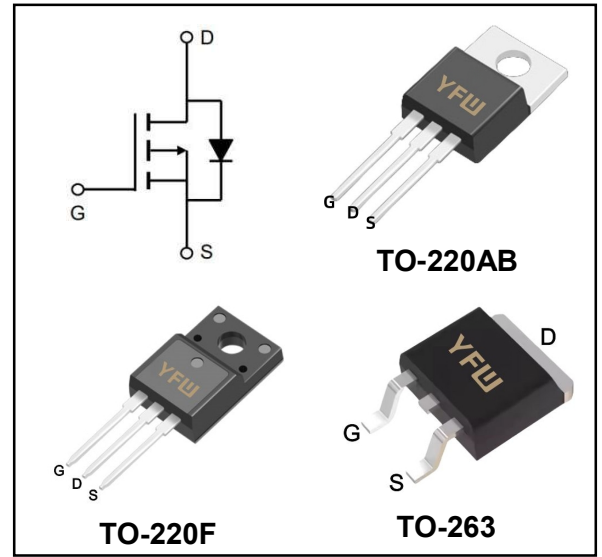


-100V P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

| | |
|---|---------------------|
| I_D | -50A |
| V_{DSS} | -100V |
| R_{DS(on)-typ(@V_{GS}=-10V)} | < 52mΩ (Type:40 mΩ) |



Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply

Maximum Ratings at T_c=25°C unless otherwise specified

| Characteristics | Symbols | Value | Units |
|--|------------------------|-------------|-------------|
| Drain-Source Voltage | V_{DS} | -100 | V |
| Gate - Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current, V _{GS} @ -10V ¹ @T _C =25°C | I_D | -50 | A |
| Continuous Drain Current, V _{GS} @ -10V ¹ @T _C =100°C | I_D | -28 | A |
| Pulsed Drain Current ² | I_{DM} | -150 | A |
| Single Pulse Avalanche Energy ³ | E_{AS} | 87 | mJ |
| Avalanche Current | I_{AS} | -35 | A |
| Total Power Dissipation ⁴ @T _C =25°C | P_D | 140 | W |
| Storage Temperature Range | T_{STG} | -55 to +150 | °C |
| Operating Junction Temperature Range | T_J | -55 to +150 | °C |
| Thermal Resistance Junction-Ambient ¹ | R_{θJA} | 62 | °C/W |
| Thermal Resistance Junction-Case ¹ | R_{θJC} | 1.1 | °C/W |

Maximum Ratings at Tc=25°C unless otherwise specified

| Characteristics | Test Condition | Symbols | Min | Typ | Max | Units |
|--|--|---------------------------|------|-------|------|-----------|
| Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=-250\mu A$ | V(BR)DSS | -100 | - | - | V |
| Zero Gate Voltage Drain Current | $V_{DS}=-100V, V_{GS}=0V$ | I_{DSS} | - | - | -1.0 | μA |
| Gate to Body Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0V$ | I_{GSS} | - | - | ±100 | nA |
| Gate -Threshold Voltage | $V_{DS}=V_{GS}, I_D=-250\mu A$ | V_{GS(th)} | -1.0 | -1.6 | -2.5 | V |
| Static Drain-Source on-Resistance | $V_{GS}=-10V, I_D=-20A$ | R_{DS(on)} | - | 40 | 52 | mΩ |
| | $V_{GS}=-4.5V, I_D=-10A$ | | - | 44 | 62 | |
| Input Capacitance | $V_{DS}=-50V$ $V_{GS}=0V$ $f=1MHz$ | C_{iss} | - | 2120 | - | μF |
| Output Capacitance | | C_{oss} | - | 194 | - | |
| Reverse Transfer Capacitance | | C_{rss} | - | 13 | - | |
| Total Gate Charge | $V_{DS}=-50V$ $V_{GS}=-10V$ $I_D=-5A$ | Q_g | - | 40 | - | nC |
| Gate-Source Charge | | Q_{gs} | - | 7.8 | - | |
| Gate-Drain("Miller") Charge | | Q_{gd} | - | 8.6 | - | |
| Turn-on delay time | $V_{DD}=-50V$ $V_{GS}=-10V$ $I_D=-5A$ $R_G=6\Omega$ | t_{d(on)} | - | 13 | - | ns |
| Turn-on Rise Time | | T_r | - | 39 | - | |
| Turn-Off Delay Time | | t_{d(OFF)} | - | 100.1 | - | |
| Turn-Off Fall Time | | t_f | - | 105.3 | - | |
| Maximum Continuous Drain to Source Diode Forward Current | | I_S | - | - | -35 | A |
| Maximum Pulsed Drain to Source Diode Forward Current | | I_{SM} | - | - | -140 | A |
| Drain to Source Diode Forward Voltage | $V_{GS}=0V, I_S=-30A$ | V_{SD} | - | - | -1.2 | V |
| Body Diode Reverse Recovery Time | $I_F=-5A, dI/dt=100A/\mu s, T_J=25^\circ C$ | t_{rr} | - | 104 | - | ns |
| Body Diode Reverse Recovery Charge | | Q_{rr} | - | 280 | - | nC |

