

AP85T03GH/J

RoHS-compliant Product

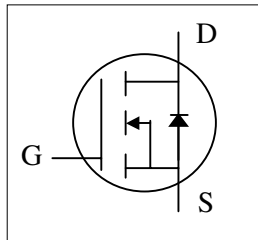


**Advanced Power
Electronics Corp.**

N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

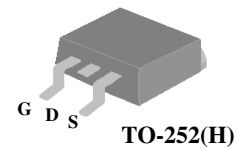
- ▼ Low Gate Charge
- ▼ Simple Drive Requirement
- ▼ Fast Switching



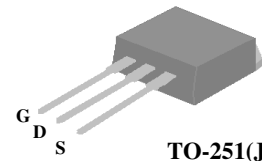
| | |
|--------------|-------------|
| BV_{DSS} | 30V |
| $R_{DS(ON)}$ | 6m Ω |
| I_D | 75A |

Description

The TO-252 package is widely preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters. The through-hole version (AP85T03GJ) is available for low-profile applications.



TO-252(H)



TO-251(J)

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|-----------------------------|--|------------|---------------------|
| V_{DS} | Drain-Source Voltage | 30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D@T_C=25^\circ\text{C}$ | Continuous Drain Current, V_{GS} @ 10V | 75 | A |
| $I_D@T_C=100^\circ\text{C}$ | Continuous Drain Current, V_{GS} @ 10V | 55 | A |
| I_{DM} | Pulsed Drain Current ¹ | 350 | A |
| $P_D@T_C=25^\circ\text{C}$ | Total Power Dissipation | 107 | W |
| | Linear Derating Factor | 0.7 | W/ $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature Range | -55 to 175 | $^\circ\text{C}$ |

Thermal Data

| Symbol | Parameter | Value | Units |
|--------|--|-------|---------------------------|
| Rthj-c | Maximum Thermal Resistance, Junction-case | 1.4 | $^\circ\text{C}/\text{W}$ |
| Rthj-a | Maximum Thermal Resistance, Junction-ambient | 110 | $^\circ\text{C}/\text{W}$ |



AP85T03GH/J

Electrical Characteristics@T_j=25°C(unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-------------------------------------|--|--|------|------|------|-------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 30 | - | - | V |
| ΔBV _{DSS} /ΔT _j | Breakdown Voltage Temperature Coefficient | Reference to 25°C, I _D =1mA | - | 0.02 | - | V/°C |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =10V, I _D =45A | - | - | 6 | mΩ |
| | | V _{GS} =4.5V, I _D =30A | - | - | 10 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250uA | 1 | - | 3 | V |
| g _{fs} | Forward Transconductance | V _{DS} =10V, I _D =30A | - | 55 | - | S |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =30V, V _{GS} =0V | - | - | 1 | uA |
| | Drain-Source Leakage Current (T _j =175°C) | V _{DS} =24V, V _{GS} =0V | - | - | 500 | uA |
| I _{GSS} | Gate-Source Leakage | V _{GS} =±20V | - | - | ±100 | nA |
| Q _g | Total Gate Charge ² | I _D =30A | - | 33 | 52 | nC |
| Q _{gs} | Gate-Source Charge | V _{DS} =24V | - | 8 | | nC |
| Q _{gd} | Gate-Drain ("Miller") Charge | V _{GS} =4.5V | - | 24 | | nC |
| Q _{oss} | Output Charge | V _{DD} =15V, V _{GS} =0V | - | 24.5 | 39 | nC |
| t _{d(on)} | Turn-on Delay Time ² | V _{DS} =15V | - | 11 | - | ns |
| t _r | Rise Time | I _D =30A | - | 77 | - | ns |
| t _{d(off)} | Turn-off Delay Time | R _G =3.3Ω, V _{GS} =10V | - | 35 | - | ns |
| t _f | Fall Time | R _D =0.5Ω | - | 67 | - | ns |
| C _{iss} | Input Capacitance | V _{GS} =0V | - | 2700 | 4200 | pF |
| C _{oss} | Output Capacitance | V _{DS} =25V | - | 550 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | f=1.0MHz | - | 380 | - | pF |

Source-Drain Diode

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-----------------|------------------------------------|---|------|------|------|-------|
| V _{SD} | Forward On Voltage ² | I _S =45A, V _{GS} =0V | - | - | 1.3 | V |
| t _{rr} | Reverse Recovery Time ² | I _S =30A, V _{GS} =0V, | - | 28 | - | ns |
| Q _{rr} | Reverse Recovery Charge | dI/dt=100A/μs | - | 10 | - | nC |

