0.24 | | 0.27 | 0.009 | | 0.011 |
| t1 | 0.10 | | | 0.004 | | |
| 10P0 | 39.80 | 40.00 | 40.20 | 1.567 | 1.575 | 1.583 |

1.版本记录

| DATE | REV. | DESCRIPTION |
|------------|------|-------------------|
| 2018/04/19 | 1.0 | First Release |
| 2021/11/15 | 1.1 | Layout adjustment |
| | | |
| | | |

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