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The EAS data shows Max. rating . The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-24A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

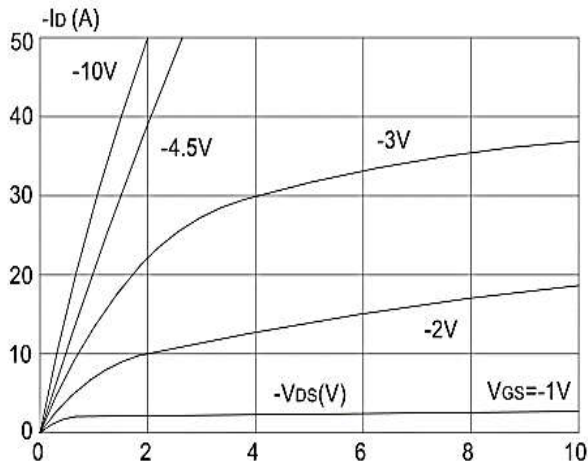


Figure 1: Output Characteristics

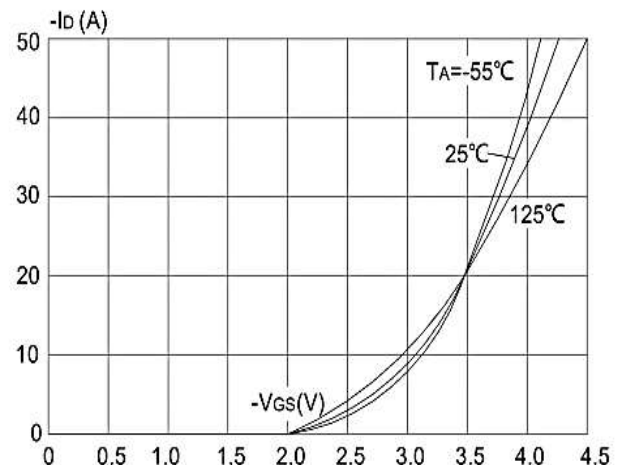


Figure 2: Typical Transfer Characteristics

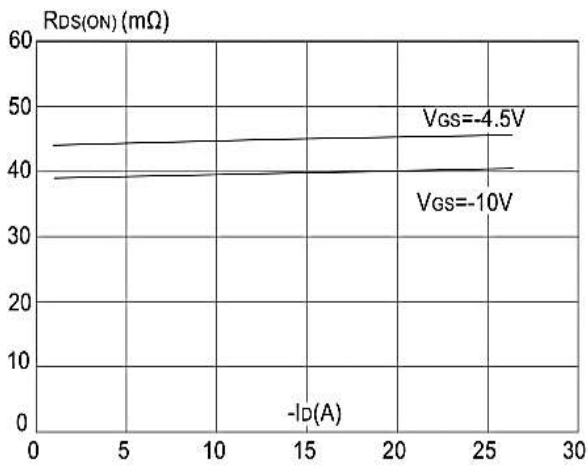


Figure 3: On-resistance vs. Drain Current

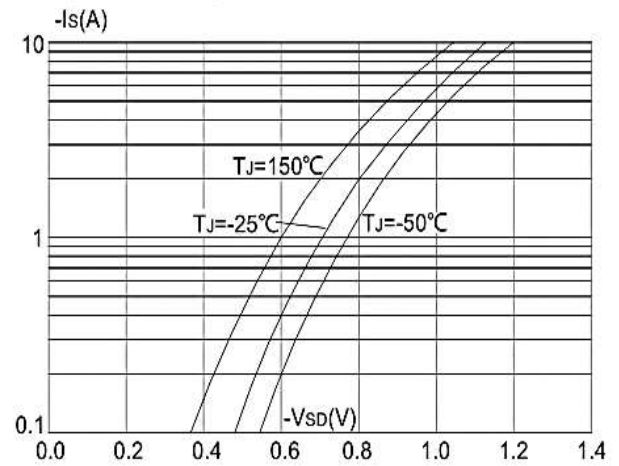


Figure 4: Body Diode Characteristics

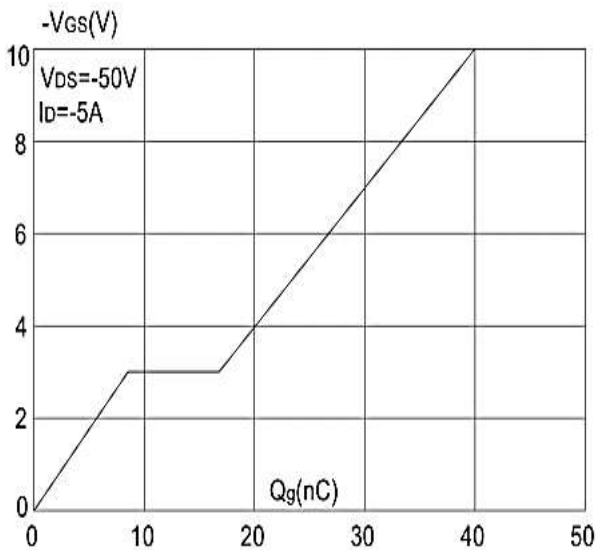


