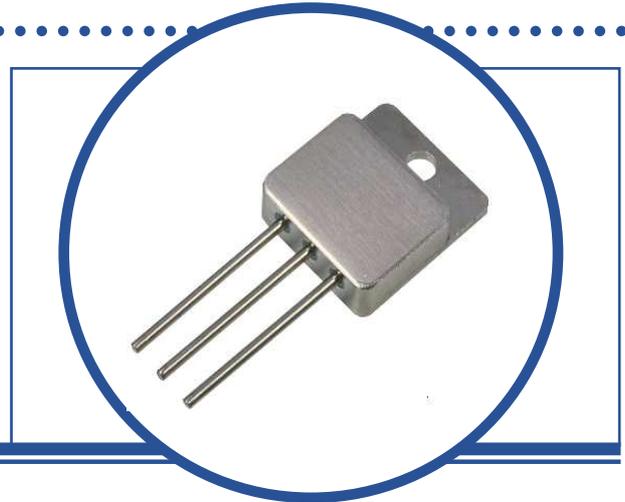


# NORMALLY-OFF SILICON CARBIDE POWER JFET

## 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<sub>C</sub> = 25°C unless otherwise stated)

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

### Notes

(1) Pulse Width ≤ 300us, δ ≤ 2%



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