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width ≤300us , duty cycle ≤2%.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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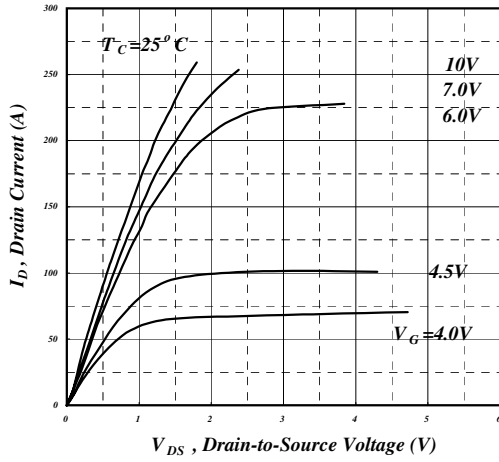


Fig 1. Typical Output Characteristics

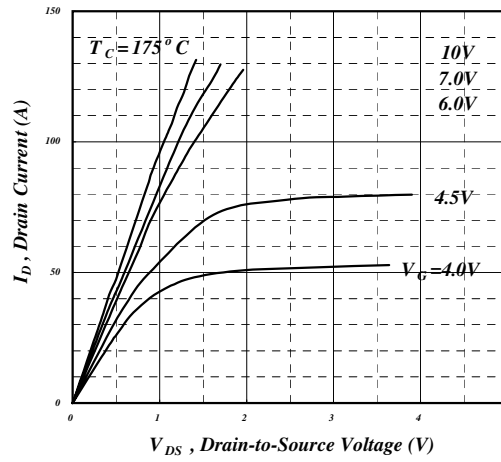


Fig 2. Typical Output Characteristics

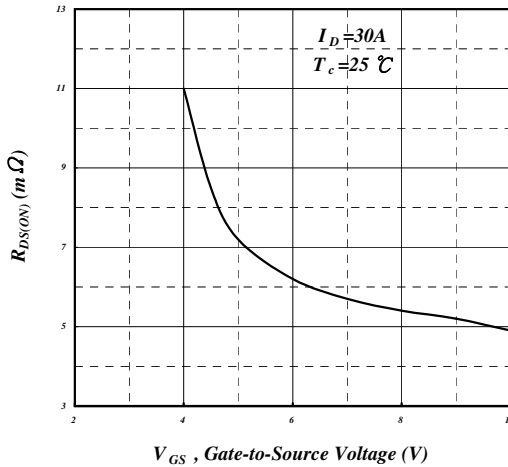


Fig 3. On-Resistance v.s. Gate Voltage

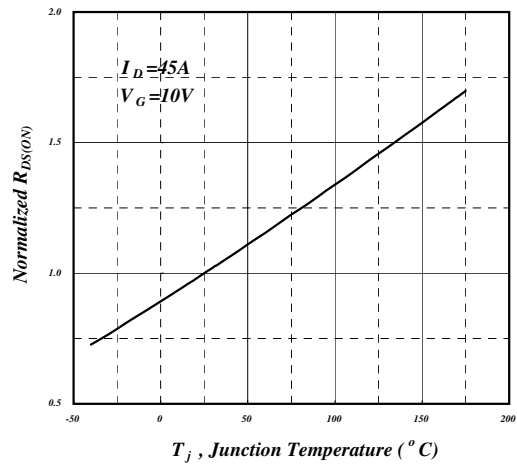


Fig 4. Normalized On-Resistance v.s. Junction Temperature

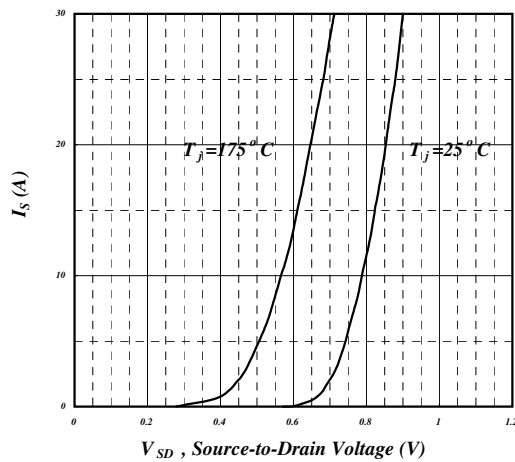


Fig 5. Forward Characteristic of Reverse Diode

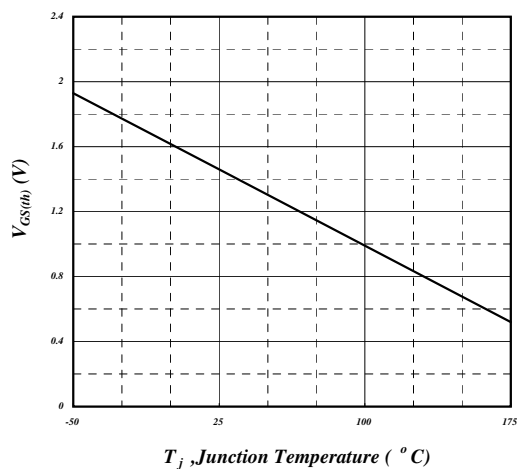
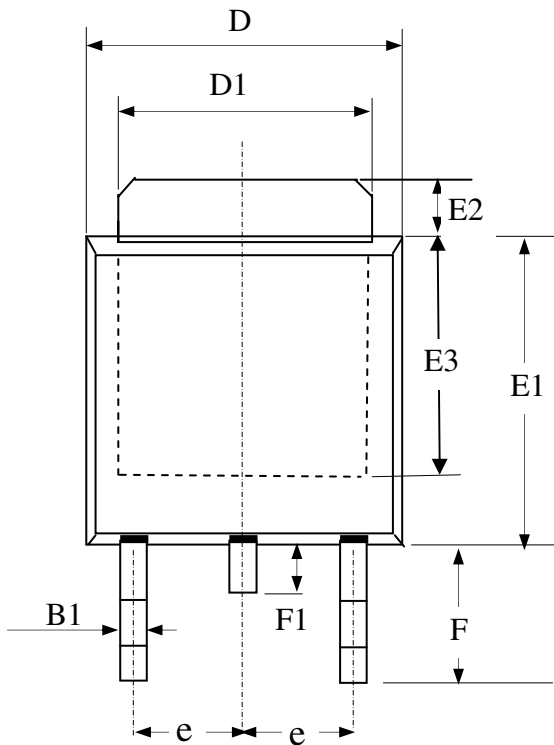