Figure 5: Gate Charge Characteristics

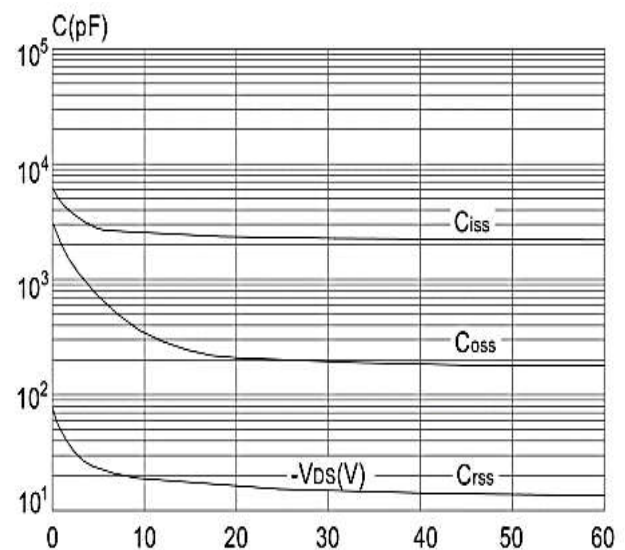


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

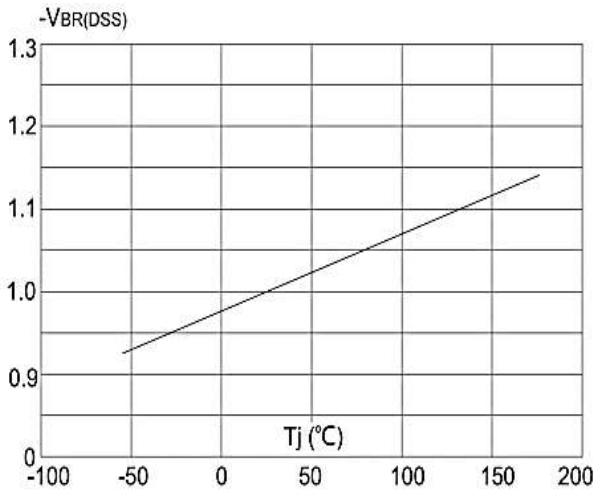


Figure 7: Normalized Breakdown Voltage vs Junction Temperature

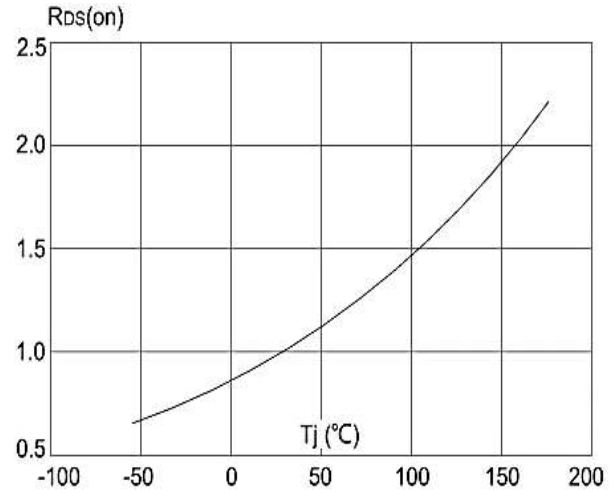


