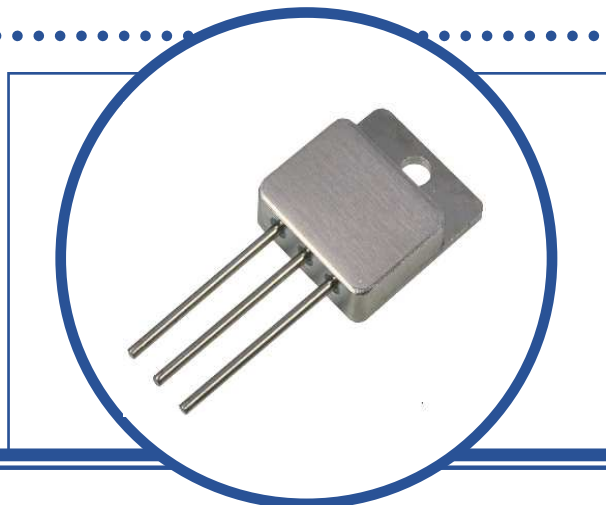


NORMALLY-OFF SILICON CARBIDE POWER JFET

SML100M12MSF

- RDS(on)max of 0.150Ω
- High Temperature Operation $T_j = 200^\circ\text{C}$
- Low Gate Charge and Intrinsic Capacitance
- Positive Temperature Coefficient and Temperature Independent Switching Behaviour



APPLICATIONS

- SMPS
- Motor Drive
- UPS
- Induction Heating

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

| | | |
|-----------------|-------------------------------|----------------|
| V_{DS} | Drain-Source Blocking Voltage | 1200 V |
| $R_{DS(on)max}$ | Drain-Source On-resistance | 0.15 Ω |
| I_D | Available Drain Current | 24 A |
| I_{DM} | Pulsed Drain Current | 34 A |
| P_D | Power Dissipation | 70 W |
| V_{GS} | DC Gate-Source Voltage | -15 to +3 V |
| T_J | Operating Temperature | -55 to +200 °C |
| T_{Jstg} | Storage Temperature | -55 to +225 °C |

THERMAL PROPERTIES

| Symbols | Parameters | Min. | Typ. | Max. | Units |
|-----------------|--|------|------|------|-------|
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case, $T_C = 25^\circ\text{C}$ | | 1.8 | 2.5 | °C/W |

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

NORMALLY-OFF SILICON CARBIDE POWER JFET SML100M12MSF

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

| Symbols | Parameters | Test Conditions | Min. | Typ. | Max. | Units |
|------------------------------------|---------------------------------|---|------|------|------|-------|
| B _V DSS | Drain-Source Blocking Voltage | V _{GS} = 0V, I _D = 1.0mA | 1200 | - | - | V |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} = 1200V, V _{GS} = 0V | - | - | 1.0 | mA |
| | | V _{DS} = 1200V, V _{GS} = -5V | - | 0.11 | - | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} = 1.0V, I _D = 34mA | 0.70 | 1.00 | 1.25 | V |
| I _{GSS} | Gate-Source Leakage Current | V _{GS} = 2.4V | - | 0.25 | 1.5 | mA |
| | | V _{GS} = -15V | - | 0.1 | 1.5 | |
| R _{DS(on)} ⁽¹⁾ | Drain-Source On-resistance | I _D = 13A, V _{GS} = 3V, T _J = 25°C | - | 0.09 | 0.15 | Ω |
| | | I _D = 13A, V _{GS} = 3V, T _J = 175°C | - | 0.29 | - | |
| Q _g | Total Gate Charge | V _{DS} = 600V, I _D = 13A, V _{GS} = 0V to +3V | - | 28 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 9.3 | - | |
| t _{on} | Turn-on Delay (Resistive Load) | V _{DS} = 600V, I _D = 13A, C _{BP} = 33nF, R _{CL} = 110Ω | - | 20 | - | ns |
| t _{off} | Turn-off Delay (Resistive Load) | | - | 30 | - | |
| t _r | Rise time (Resistive Load) | | - | 70 | - | |
| C _{iss} | Input Capacitance | V _{DS} = 100V | - | 642 | - | pF |
| C _{oss} | Output Capacitance | | - | 69 | - | |
| C _{rss} | Reverse Transfer Capacitance | | - | 68 | - | |

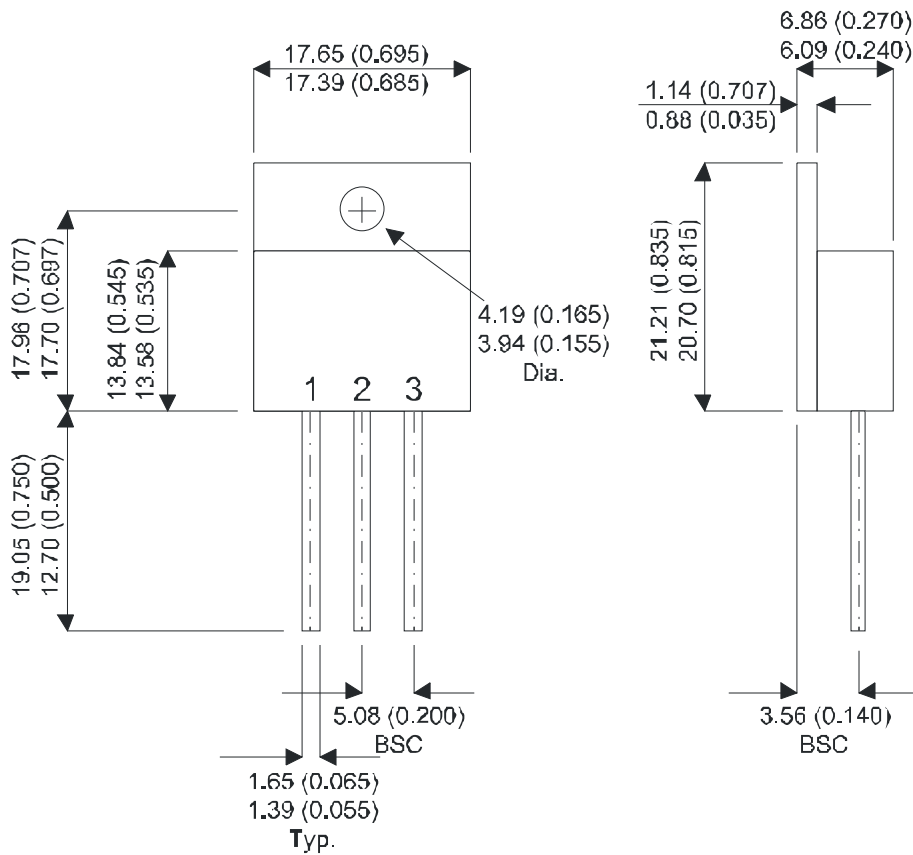
Notes

(1) Pulse Width ≤ 300us, δ ≤ 2%

NORMALLY-OFF SILICON CARBIDE POWER JFET SML100M12MSF

MECHANICAL DATA

Dimensions in mm (inches)



TO258 (TO-258AA)

Pin 1 – Gate

Pin 2 - Source

Pin 3 – Drain