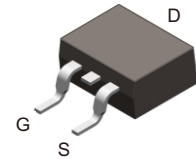


ACMS35N10D2-HF

**N-Channel
RoHS Device
Halogen Free**

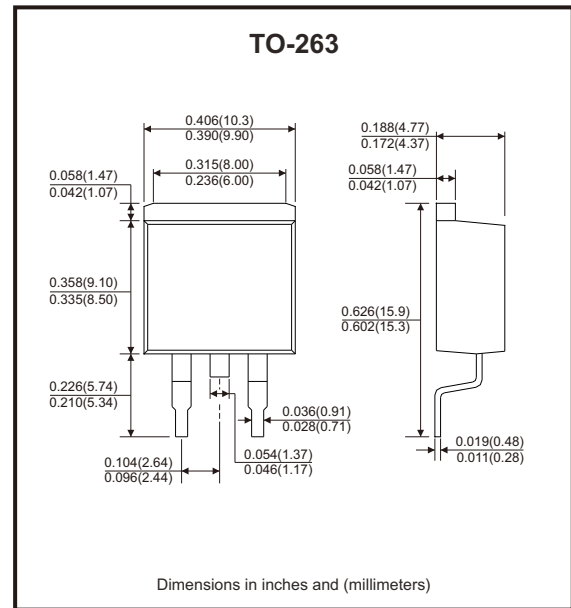


Features

- Low gate charge minimize switching loss.
- Fast recovery body diode.
- AEC-Q101 Qualified.

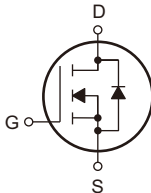
Mechanical data

- Case: TO-263, molded plastic.
- Molding compound: UL flammability classification rating 94V-0.
- Terminals: Matte tin-plated leads, solderability per MIL-STD-202, method 208.



Circuit Diagram

- G : Gate
- S : Source
- D : Drain



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

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Drain-source voltage | V _{DSS} | 100 | V |
| Gate-source voltage | V _{GSS} | ±20 | V |
| Continuous drain current @T _C =25°C | I _D | 35 | A |
| Continuous drain current @T _C =100°C | I _D | 25 | |
| Continuous drain current @T _A =25°C (Note 1) | I _D | 9.3 | |
| Continuous drain current @T _A =100°C (Note 1) | I _D | 6.6 | |
| Pulsed drain current (t _p = 10μs, T _C =25°C) | I _{DM} | 175 | A |
| Single pulse avalanche energy (Note 3) | E _{AS} | 51 | mJ |
| Power dissipation @T _C =25°C | P _D | 71 | W |
| Thermal resistance junction to case | R _{θJC} | 2.1 | °C/W |
| Thermal resistance junction to air (Note 1) | R _{θJA} | 30 | °C/W |
| Operating junction temperature range | T _J | -55 to +175 | °C |
| Storage temperature range | T _{STG} | -55 to +175 | °C |

Electrical Characteristics (at T_J=25°C unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---------------------|---|-----|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{DSS} | V _{GS} = 0V, I _D = 250μA | 100 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = 100V, V _{GS} = 0V | | | 1 | μA |
| | | V _{DS} = 80V, V _{GS} = 0V, T _J = 125°C | | | 100 | |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | | | ±100 | nA |
| On Characteristics | | | | | | |
| Drain-source on-resistance (Note 2) | R _{DS(on)} | V _{GS} = 10V, I _D = 14A | | | 25 | mΩ |
| | R _{DS(on)} | V _{GS} = 4.5V, I _D = 14A | | | 35 | mΩ |
| Gate threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.1 | 2 | 2.5 | V |
| Forward threshold voltage | gfs | V _{DS} = 5V, I _D = 15A | | 1.5 | | S |
| Gate resistance | R _G | V _{GS} = 0V, f = 1MHz | | 1.7 | | Ω |
| Dynamic Characteristics | | | | | | |
| Input capacitance | C _{iss} | V _{GS} = 0V, V _{DS} = 30V, f = 1MHz | | 941 | | pF |
| Output capacitance | C _{oss} | | | 419 | | |
| Reverse transfer capacitance | C _{rss} | | | 30 | | |
| Switching Characteristics | | | | | | |
| Turn-on delay time (Note 4) | t _{d(on)} | V _{DS} = 50V, V _{GS} = 10V R _G = 2.2Ω, I _D = 14A | | 4 | | ns |
| Turn-on rise time (Note 4) | t _r | | | 19 | | |
| Turn-off delay time (Note 4) | t _{d(off)} | | | 22 | | |
| Turn-off fall time (Note 4) | t _f | | | 7 | | |
| Total gate charge | Q _g | V _{DS} = 50V, V _{GS} = 10V, I _D = 14A | | 19.4 | | nC |
| Gate to source charge | Q _{gs} | | | 2.7 | | |
| Gate to drain (miller) charge | Q _{gd} | | | 5.1 | | |
| Source-Drain Diode Characteristics | | | | | | |
| Diode forward voltage (Note 2) | V _{SD} | I _{SD} = 14A, V _{GS} = 0V | | 0.9 | 1.2 | V |
| Reverse recovery time | t _{rr} | I _{SD} = 14A, V _{GS} = 0V, dI _{SD} /dt = 100A/μs | | 40 | | ns |
| Reverse recovery charge | Q _{rr} | | | | 48 | |

