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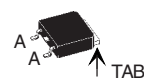
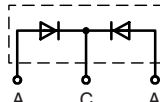
# Gallium Arsenide Schottky Rectifier

Second generation

$$V_{RRM} = 300 \text{ V}$$

$$I_{DC} = 29 \text{ A}$$

$$C_{Junction} = 10.7 \text{ pF}$$

| Type         | Marking on product | Circuit                                                                                           | Package                                                                                                                   |
|--------------|--------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| DGS 17-03CS  | 17A300AS           | Single          | TO-252 AA                              |
| DGSK 36-03CS | DGSK 36-03CS       | Common cathode  | TO-263 AB <br>A = Anode, TAB = Cathode |

| Diode         |                                                                                                                 |                       |      |      |     |
|---------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|------|------|-----|
| Symbol        | Conditions                                                                                                      | Maximum Ratings       |      |      |     |
| $V_{RRM/RSM}$ |                                                                                                                 | 300                   |      | V    |     |
| $I_{FAV}$     | $T_C = 25^\circ\text{C}; \text{DC}$                                                                             | 29                    |      | A    |     |
| $I_{FAV}$     | $T_C = 90^\circ\text{C}; \text{DC}$                                                                             | 17.5                  |      | A    |     |
| $I_{FSM}$     | $T_{VJ} = 45^\circ\text{C}; t_p = 10 \text{ ms (50 Hz), sine}$                                                  | 80                    |      | A    |     |
| $P_{tot}$     | $T_C = 25^\circ\text{C}$                                                                                        | 34                    |      | W    |     |
| Symbol        | Conditions                                                                                                      | Characteristic Values |      |      |     |
|               |                                                                                                                 | min.                  | typ. | max. |     |
| $V_F$         | $I_F = 7.5 \text{ A}; T_{VJ} = 25^\circ\text{C}$                                                                | 1.5                   |      | 1.9  | V   |
|               | $I_F = 7.5 \text{ A}; T_{VJ} = 125^\circ\text{C}$                                                               | 1.1                   |      |      | V   |
| $I_R$         | $V_R = V_{RRM}; T_{VJ} = 25^\circ\text{C}$                                                                      |                       |      | 0.25 | mA  |
|               | $V_R = V_{RRM}; T_{VJ} = 125^\circ\text{C}$                                                                     |                       | 0.25 |      | mA  |
| $I_{RM}$      | $I_F = 5 \text{ A}; -di_F/dt = 150 \text{ A}/\mu\text{s};$<br>$V_R = 150 \text{ V}; T_{VJ} = 125^\circ\text{C}$ | 1.4                   |      |      | A   |
| $t_{rr}$      |                                                                                                                 | 23                    |      |      | ns  |
| $C_J$         | $V_R = 150 \text{ V}; T_{VJ} = 125^\circ\text{C}$                                                               | 10.7                  |      |      | pF  |
| $R_{thJC}$    |                                                                                                                 |                       |      | 4.4  | K/W |

Data according to IEC 60747 and per diode unless otherwise specified

| Component |            |                       |      |      |                  |
|-----------|------------|-----------------------|------|------|------------------|
| Symbol    | Conditions | Maximum Ratings       |      |      |                  |
| $T_{VJ}$  |            | -55...+175            |      |      | $^\circ\text{C}$ |
| $T_{stg}$ |            | -55...+150            |      |      | $^\circ\text{C}$ |
| Symbol    | Conditions | Characteristic Values |      |      |                  |
|           |            | min.                  | typ. | max. |                  |
| Weight    | TO-252     | 0.3                   |      |      | g                |
|           | TO-263     | 2                     |      |      | g                |

## Features

*GaAs Schottky Diode with Enhanced Barrier Height:*

- lowest operating forward voltage drop due to additional injection of minority carriers
- high switching speed
  - low junction capacity of GaAs diode independent from temperature
  - short and low reverse recovery current peak due to short lifetime of minority carriers
  - soft turn off

*Surface Mount Packages:*

- Incorporating Single and Dual Diode Topologies
- Industry Standard Package Outlines
- Epoxy meets UL 94V-0

## Applications

*Switched Mode Power Supplies:*

- AC-DC converters
  - DC-DC converters
- with:*
- high switching frequency
  - high efficiency
  - low EMI
- for use e. g. in:*
- telecom
  - computer
  - automotive equipment

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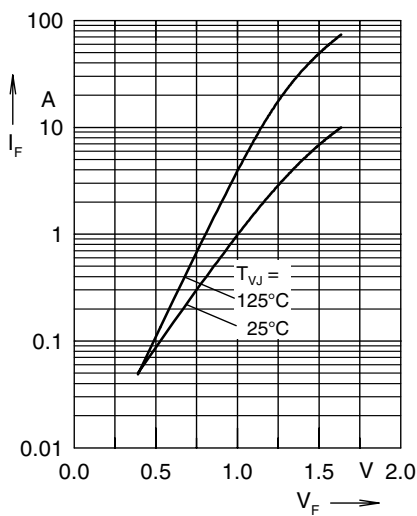


