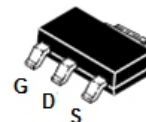


ACMS04P06Y-HF

P-Channel
RoHS Device
Halogen Free



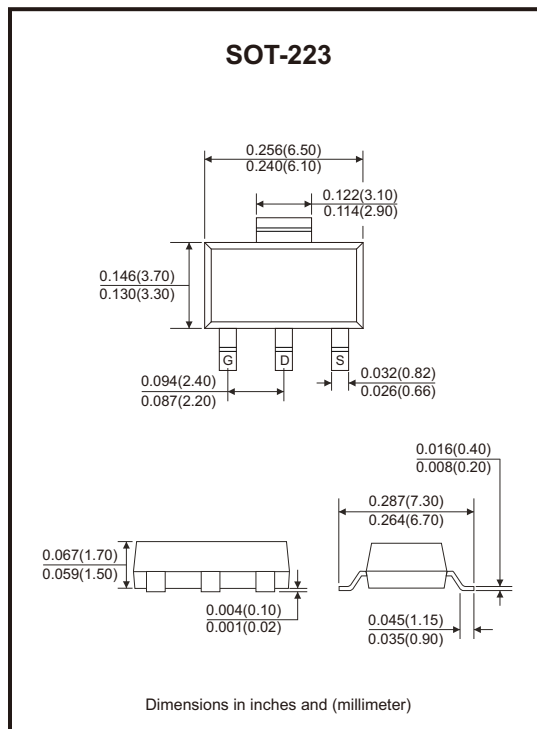
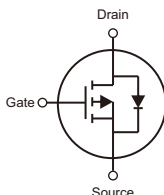
Features

- High density cell design for ultralow RDS(ON).
- Fully characterized avalanche voltage and current.
- Excellent package for good heat dissipation.
- AEC-Q101 Qualified.

Mechanical data

- Case: SOT-223, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin plated leads, solderability per MIL-STD-202, method 208.

Circuit Diagram



Maximum Ratings (at TA=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--------------------------------------|------------------|-------------|------|
| Drain-source voltage | V _{DSS} | -60 | V |
| Gate-source voltage | V _{GSS} | ±20 | V |
| Continuous drain current | I _D | -4 | A |
| Pulsed drain current (Note 2) | I _{DM} | -20 | A |
| Power dissipation | P _D | 3.1 | W |
| Junction to air (Note 1) | R _{θJA} | 40.3 | °C/W |
| Operating junction temperature range | T _J | -55 to +150 | °C |
| Storage temperature range | T _{STG} | -55 to +150 | °C |

Electrical Characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|--|--------------|---|-----|------|-----------|------------|
| Off Characteristics | | | | | | |
| Drain-source breakdown voltage | V_{DSS} | $V_{GS} = 0V, I_D = -250\mu A$ | -60 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -60V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 20V, V_{DS} = 0V$ | | | ± 0.1 | μA |
| On Characteristics (Note 3) | | | | | | |
| Static drain-source on-resistance | $R_{DS(on)}$ | $V_{GS} = -10V, I_D = -4A$ | | 70 | 90 | m Ω |
| | | $V_{GS} = -4.5V, I_D = -4A$ | | 100 | 135 | |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -1 | -1.6 | -3 | V |
| Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$ | | | | | | |
| Dynamic Characteristics (Note 4) | | | | | | |
| Forward Transconductance | g_{fs} | $V_{DS} = -5V, I_D = -4A$ | | 10 | | S |
| Input capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = -30V, f = 1MHz$ | | 930 | | pF |
| Output capacitance | C_{oss} | | | 55 | | |
| Reverse transfer capacitance | C_{rss} | | | 41 | | |
| Switching Characteristics (Note 4) | | | | | | |
| Total gate charge | Q_g | $V_{DD} = -30V, I_D = -4A, V_{GS} = -10V$ | | 20 | | nC |
| Gate to source charge | Q_{gs} | | | 3.1 | | |
| Gate to drain (miller) charge | Q_{gd} | | | 3.2 | | |
| Source-Drain Diode Characteristics | | | | | | |
| Diode forward voltage (Note 3) | V_{SD} | $I_S = -4A, V_{GS} = 0V$ | | | -1.2 | V |
| Continuous source current (body diode) | I_S | | | | -4 | A |

Notes: 1. Mounted on a 1in² pad of 2oz copper on FR-4 board.
 $R_{\theta JA}$ is the sum of the junction to case and case to ambient resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.

2. Repetitive rating: Pulse width limited by maximum junction temperature.
3. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.