- Notes: 1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
 2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
 3. The EAS data shows Max. rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=0.5mH.
 4. Guaranteed by design, not subject to production.

Rating and Characteristic Curves (ACMS35N10D2-HF)

Fig.1 - Typical Output Characteristics

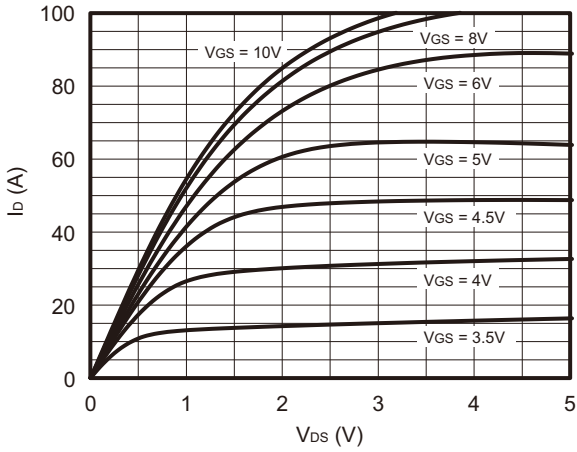


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

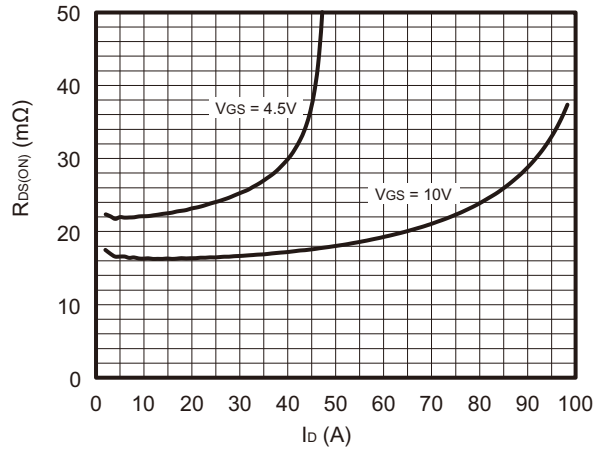


Fig.3 - On-Resistance vs. Vgs

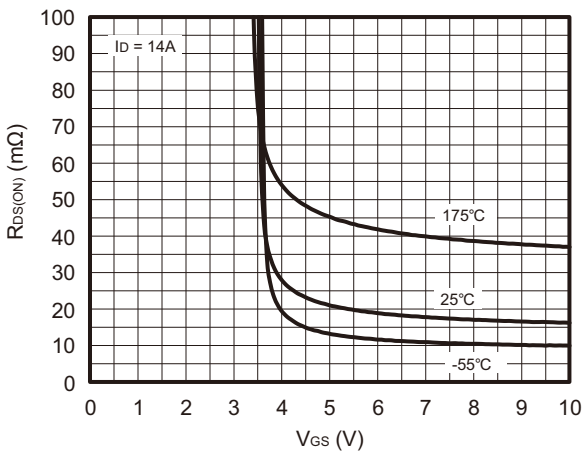


Fig.4 - Body-Diode Characteristics

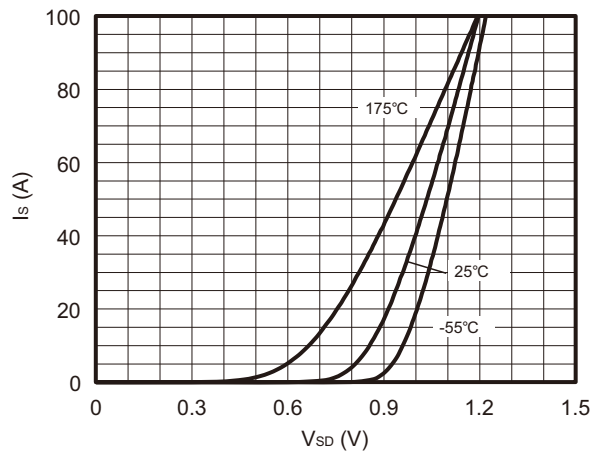


Fig.5 - Normalized On-Resistance vs. Tj

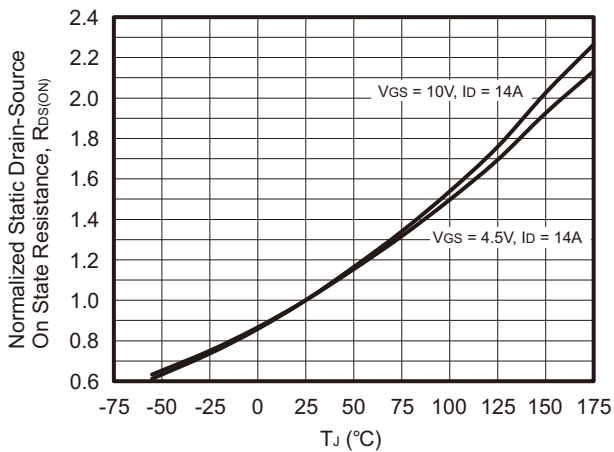
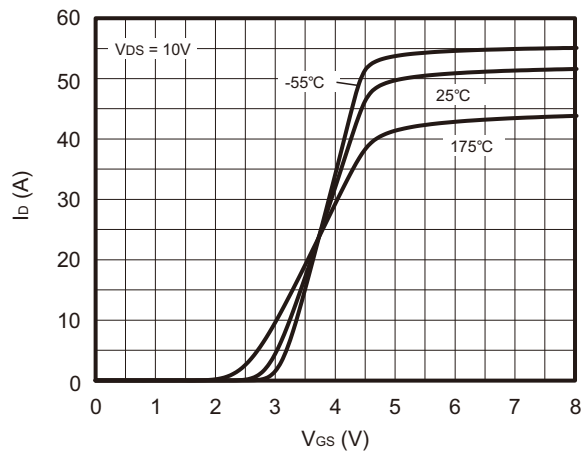


Fig.6 - Transfer Characteristics



Rating and Characteristic Curves (ACMS35N10D2-HF)

