

WPM2341

P-Channel Enhancement Mode Mosfet

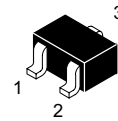
<http://www.willsemi.com>

Features

- Higher Efficiency Extending Battery Life
- Miniature SOT23-3 Surface Mount Package
- Super high density cell design for extremely low RDS (ON)

Applications

- DC/DC Converter
- Load Switch
- Battery Powered System
- LCD Display inverter
- Power Management in Portable, Battery Powered Products

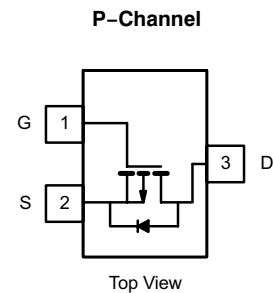


SOT 23-3

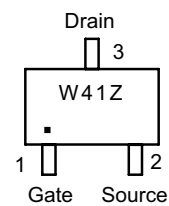
pin connections :

| ABSOLUTE MAXIMUM RATINGS $T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted | | | | | |
|--|----------------|----------------------------------|--------------|------------------|---|
| Parameter | Symbol | 5 s | Steady State | Unit | |
| Drain-Source Voltage | V_{DS} | -20 | | V | |
| Gate-Source Voltage | V_{GS} | ± 8 | | | |
| Continuous Drain Current ($T_J = 150\text{ }^\circ\text{C}$) ^a | I_D | $T_A = 25\text{ }^\circ\text{C}$ | -4.3 | -3.5 | A |
| | | $T_A = 80\text{ }^\circ\text{C}$ | -3.2 | -2.5 | |
| Pulsed Drain Current | I_{DM} | -20 | | A | |
| Continuous Source Current (Diode Conduction) ^a | I_S | -1.7 | -1 | A | |
| Maximum Power Dissipation ^a | P_D | $T_A = 25\text{ }^\circ\text{C}$ | 1.25 | 0.75 | W |
| | | $T_A = 80\text{ }^\circ\text{C}$ | 0.7 | 0.42 | |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | - 55 to 150 | | $^\circ\text{C}$ | |

a. Surface Mounted on FR4 Board using 1 in sq pad size, 2oz Cu.



Marking:



W 41= Specific Device Code
Z = Date Code

Order information

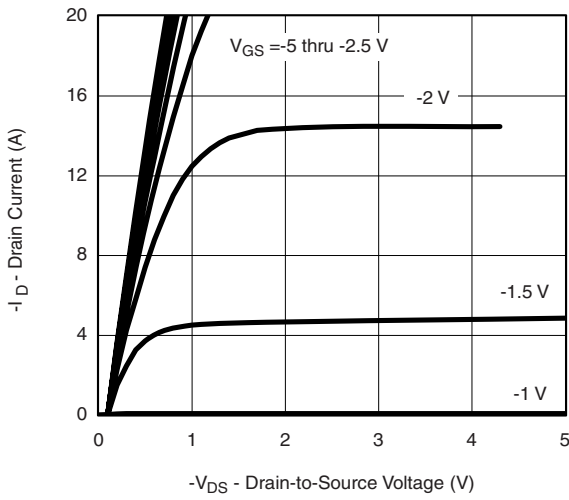
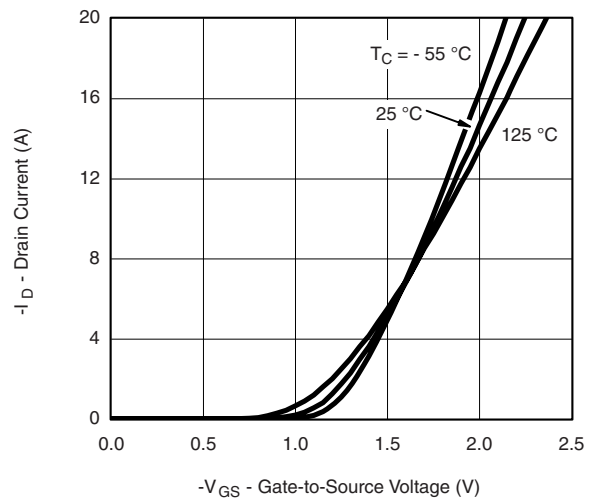
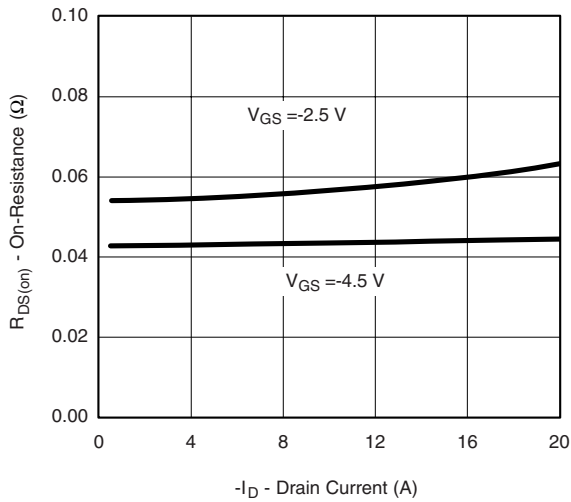
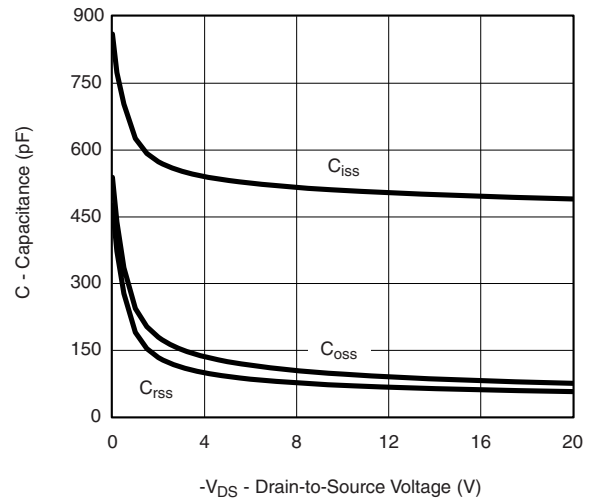
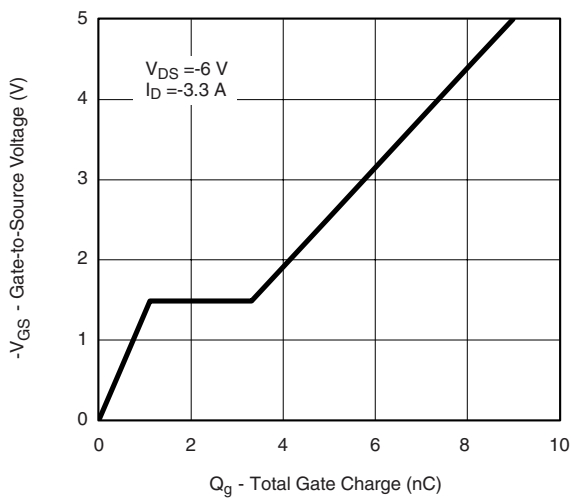
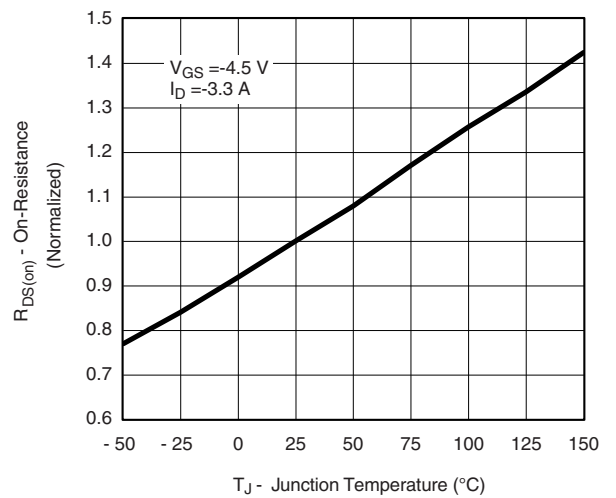
| Part Number | Package | Shipping |
|--------------|---------|------------------|
| WPM2341-3/TR | SOT23-3 | 3000 Tape & Reel |