Figure 8: Normalized on Resistance vs. Junction Temperature

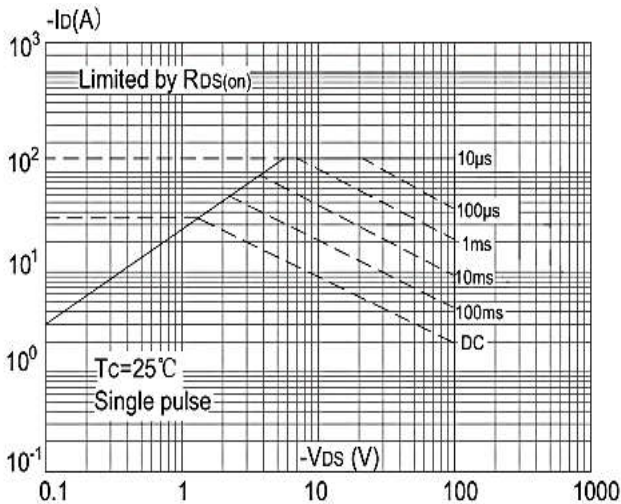


Figure 9: Maximum Safe Operating Area

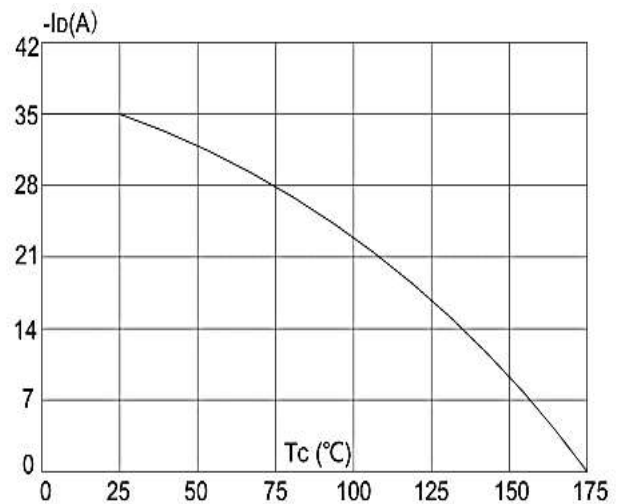


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

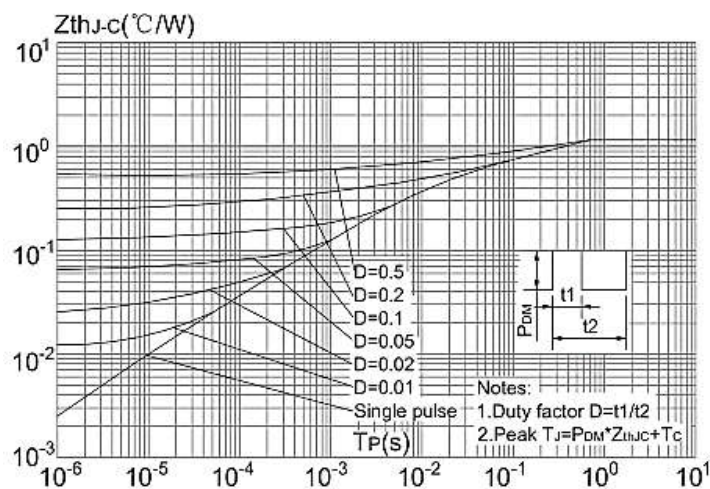
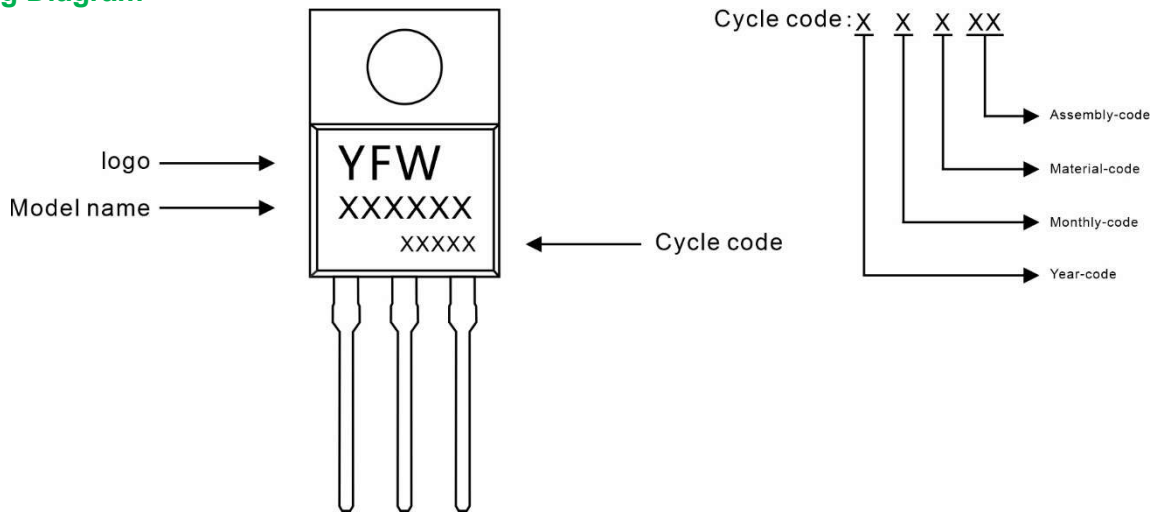