Fig.7 - Capacitance Characteristics

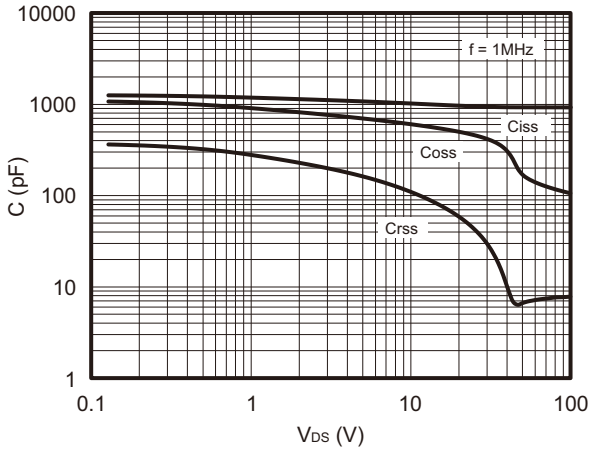


Fig.8 - Gate Charge Characteristics

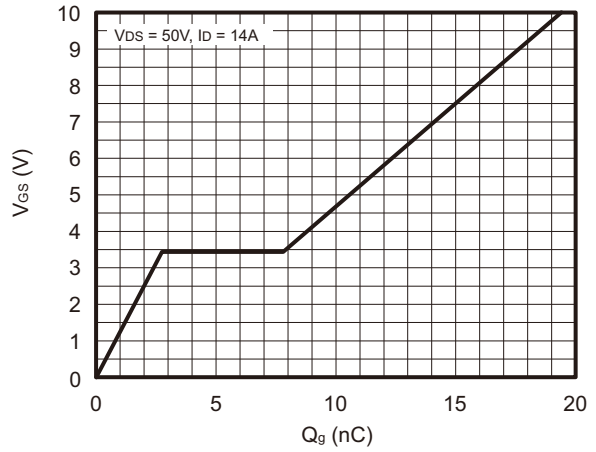


Fig.9 - Normalized Breakdown Voltage vs. T_J

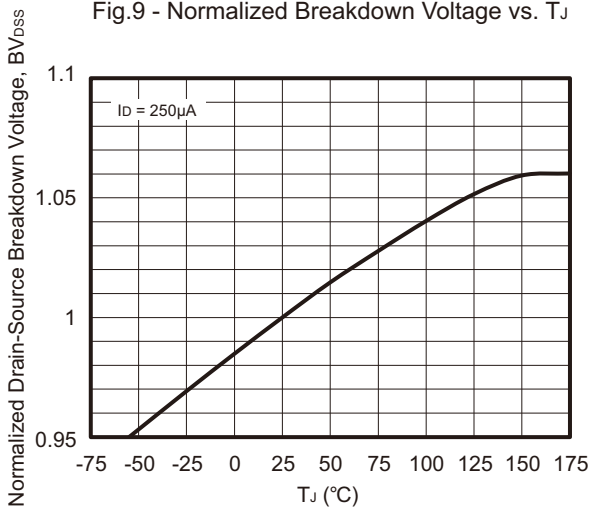