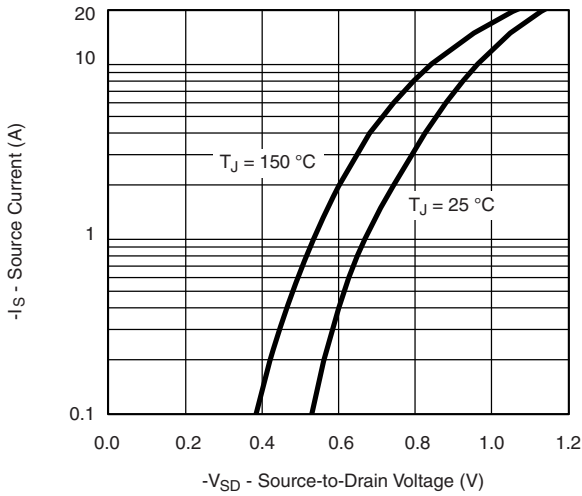
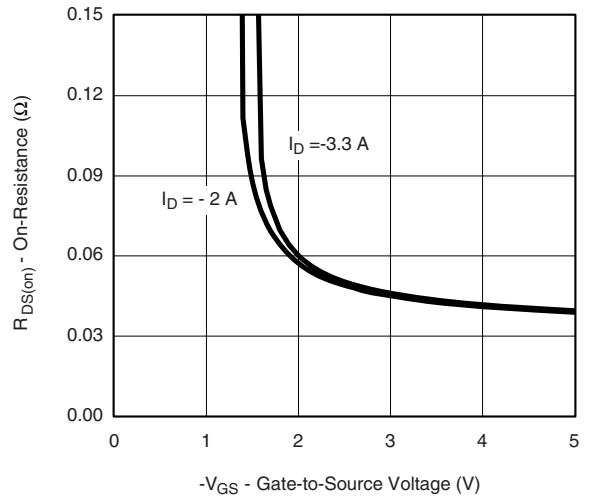
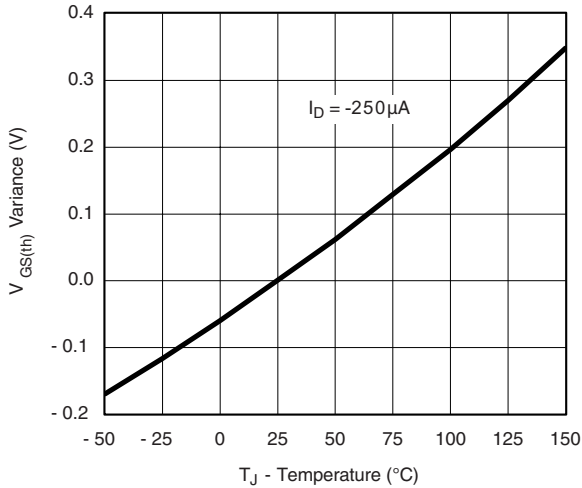
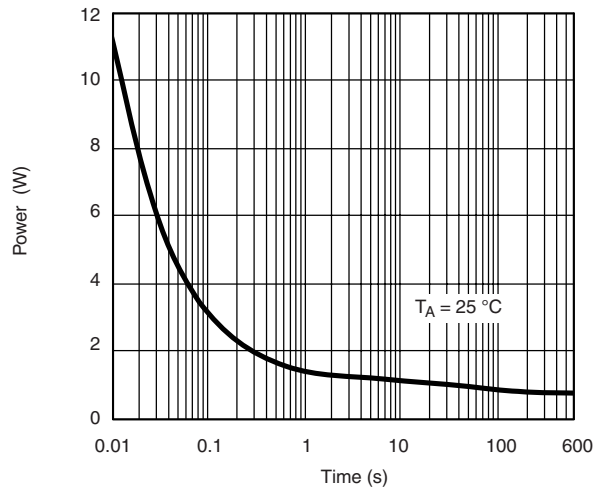
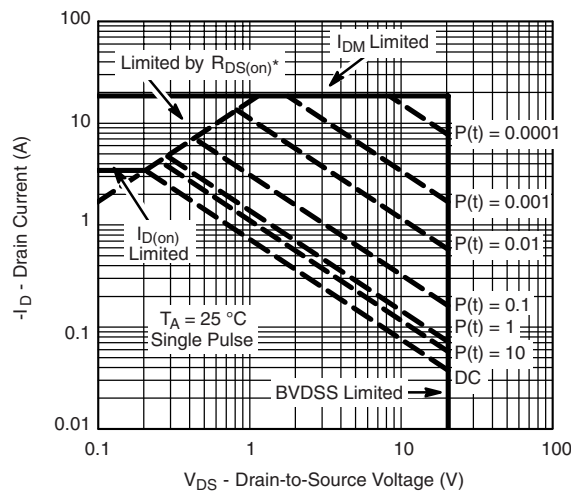
| THERMAL RESISTANCE RATINGS | | | | | |
|---|--------------|------------------|---------|---------|------|
| Parameter | | Symbol | Typical | Maximum | Unit |
| Junction-to-Ambient Thermal Resistance ^b | t ≤ 5 s | R _{θJA} | 75 | 100 | °C/W |
| | Steady State | | 125 | 165 | |

b. Surface Mounted on FR4 Board using 1 in sq pad size, 2oz Cu.

MOSFET ELECTRICAL CHARACTERISTICS(T_J =25 °C unless otherwise specified)

