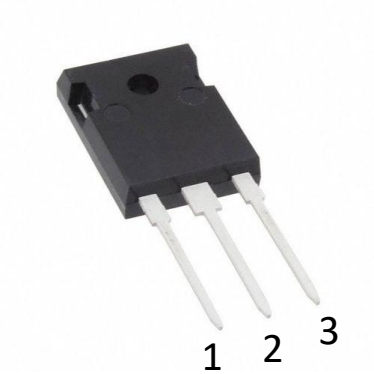
SiC MOSFET

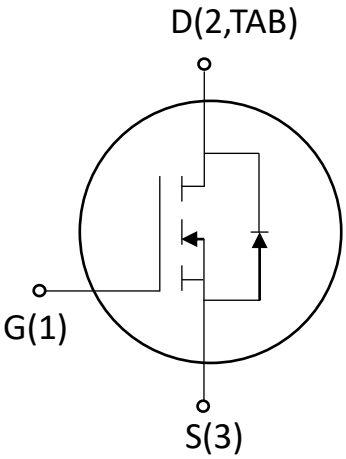


1. Key Parameters

Order code	V_{DS}	$R_{DS(on)}$ typ.	I_D
CI61N170SM	1700 V	60 mΩ	61A

2. Features

- Very fast and robust intrinsic body diode
- Extremely low gate charge and input capacitance



3. Applications

- Industrial applications

Product summary	
Order code	CI61N170SM
Marking	CI61N170SM
Package	TO-247-3L
Packing	Tube

Maximum ratings

at T_J = 25℃ unless otherwise specified.

Stresses beyond max ratings may cause permanent damage to the device.

Table 2 Maximum ratings

Symbol	Parameter	Max	Unit
V_{DS}	Drain-Source Voltage	1700	V
V_{GS}	Gate-Source Voltage	-10 to 22	V
	Gate-Source Voltage (recommended operating values)	-5 to 18	V
I_D	Continuous Drain Current at T_c=25℃	61	A
	Continuous Drain Current at T_c=100℃	38	A
I_{DM}	Pulse drain current	85	A
P_{tot}	Total power dissipation at T_c=25℃	357	W
T_J	Operating Temperature	-55 to 150	℃
T_{STG}	Storage Temperature		℃

Table 3 Thermal data

Symbol	Parameter	Typ	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case,	0.35	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	-	℃/W

Electrical characteristics

at T_J = 25 °C, unless otherwise specified.

Table 4 Static characteristics

Symbol	Parameter	Test condition	Min	Typ	Max	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage	V_{GS}=0V, I_{DS}=250uA	1700	-	-	V
I_{DSS}	Drain-Source Leakage Current	V_{GS}=0V, V_{DS}=1200V	-	-	10	uA
I_{GSS}	Gate-body leakage current	V_{DS}=0V, V_{GS}=-10 to 22V	-	-	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=10mA	1.8	2.8	3.8	V
		V_{DS}=V_{GS}, I_{DS}=10mA T_J=175°C	-	1.9	-	
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=18V, I_{DS}=20A	-	60	-	mΩ
		V_{GS}=18V, I_{DS}=20A T_J=175°C	-	95	-	

Table 5 Dynamic characteristics

Symbol	Parameter	Test condition	Min	Typ	Max	Unit
C_{ISS}	Input Capacitance	V_{DS}=1200V f=100kHz, V_{GS}=0V	-	3160	-	pF
C_{OSS}	Output Capacitance		-	96	-	
C_{RSS}	Reverse Transfer Capacitance		-	7	-	
Q_G	Total Gate Charge	V_{GS}=-5 to 18V, V_{DS}=1200V, I_{DS}=40A	-	144	-	nC
Q_{GS}	Gate to Source Charge		-	40	-	
Q_{GD}	Gate to Drain Charge		-	43	-	
R_G	Gate Resistance	f=1MHz.Vac=100mV, Open drain	-	1.4	-	Ω