Fig.10 - Normalized $V_{GS(th)}$ vs. T_J

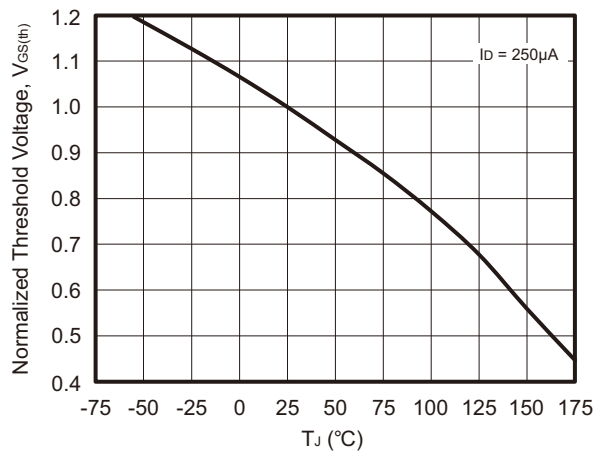
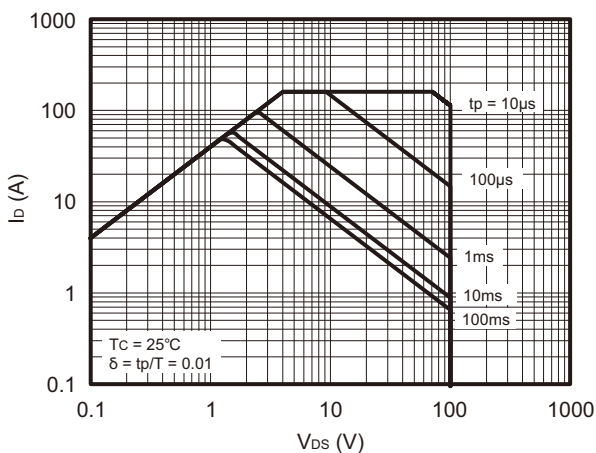
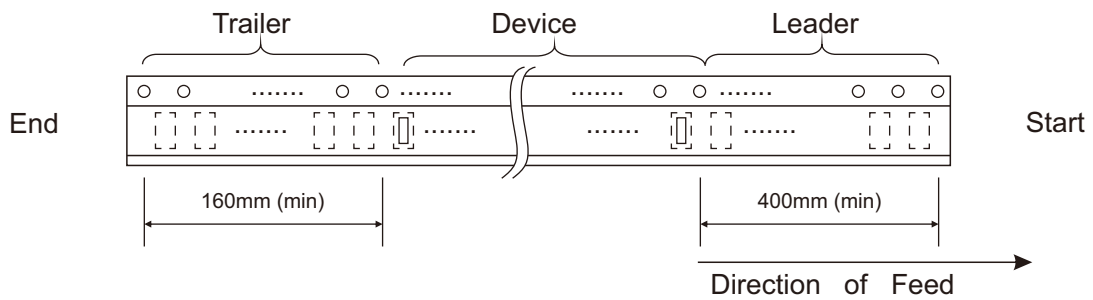
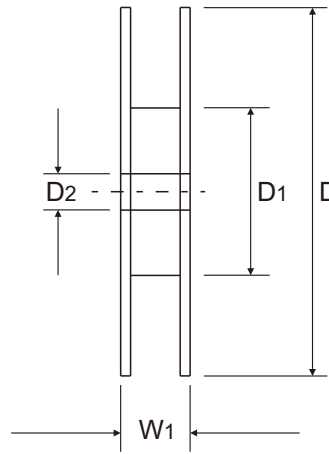
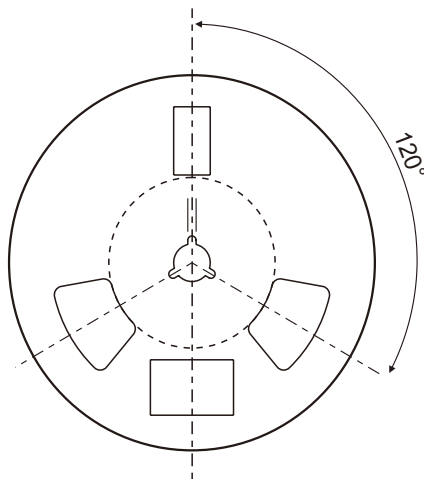
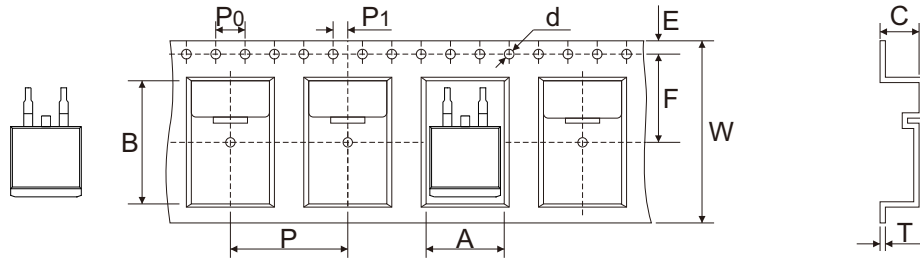