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

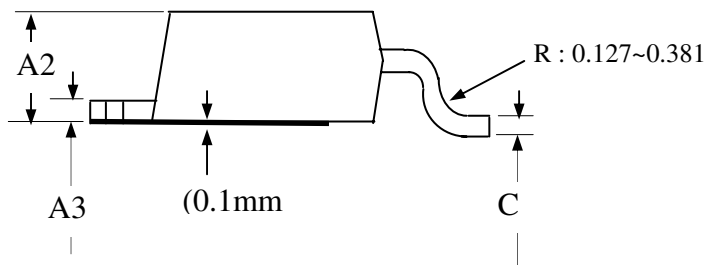


Package Outline : TO-252



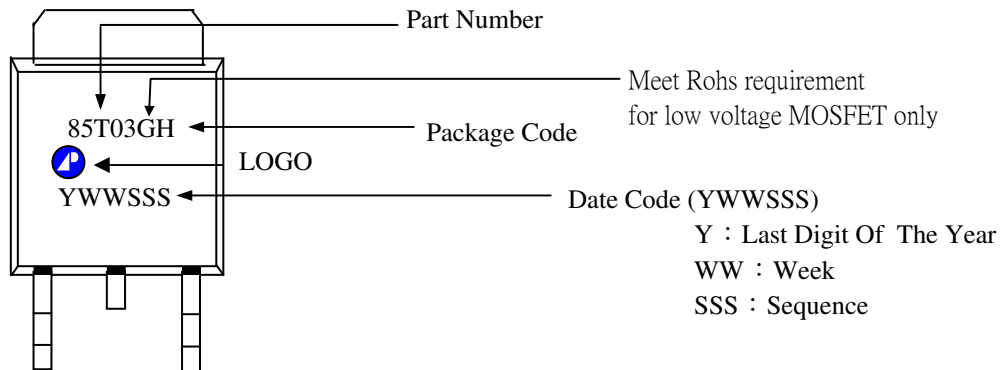
| SYMBOLS | Millimeters | | |
|---------|-------------|------|------|
| | MIN | NOM | MAX |
| A2 | 1.80 | 2.30 | 2.80 |
| A3 | 0.40 | 0.50 | 0.60 |
| B1 | 0.40 | 0.70 | 1.00 |
| D | 6.00 | 6.50 | 7.00 |
| D1 | 4.80 | 5.35 | 5.90 |
| E3 | 3.50 | 4.00 | 4.50 |
| F | 2.20 | 2.63 | 3.05 |
| F1 | 0.50 | 0.85 | 1.20 |
| E1 | 5.10 | 5.70 | 6.30 |
| E2 | 0.50 | 1.10 | 1.80 |
| e | -- | 2.30 | -- |
| C | 0.35 | 0.50 | 0.65 |

- 1.All Dimensions Are in Millimeters.
- 2.Dimension Does Not Include Mold Protrusions.