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambien

Marking Diagram



Ordering information

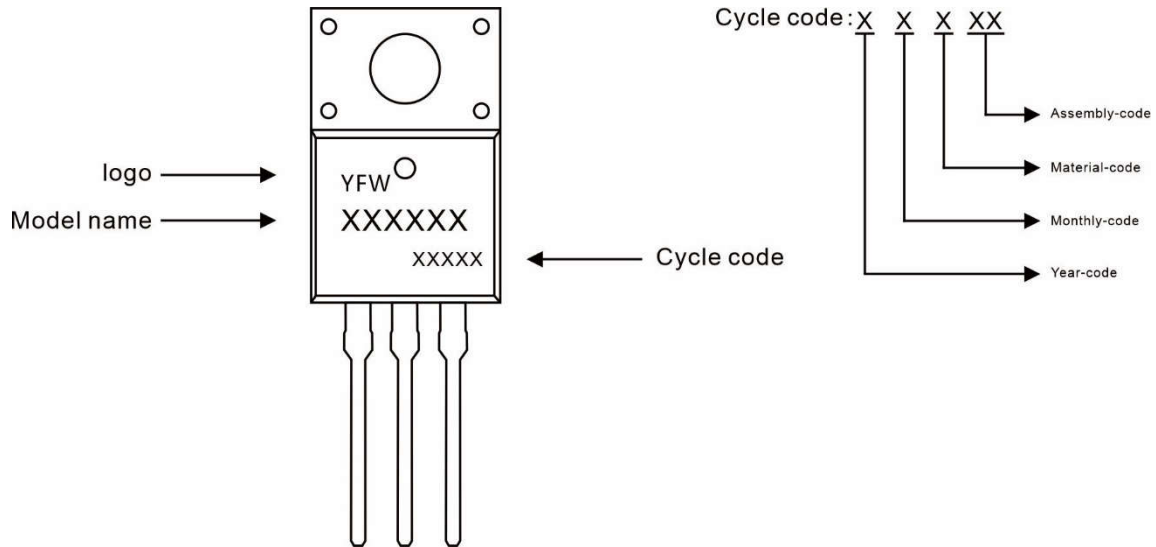
| Model name | Package | Unit Weight | Base Quantity | Packing Quantity |
|------------|----------|---------------|---------------|----------------------------|
| YFW50P10AT | TO-220AB | 0.07oz(1.96g) | 50pcs/tube | 1000PCS/Box 5000PCS/Carton |

Package Dimensions

TO-220AB

| Symbol | Millimeter | | Inches | |
|--------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.30 | 4.70 | 0.169 | 0.185 |
| A1 | 2.52 | 2.82 | 0.099 | 0.111 |
| b | 0.71 | 0.91 | 0.028 | 0.036 |
| b1 | 1.17 | 1.37 | 0.046 | 0.054 |
| c | 0.30 | 0.50 | 0.012 | 0.020 |
| c1 | 1.17 | 1.37 | 0.046 | 0.054 |
| D | 9.90 | 10.20 | 0.390 | 0.402 |
| E | 8.50 | 8.90 | 0.335 | 0.350 |
| E1 | 12.00 | 12.50 | 0.472 | 0.492 |
| e | 2.44 | 2.64 | 0.096 | 0.104 |
| e1 | 4.88 | 5.28 | 0.192 | 0.208 |
| F | 2.60 | 2.80 | 0.102 | 0.110 |
| L | 13.20 | 13.80 | 0.520 | 0.543 |
| L1 | 3.80 | 4.20 | 0.150 | 0.165 |
| Φ | 3.60 | 3.96 | 0.142 | 0.156 |