Fig.11 - Safe Operation Area



Reel Taping Specification

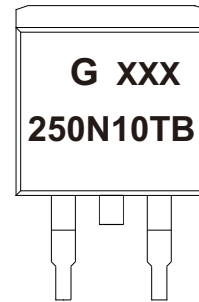


| TO-263 | SYMBOL | A | B | C | d | D | D1 | D2 |
|--------|--------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|
| | (mm) | 10.80 ± 0.10 | 16.13 ± 0.10 | 5.21 ± 0.10 | 1.55 ± 0.05 | 330 ± 0.20 | 100 ± 0.20 | 13.00 ± 0.20 |
| | (inch) | 0.425 ± 0.004 | 0.635 ± 0.004 | 0.205 ± 0.004 | 0.061 ± 0.002 | 12.992 ± 0.008 | 3.937 ± 0.008 | 0.512 ± 0.008 |

| TO-263 | SYMBOL | E | F | P | P0 | P1 | T | W | W1 |
|--------|--------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|---------------|
| | (mm) | 1.75 ± 0.10 | 11.50 ± 0.10 | 16.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 0.35 ± 0.03 | 24.00 + 0.30 - 0.10 | 24.00 ± 0.20 |
| | (inch) | 0.069 ± 0.004 | 0.453 ± 0.004 | 0.630 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.014 ± 0.001 | 0.945 + 0.012 - 0.004 | 0.945 ± 0.008 |

Marking Code

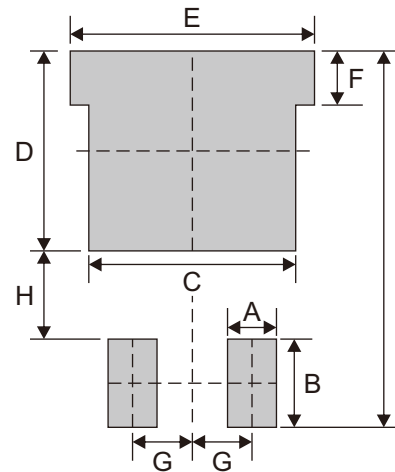
| | |
|----------------|--------------|
| Part Number | Marking Code |
| ACMS35N10D2-HF | 250N10TB |



XXX = Control code

Suggested P.C.B. PAD Layout

| SIZE | TO-263 | |
|------|--------|--------|
| | (mm) | (inch) |
| A | 2.08 | 0.110 |
| B | 3.50 | 0.138 |
| C | 8.80 | 0.346 |
| D | 9.00 | 0.354 |
| E | 10.4 | 0.409 |
| F | 2.30 | 0.091 |
| G | 2.54 | 0.100 |
| H | 4.00 | 0.157 |
| I | 16.5 | 0.650 |



Standard Packaging

| Case Type | REEL PACK | |
|-----------|------------|------------------|
| | REEL (pcs) | Reel Size (inch) |
| TO-263 | 800 | 13 |