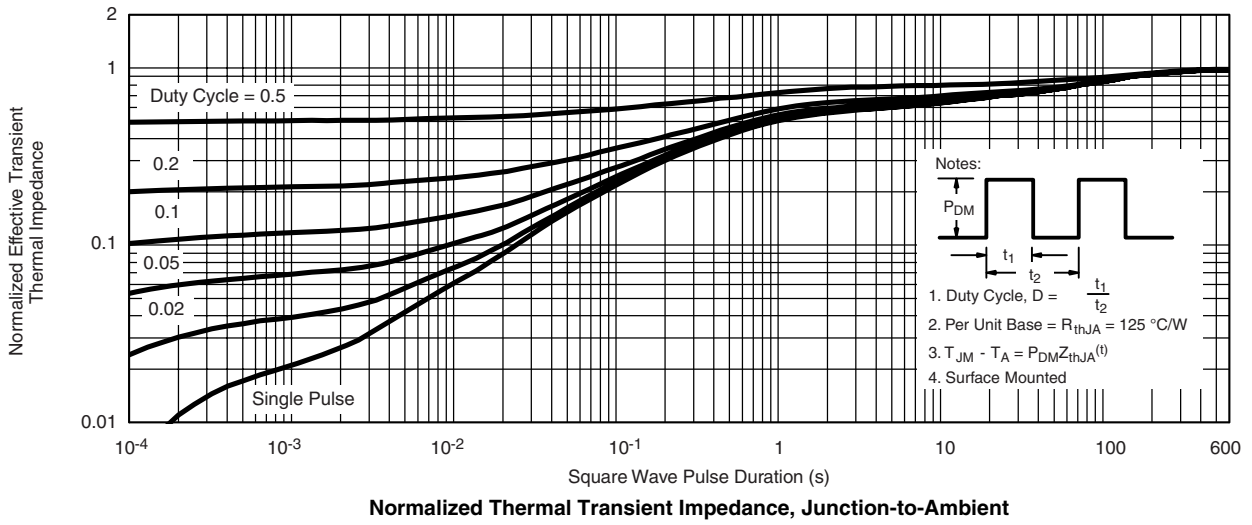
| Parameter | Symbol | Test Condition | Min | Typ | Max | Units |
|---|---------------------|--|------|-------|-------|-------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D = -250μA | -20 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = -16V, V _{GS} = 0V | | | -1 | μA |
| Gate -Source leakage current | I _{GSS} | V _{GS} = ±8 V, V _{DS} = 0V | | | ±100 | nA |
| On Characteristics | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | V _{GS} = V _{DS} , I _D = -250μA | -0.5 | -0.63 | -0.76 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = -4.5V, I _D = -3.3A | | 44 | 53 | mΩ |
| | | V _{GS} = -2.5V, I _D = -2.8 A | | 56 | 67 | mΩ |
| Forward Transconductance | g _{FS} | V _{DS} = -5 V, I _D = -3.3A | | 3.0 | | S |
| Dynamic Characteristics | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = -6 V, V _{GS} = 0V, f = 1.0 MHz | | | 700 | pF |
| Output Capacitance | C _{oss} | | | | 160 | pF |
| Reverse Transfer Capacitance | C _{rss} | | | | 120 | pF |
| Switching Characteristics | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{GS} = -4.5V, V _{DD} = -6 V, I _D = -1.0A, R _G = 6.0Ω, | | | 25 | ns |
| Turn-On Rise Time | t _r | | | | 55 | ns |
| Turn-Off Delay Time | t _{d(off)} | | | | 90 | ns |
| Turn-Off Fall Time | t _f | | | | 60 | ns |
| Total Gate Charge | Q _{G(TOT)} | V _{DS} = -6 V, I _D = -3.3A, V _{GS} = -4.5V | | 8 | 13 | nC |
| Threshold gate charge | Q _{G(TH)} | | | 0.2 | | nC |
| Gate-Source Charge | Q _{GS} | | | 1.2 | | nC |
| Gate-Drain Charge | Q _{GD} | | | 2.2 | | nC |
| Drain-Source Diode Characteristics and Maximun Ratings | | | | | | |
| Forward Diode Voltage | V _{SD} | V _{GS} = 0V, I _S = -1.6A | | -0.8 | | V |

Typical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Output Characteristics

Transfer Characteristics

On-Resistance vs. Drain Current

Capacitance

Gate Charge

On-Resistance vs. Junction Temperature

Typical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Single Pulse Power


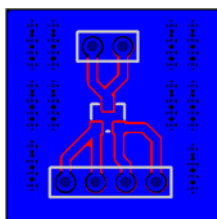
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

Typical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)


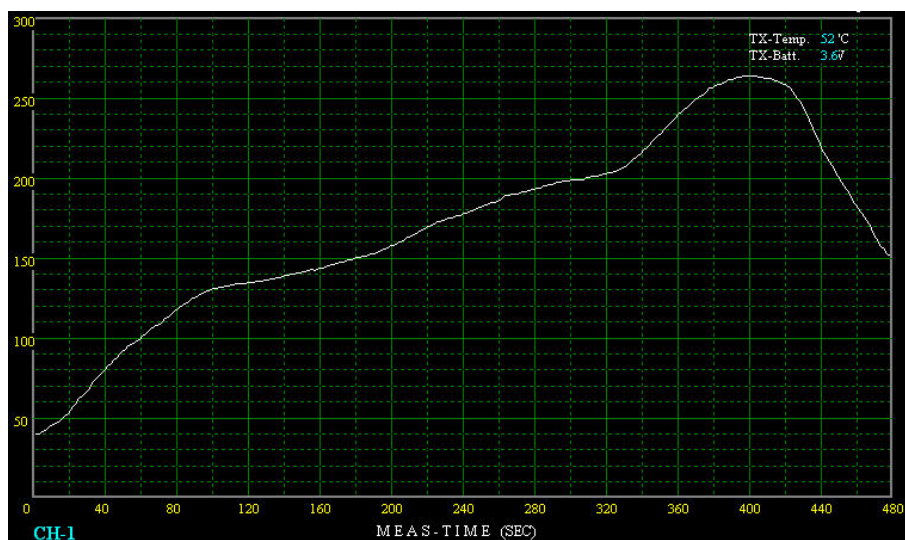
Power Dissipation Characteristics

1. The package of WPM2341 is SOT23-3, surface mounted on FR4 Board using 1 in sq pad size, 2 oz Cu, $R_{\theta JA}$ is 125 °C/W.
2. The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, and the relation between T_J and P_D is $T_J = T_a + R_{\theta JA} * P_D$, the maximum power dissipation is determined by $R_{\theta JA}$.
3. The $R_{\theta JA}$ is the thermal impedance from junction to ambient, using larger PCB pad size can get smaller $R_{\theta JA}$ and result in larger maximum power dissipation.