Marking Diagram



Ordering information

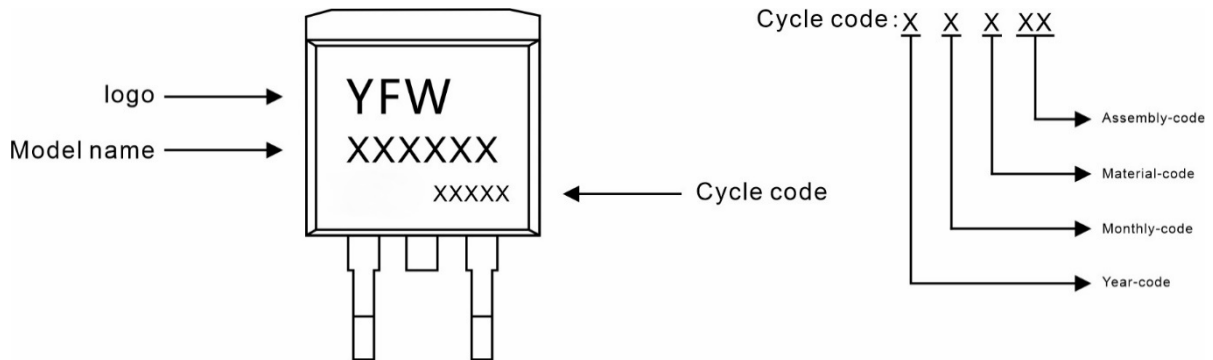
| Model name | Package | Unit Weight | Base Quantity | Packing Quantity |
|------------|---------|---------------|---------------|----------------------------|
| YFW50P10AF | TO-220F | 0.06oz(1.74g) | 50pcs/tube | 1000PCS/Box 5000PCS/Carton |

Package Dimensions

TO-220F

| Symbol | Millimeter | | Inches | |
|--------|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.50 | 4.90 | 0.177 | 0.193 |
| A1 | 2.34 | 2.74 | 0.092 | 0.108 |
| A2 | 2.66 | 2.86 | 0.105 | 0.113 |
| b | 0.75 | 0.85 | 0.030 | 0.033 |
| b1 | 1.24 | 1.44 | 0.049 | 0.057 |
| c | 0.40 | 0.60 | 0.016 | 0.024 |
| D | 10.00 | 10.32 | 0.394 | 0.406 |
| E | 15.75 | 16.05 | 0.620 | 0.632 |
| e | 2.44 | 2.64 | 0.096 | 0.104 |
| e1 | 4.88 | 5.28 | 0.192 | 0.208 |
| F | 3.10 | 3.5 | 0.122 | 0.138 |
| L | 13.50 | 13.90 | 0.531 | 0.547 |
| L1 | 2.90 | 3.30 | 0.114 | 0.130 |
| Φ | 3.10 | 3.30 | 0.122 | 0.130 |

Marking Diagram



Ordering information

| Model name | Package | Unit Weight | Base Quantity | Packing Quantity |
|------------|---------|---------------|---------------|----------------------------|
| YFW50P10AS | TO-263 | 0.04oz(1.16g) | 800pcs/reel | 1600pcs/box 8000pcs/Carton |

Package Dimensions

TO-263

| Dim | Millimeter | | Inches | |
|-----|------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.30 | 4.70 | 0.169 | 0.185 |
| A1 | 0.00 | 0.15 | 0.000 | 0.006 |
| A2 | 4.30 | 4.55 | 0.169 | 0.179 |
| B | 1.10 | 1.50 | 0.043 | 0.059 |
| b | 0.70 | 0.90 | 0.028 | 0.035 |
| b1 | 1.20 | 1.50 | 0.047 | 0.059 |
| c | 0.30 | 0.60 | 0.012 | 0.024 |
| c1 | 1.17 | 1.37 | 0.046 | 0.054 |
| D | 9.90 | 10.20 | 0.390 | 0.402 |
| E | 8.50 | 8.90 | 0.335 | 0.350 |
| e | 2.44 | 2.64 | 0.096 | 0.104 |
| e1 | 4.88 | 5.28 | 0.192 | 0.208 |
| L | 15.00 | 15.30 | 0.591 | 0.602 |
| L1 | 5.20 | 5.40 | 0.205 | 0.213 |
| L2 | 2.40 | 2.60 | 0.094 | 0.102 |
| L3 | 1.60 | 1.80 | 0.063 | 0.071 |

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