Table 6 Switching characteristics

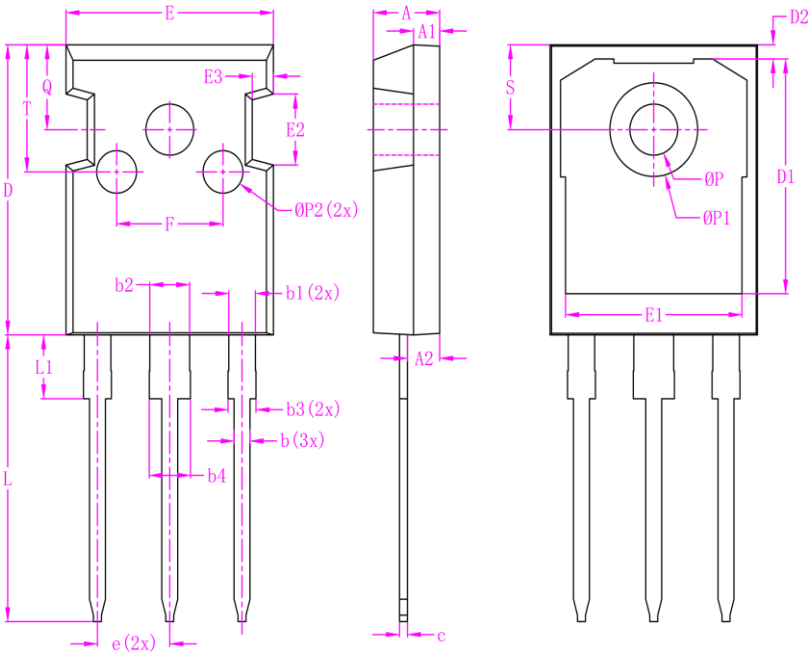
Symbol	Parameter	Test condition	Min	Typ	Max	Unit
E_{on}	Turn-on switching energy	VDD = 1200 V, I_D = 40 A, R_G =3 Ω, L= 400uH V_{GS} = -5 to 18 V	-	1970	-	μJ
E_{off}	Turn-off switching energy		-	321	-	
$T_{d(on)}$	Turn-on delay time		-	53	-	ns
T_r	Rise time		-	18	-	
$T_{d(off)}$	Turn-off delay time		-	52	-	
T_f	Fall time		-	15	-	

Table 7 Reverse diode characteristics

Symbol	Parameter	Test condition	Min	Typ	Max	Unit
V_{SD}	Diode forward voltage	I_{SD}=40A,V_{GS}=-5V, T_J=25℃	-	4.4	-	V
		I_{SD}=40A,V_{GS}=-5V, T_J=175℃	-	3.9	-	
t_{rr}	Reverse recovery time	VDD = 1200 V, I_{SD} = 40 A, V_{GS} = -5 to 18V di/dt=1000A/s,	-	63	-	ns
Q_{rr}	Reverse recovery charge		-	293	-	nC
I_{RRM}	Reverse recovery current		-	9	-	A

Package outlines

Package Reference



Item	DIMENSION		
	MIN	NOR	MAX
A	4.90	5.00	5.10
A1	1.90	2.00	2.10
A2	2.31	2.41	2.51
D	20.35	20.45	20.55
E	15.50	15.60	15.70
D1	16.25	16.55	16.85
E1	13.06	13.26	13.46
D2	0.85	1.00	1.15
e	5.44 BCS		
b	1.16	1.21	1.26
b1	1.96	2.01	2.06
b2	2.96	3.01	3.06
b3	2.00	2.10	2.20
b4	3.00	3.10	3.20
c	0.59	0.625	0.66
L	20.00	20.20	20.40
L1	4.32	4.50	4.67
T	8.76	8.96	9.16
F	7.80	8.00	8.20
Q	5.78	5.98	6.18
E2	4.90	5.00	5.10
E3	1.50	1.60	1.70
S	5.98 BSC		
P	3.40	3.50	3.60
P1	6.40	6.60	6.80
P2	3.00 BSC		