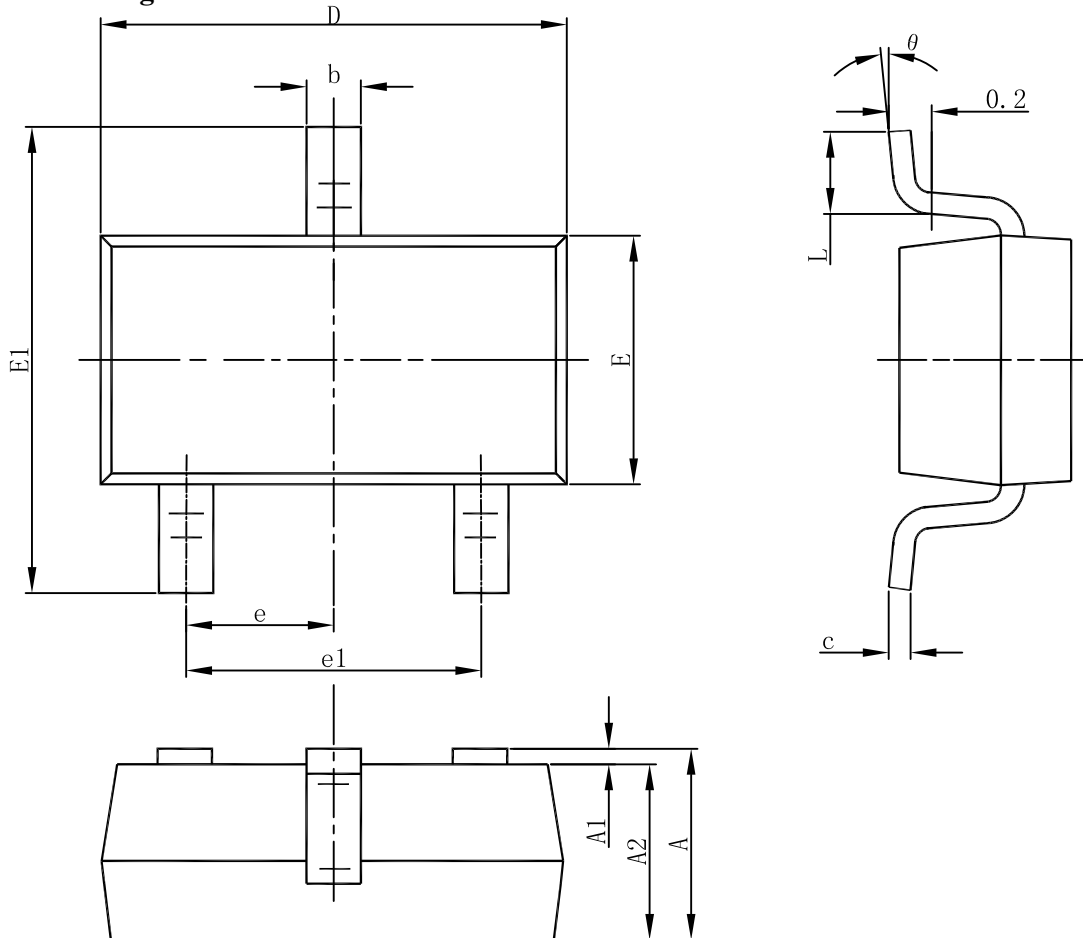
125 °C/W when mounted on
a 1 in² pad of 2 oz copper.