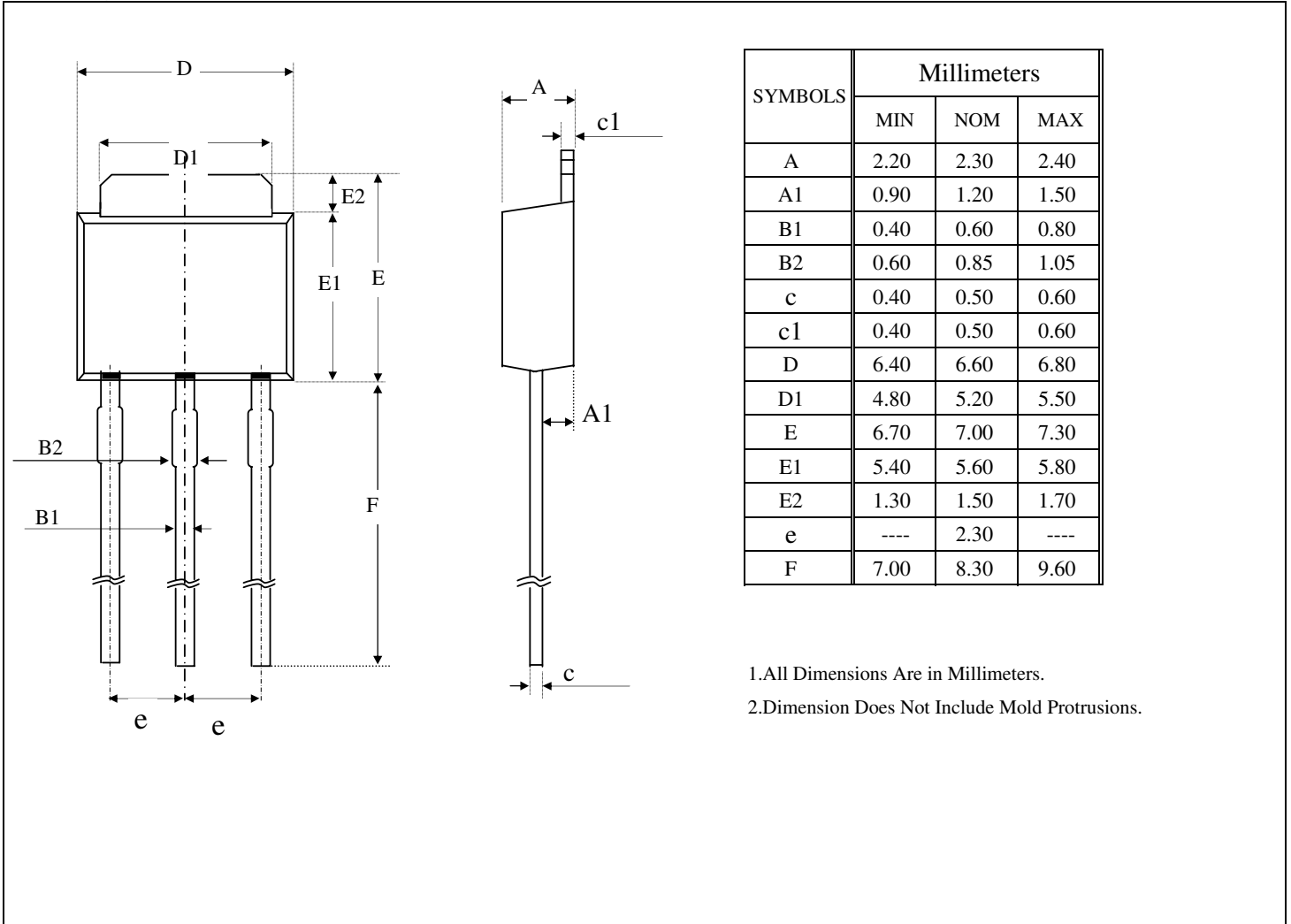
Part Marking Information & Packing : TO-252

Laser Marking





Package Outline : TO-251



Part Marking Information & Packing : TO-251