Rating and Characteristic Curves (ACMS04P06Y-HF)

Fig.1 - On-Region Characteristics

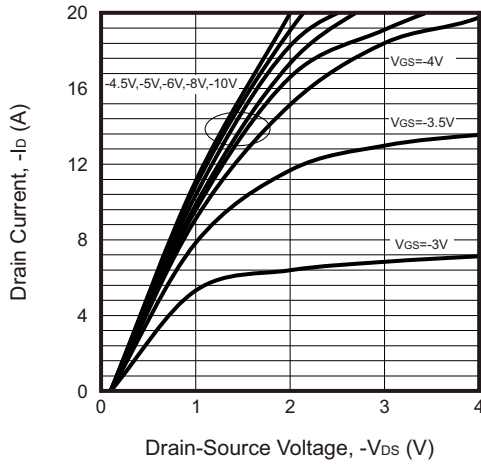


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

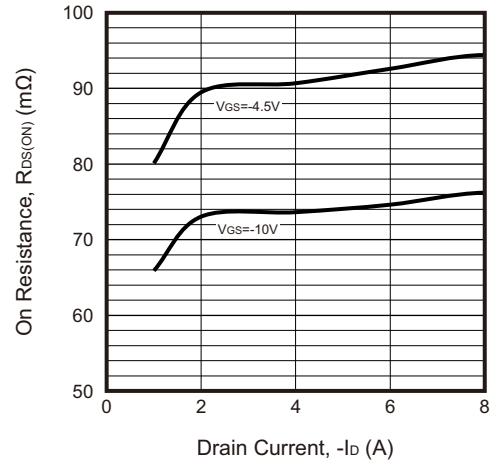


Fig.3 - On-Resistance vs. Gate-Source Voltage

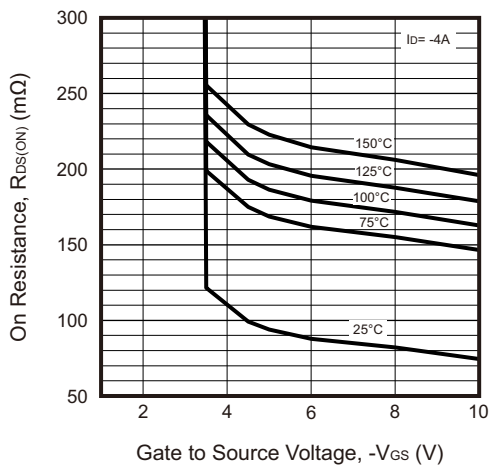


Fig.4 - Body-Diode Characteristics

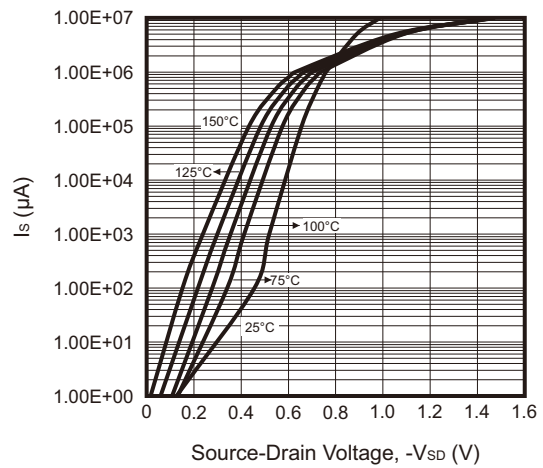


Fig.5 - On-Resistance vs. Junction Temperature

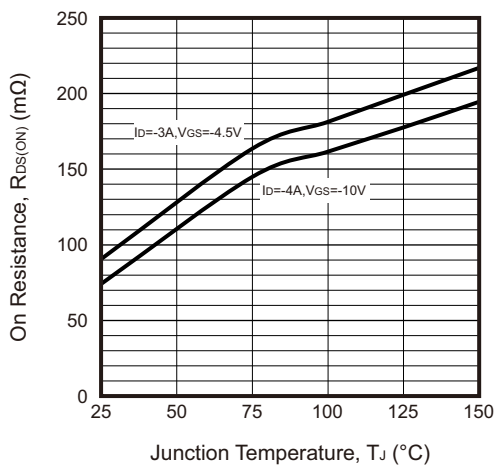
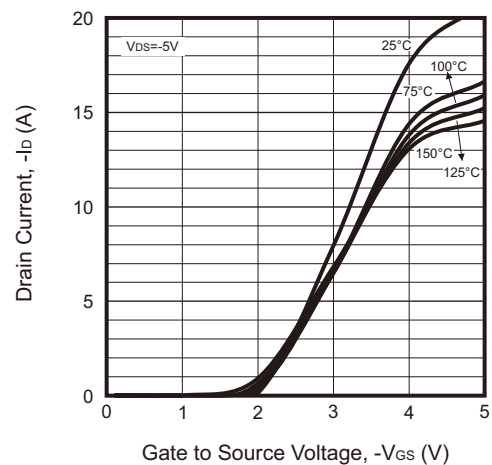