Welding temperature curve

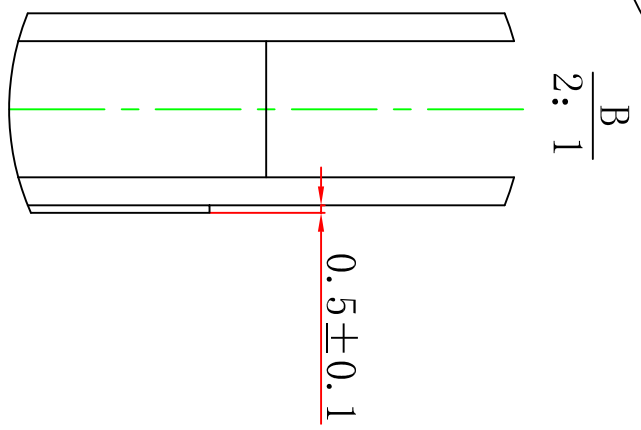
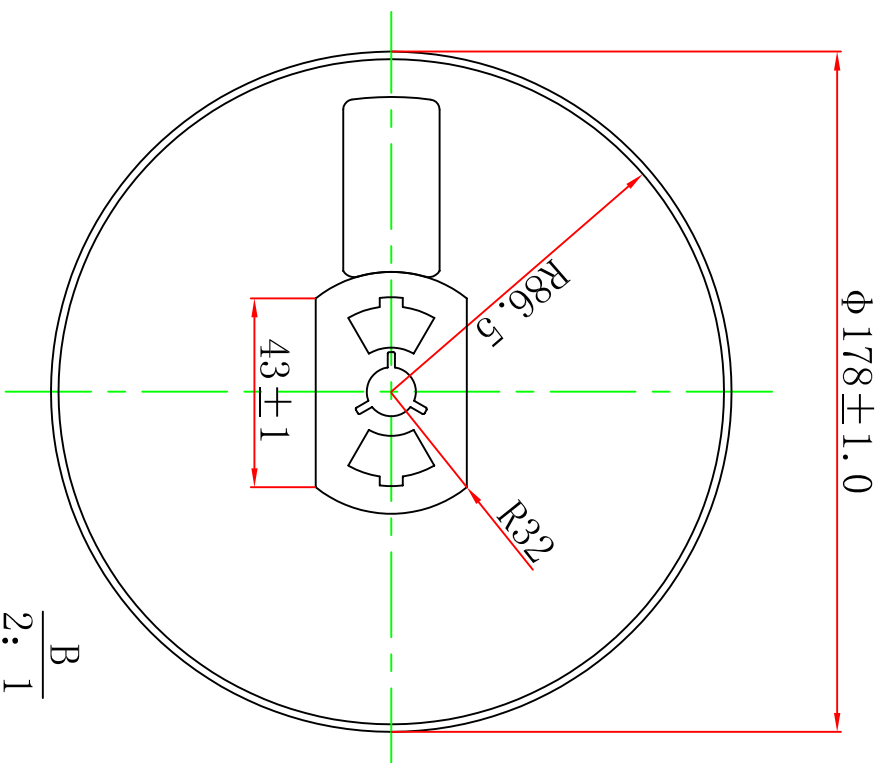
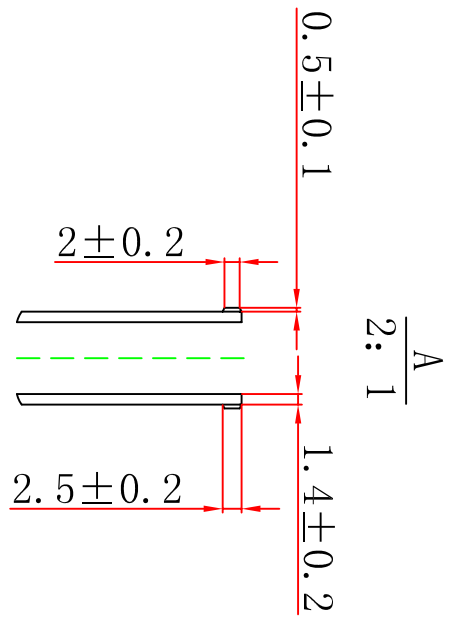
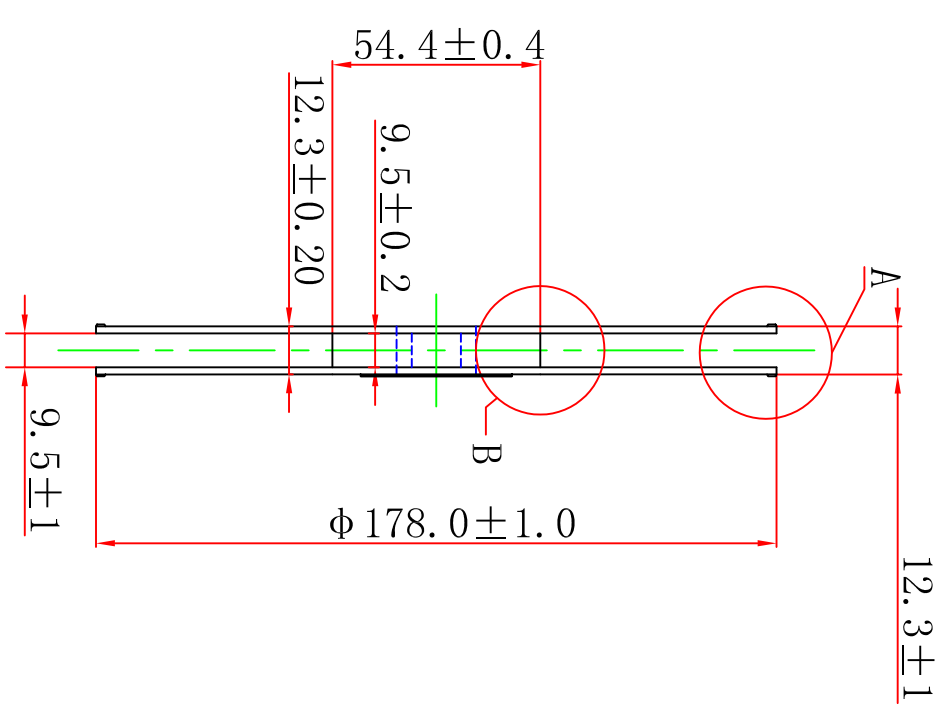
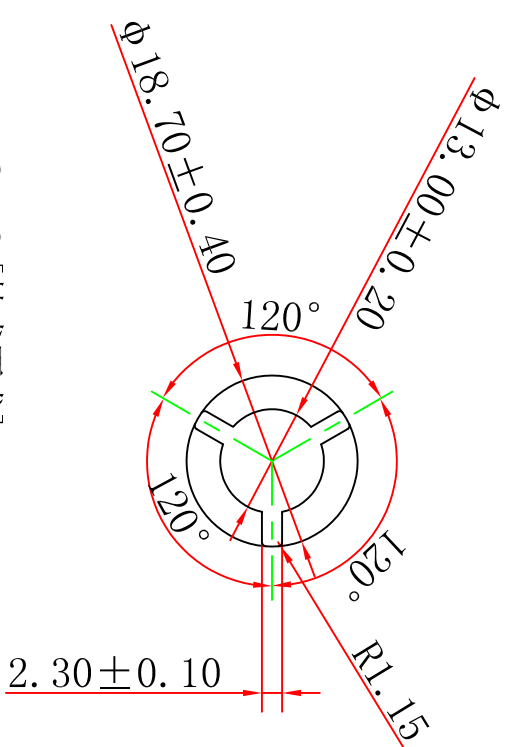
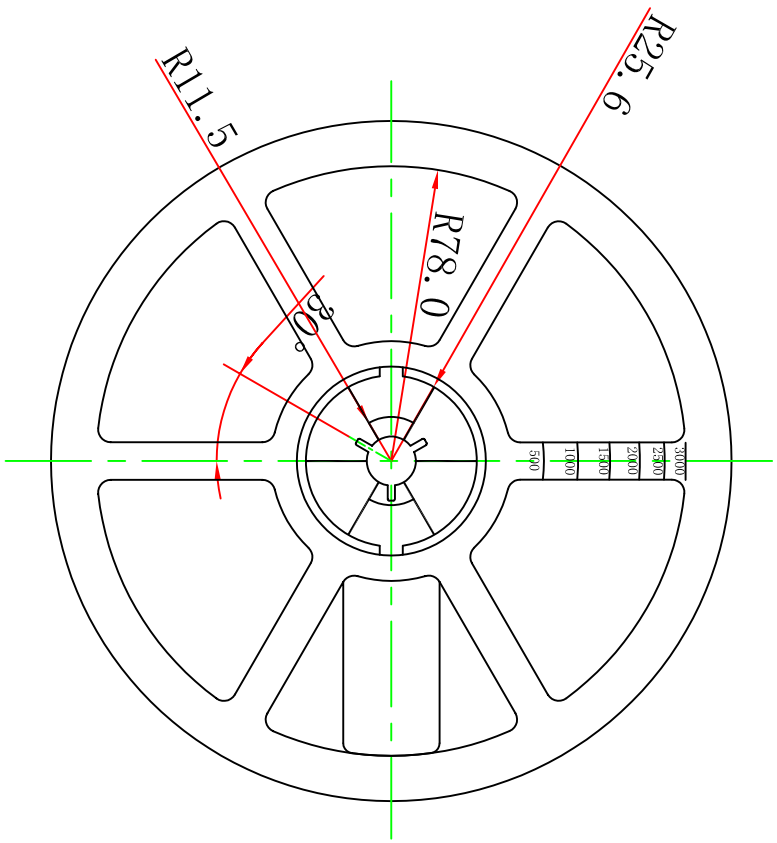


