SCQH1000N170

1700V 1Ω N-Channel SiC Power MOSFET

Features

- Typical on-Resistance: $R_{DS\ (on)}$=1Ω(typ.)
- High Blocking Voltage
- 100% Avalanche Test
- Good Stability and Uniformity with High E_{AS}

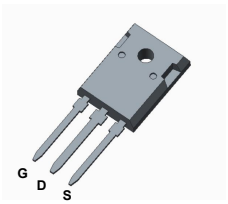
Description

The SCQH1000N170 is a high blocking voltage N-Channel SiC power MOSFET. This device provide excellent performance for high voltage power supplies or pulse circuits.

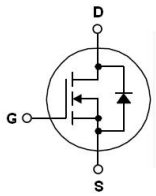
Applications

- Solar Inverters
- High Voltage DC/DC Converters
- Motor Drivers
- Switch Mode Power Supplies

Package Type & Internal Circuit



TO-247



Absolute Maximum Ratings @T_C=25 ℃ unless otherwise noted

Symbol	Parameter		Ratings	Unit
V_{DSS}	Drain to Source Voltage		1700	V
V_{GSS}	Gate to Source Voltage		-10/+25	V
V_{GSop}	Recommended operation Values of Gate −Source Voltage		-5/+20	V
I_D	Drain Current	T_C=25℃	5.0	A
		T_C=100℃	3.0	A
I_{DM}	Pulsed Drain Current (Note1)		20.0	A
P_D	Maximum Power Dissipation	T_C=25℃	62	W
	Derate above 25℃		0.5	W/℃
T_J	Operating Junction Temperature Range		-55~+150	℃
T_{STG}	Storage Temperature Range		-55~+150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
$R_{th\ (J-C)}$	Thermal Resistance, Junction to case	2.02	℃/W
$R_{th\ (J-A)}$	Thermal Resistance, Junction to Ambient	40	℃/W

Electrical Characteristics @T_C=25 ℃ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=100uA	1700	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=1mA	2.0	2.6	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS}=20V, I_D=2A	-	1	1.3	Ω
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=V_{DSS}, V_{GS}=0V	-	-	100	uA
I_{GSS}	Gate to Source Leakage Current	V_{GS}=V_{GSS}, V_{DS}=0V	-	-	±250	nA

D-S Diode Characteristics and Maximum Rating @T_C=25 ℃ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=-5V, I_S=1A	-	4.2	-	V
t_{rr}	Reverse Recovery Time	V_{GS}=0V, I_S=2A, di/dt=-290A/us	-	25	-	ns
Q_{rr}	Reverse Recovery Charge		-	15	-	nC

Switching Characteristics @T_C=25 ℃ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-on Delay Time	I_D=30A , V_{DD}=1200V, R_G=2.5Ω V_{GS} = −5/20V, (Note 3)	-	5	-	ns
t_r	Turn-on Rise Time		-	9.2	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	13.8	-	ns
t_f	Turn-off Fall Time		-	22.8	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=1000V, f=1.0MHz	-	194	-	pF
C_{oss}	Output Capacitance		-	13	-	pF
C_{rss}	Reverse Transfer Capacitance		-	1.8	-	pF
Q_g	Total Gate Charge	I_D=2A, V_{DD}=1200V V_{GS}=-5V/20V (Note 3)	-	23	-	nC
Q_{gs}	Gate to Source Charge		-	5.4	-	nC
Q_{gd}	Gate to Drain Charge		-	7.6	-	nC

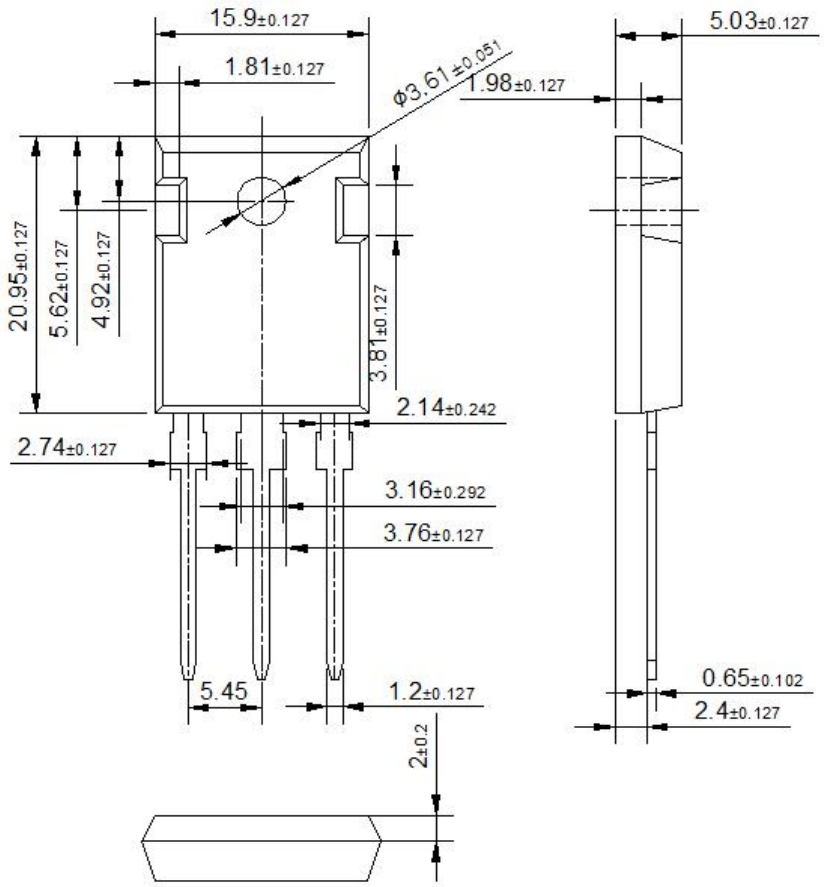
Note:

1. Repetitive rating: pulse-width limited by maximum junction temperature
2. V_{DD}=100V, L=1mH, V_G=10V, I_D=2.0A
3. Essentially independent of operating temperature typical characteristics

Package Dimensions

TO-247

(Dimensions in Millimeters)



DISCLAIMER:
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