Fig.6 - Transfer Characteristics



Rating and Characteristic Curves (ACMS04P06Y-HF)

Fig.7 - Capacitance Characteristics

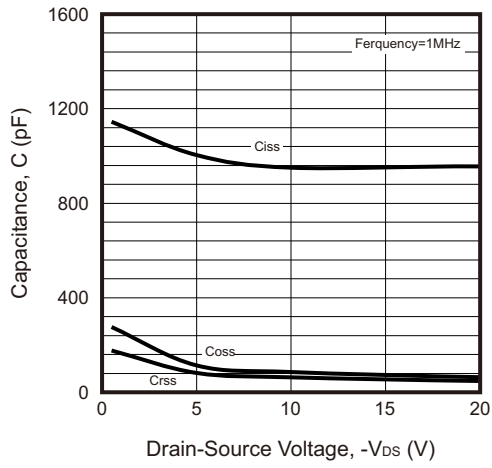
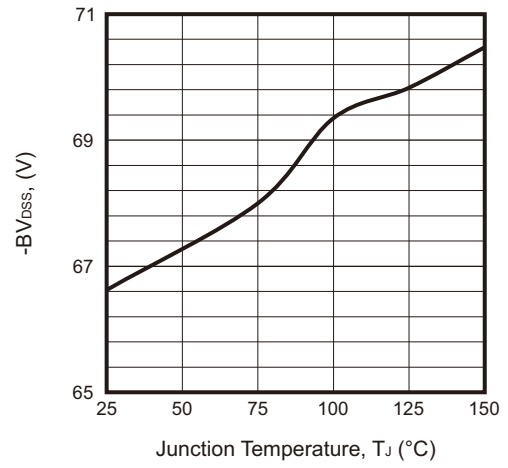
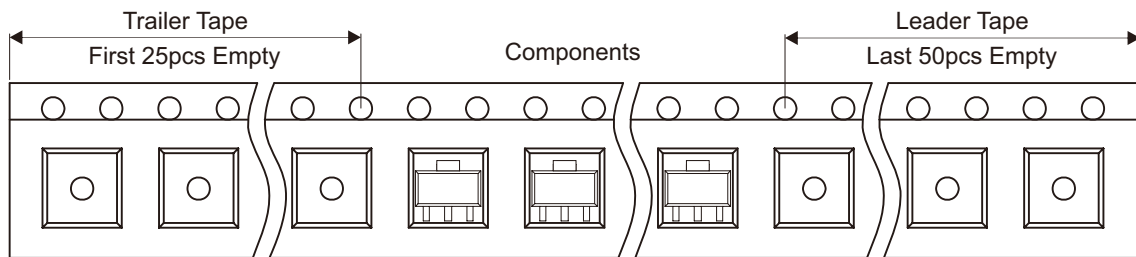
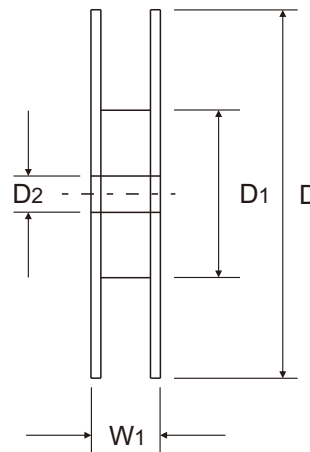
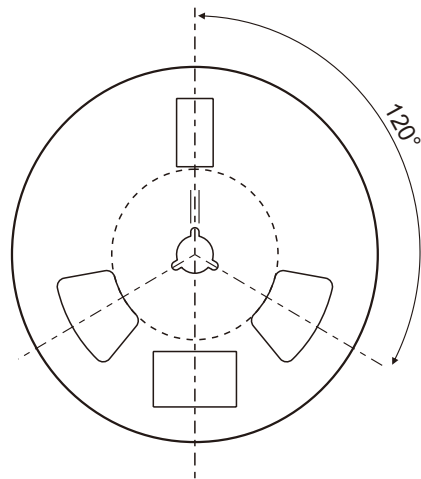
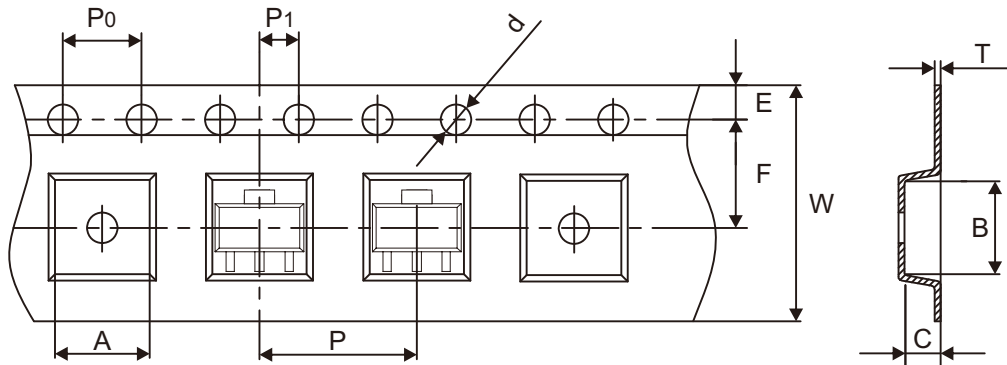