Packaging Information

SOT23-3 Package Outline Dimension



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

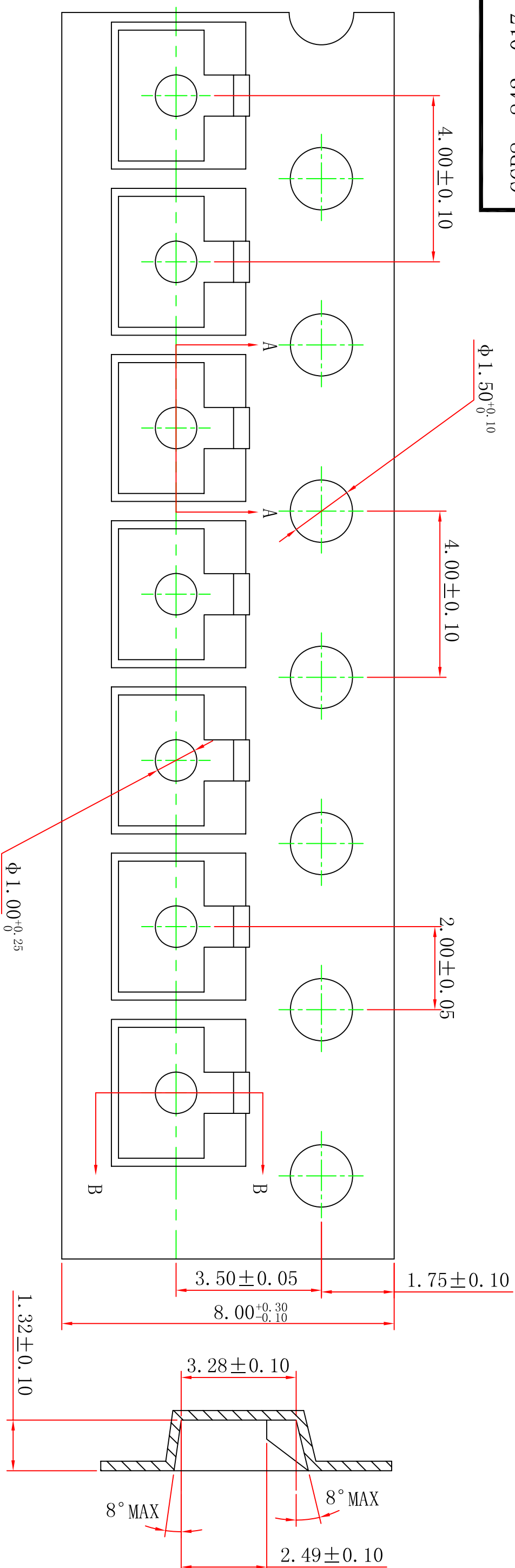


NOTES: [技术要求]