Fig. 1 typ. forward characteristics

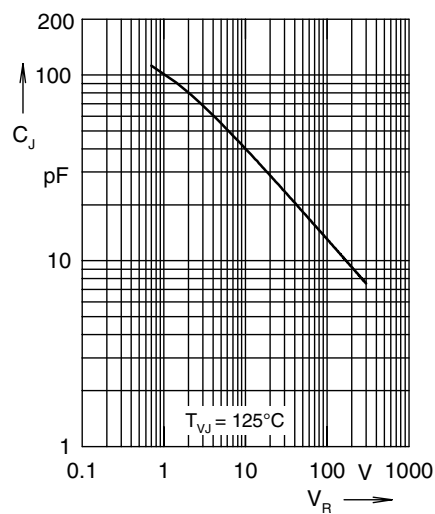


Fig. 2 typ. junction capacity versus blocking voltage

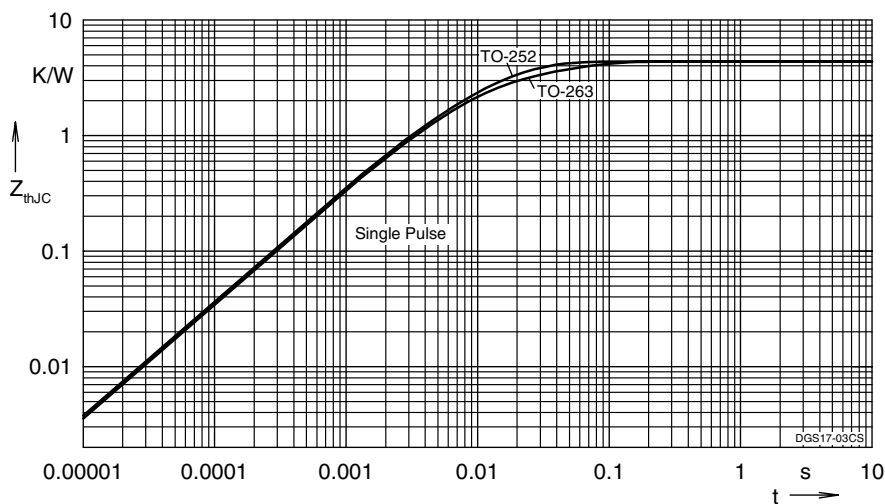
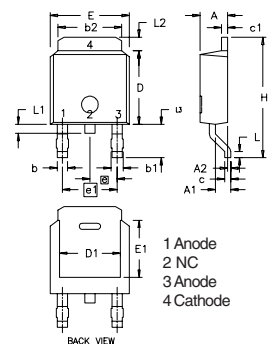


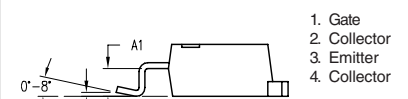
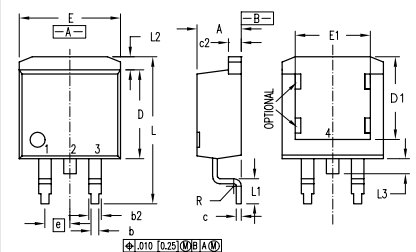
Fig. 3 typ. thermal impedance junction to case

## Outlines TO-252 AA



| Dim. | Millimeter | Inches      |
|------|------------|-------------|
|      | Min. Max.  | Min. Max.   |
| A    | 2.19 2.38  | 0.086 0.094 |
| A1   | 0.89 1.14  | 0.035 0.045 |
| A2   | 0 0.13     | 0 0.005     |
| b    | 0.64 0.89  | 0.025 0.035 |
| b1   | 0.76 1.14  | 0.030 0.045 |
| b2   | 5.21 5.46  | 0.205 0.215 |
| c    | 0.46 0.58  | 0.018 0.023 |
| c1   | 0.46 0.58  | 0.018 0.023 |
| D    | 5.97 6.22  | 0.235 0.245 |
| D1   | 4.32 5.21  | 0.170 0.205 |
| E    | 6.35 6.73  | 0.250 0.265 |
| E1   | 4.32 5.21  | 0.170 0.205 |
| e    | 2.28 BSC   | 0.090 BSC   |
| e1   | 4.57 BSC   | 0.180 BSC   |
| H    | 9.40 10.42 | 0.370 0.410 |
| L    | 0.51 1.02  | 0.020 0.040 |
| L1   | 0.64 1.02  | 0.025 0.040 |
| L2   | 0.89 1.27  | 0.035 0.050 |
| L3   | 2.54 2.92  | 0.100 0.115 |

## Outlines TO-263 AB



| Dim. | Millimeter  | Inches    |
|------|-------------|-----------|
|      | Min. Max.   | Min. Max. |
| A    | 4.06 4.83   | .160 .190 |
| A1   | 2.03 2.79   | .080 .110 |
| b    | 0.51 0.99   | .020 .039 |
| b2   | 1.14 1.40   | .045 .055 |
| c    | 0.46 0.74   | .018 .029 |
| c2   | 1.14 1.40   | .045 .055 |
| D    | 8.64 9.65   | .340 .380 |
| D1   | 8.00 8.89   | .315 .350 |
| E    | 9.65 10.29  | .380 .405 |
| E1   | 6.22 8.13   | .245 .320 |
| e    | 2.54 BSC    | .100 BSC  |
| L    | 14.61 15.88 | .575 .625 |
| L1   | 2.29 2.79   | .090 .110 |
| L2   | 1.02 1.40   | .040 .055 |
| L3   | 1.27 1.78   | .050 .070 |
| L4   | 0 0.20      | 0 .008    |
| R    | 0.46 0.74   | .018 .029 |

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