Fig.8 - Drain-Source vs. Junction Temperature



Reel Taping Specification

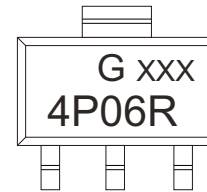


| SOT-223 | SYMBOL | A | B | C | d | D | D ₁ | D ₂ |
|---------|--------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|
| | (mm) | 7.05 ± 0.10 | 7.40 ± 0.10 | 1.90 ± 0.10 | 1.55 ± 0.05 | 330.00 ± 2.00 | 100.00 ± 2.00 | 13.00 ± 0.20 |
| | (inch) | 0.278 ± 0.004 | 0.291 ± 0.004 | 0.075 ± 0.004 | 0.061 ± 0.002 | 12.992 ± 0.079 | 3.937 ± 0.079 | 0.512 ± 0.008 |

| SOT-223 | SYMBOL | E | F | P | P ₀ | P ₁ | T | W | W ₁ |
|---------|--------|---------------|---------------|---------------|----------------|----------------|---------------|--------------------------|----------------|
| | (mm) | 1.75 ± 0.10 | 5.50 ± 0.10 | 8.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 0.25 ± 0.05 | 12.00 + 0.30 - 0.10 | 18.50 ± 2.00 |
| | (inch) | 0.069 ± 0.004 | 0.217 ± 0.004 | 0.315 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.010 ± 0.002 | 0.472 + 0.012 - 0.004 | 0.728 ± 0.079 |

Marking Code

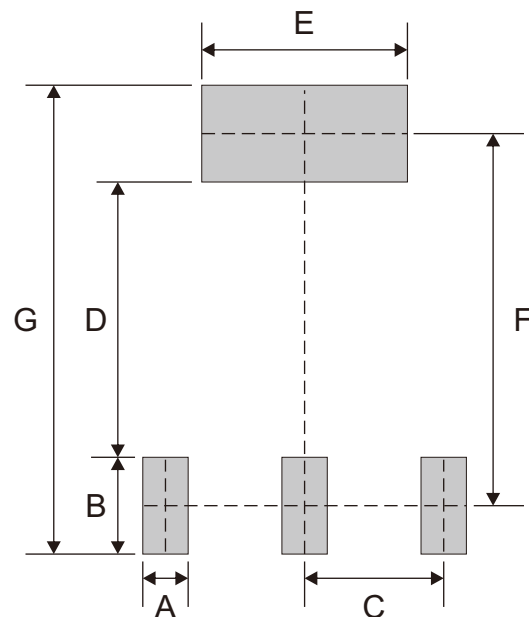
| Part Number | Marking Code |
|---------------|--------------|
| ACMS04P06Y-HF | 4P06R |



XXX = Control code

Suggested P.C.B. PAD Layout

| SIZE | SOT-223 | |
|------|---------|--------|
| | (mm) | (inch) |
| A | 0.75 | 0.030 |
| B | 1.60 | 0.063 |
| C | 2.30 | 0.091 |
| D | 4.55 | 0.179 |
| E | 3.40 | 0.134 |
| F | 6.15 | 0.242 |
| G | 7.75 | 0.305 |



Standard Packaging

| Case Type | REEL PACK | |
|-----------|--------------|------------------|
| | REEL (pcs) | Reel Size (inch) |
| SOT-223 | 4,000 | 13 |