1. COLOR: BLUE [此卷盘颜色为蓝色];
2. ALL DIM IN mm [所有单位为mm];
3. ESD-SURFACE RESISTIVITY $10^5 \sim 10^{11}$ OHMS/SQ [表面单位面积电阻系数为 $10^5 \sim 10^{11} \Omega/\square$];
4. GENERAL TOLERANCE ± 0.25 ; [未注公差 ± 0.25]
5. THIS REEL FORBIDS USING URROUNDINGS MANAGING MATTER OF JCET PRESCRIBING; [禁止使用长电科技规定一级环境管理物质]
6. THE DIRECTION OF VIEW [视图方向]: 。

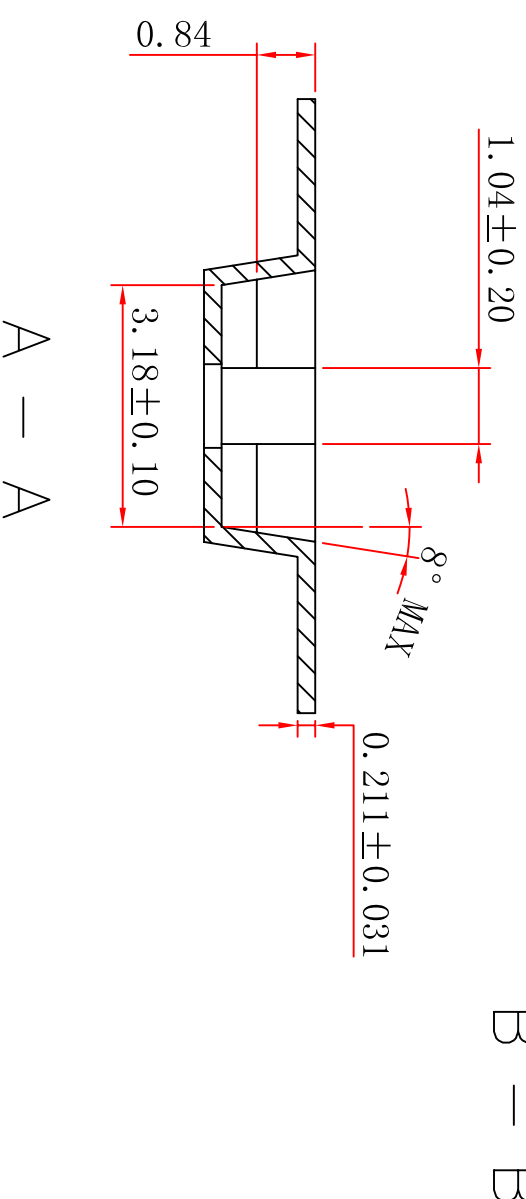
| | | | |
|---------|-------------|------|------|
| Change | GGP2007.012 | | |
| Change | GGP2006.057 | 龚臻 | |
| Mark | GN No. | Sign | Date |
| Design | | | |
| Check | | | |
| Process | | | |
| Stand. | | | |
| Approve | | | |

| | | |
|---|------------------|-------|
| Finish | | |
| Reel (7") Drawing [卷盘图] (TR-JP-04) | GGP8 • 845 • 006 | |
| Material: HIPS | | |
| Step | Rev. | Scale |
| 1 | 0F | 1 |
| JCET Co., Ltd | | |



NOTES: [技术要求]:

1. CARRIER TAPE COLOR: BLACK [载带颜色为黑色]
2. COVER TAPE WIDTH: 5.50±0.10 [配套5.5宽盖带]
3. COVER TAPE COLOR: TRANSPARENT [盖带颜色无色透明]
4. SURFACE ANTISTATIC COATED $10^5 \sim 10^{11}$ OHMS/SQ.
[单位面积表面阻抗 $10^5 \sim 10^{11} \Omega/\square$]
5. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ± 0.20 MAX.
[10个传送定位孔间距累积公差 0.20 MAX.]
6. IN A REEL CARRIER THE THICKNESS CUMULATIVE TOLERANCE ± 0.02 MAX.
[在同一卷中载带厚度公差范围不得超过 0.02 mm]
7. CAMBER NOT TO EXCEED 1 MM IN 100 MM [载带直线弯曲度: $\leq 1\text{mm}/100\text{mm}$.]
8. MOLD# SOT-23-3L [载带规格 SOT-23-3L]
9. ALL DIMS IN mm. [所有单位为 mm]
10. THIS TAPE FORBIDS USING BANNED SUBSTANCES OF JCET PRESCRIBING.
[禁止使用长电科技规定的一级环境管理物质]
11. THE DIRECTION OF VIEW: [视图方向:



| | | | | |
|---------------------------------------|--|------------------|-------|-------|
| Change | | GGP2006_085 | 龚臻 | |
| Mark | | CN NO. | Sign. | Date |
| Design | | | | |
| Check | | | | |
| Process | | | | |
| Stand. | | | | |
| Approve | | | | |
| Carrier Tape Drawing [载带图] (IC-ZD-08) | | GGP8 • 842 • 017 | | |
| Material: PC | | Step | Rev. | Scale |
| | | 1 | of 1 | 10:1 |
| | | JCET Co., Ltd | | |