WMC008M120G1AA

N-Channel SiC Power MOSFET

V_{DS}	=	1200	V
$R_{DS(on).typ}(T_j=25℃)$	=	8.0	mΩ
$I_D(T_H=80℃)$	=	150	A

Features

- High current density
- Low switching losses
- Low diode forward voltage
- **T-type Module**

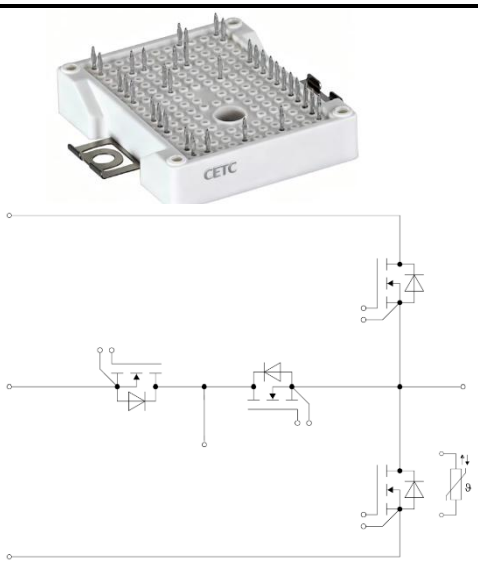
Benefits

- AlN ceramic substrate with low thermal resistance
- Press-FIT contact technology
- Intergrated NTC temperature sensor
- Rugged mounting due to intergrated mouting clamps

Applications

- AC and DC Motor Control
- UPS and SMPS
- Inverter for Motor Drive
- DC-DC Converters
- Solar Applications

Package



Part Number	Package
WMC008M120G1AA	E2B

Maximum Ratings (at T_j=25℃ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{DSmax}	Drain-Source Voltage	1200	V	V_{GS}=0V, I_D=1mA	
V_{GSmax}	Gate-Source Voltage	-10/+23	V	Absolute maximum values	
V_{GSop}	Gate-Source Voltage	-5/+18	V	Recommended operational values	
I_D	Continuous Drain Current	190	A	V_{GS}=18V, T_H=25℃	
		150		V_{GS}=18V, T_H=80℃	
$I_{D(pulse)}$	Pulsed Drain Current	300	A	Pulse width t_p limited by T_{Jmax}	
P_D	Power Dissipation	470	W	T_H=25℃, T_J=175℃	
T_J	Operating Junction Temperature	-40 to +175	℃		
T_{STG}	Storage Temperature	-40 to +175	℃		

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{GS(th)}$	Gate Threshold Voltage	2.0	2.8	4.0	V	V_{DS}=V_{GS}, I_D=50mA	
		/	2.0	/		V_{DS}=V_{GS}, I_D=50mA, T_J=175℃	
I_{DSS}	Zero Gate Voltage Drain Current	/	/	100	μA	V_{DS}=1200V, V_{GS}=0V	
I_{GSS+}	Gate-Source Leakage Current	/	/	500	nA	V_{DS}=0V, V_{GS}=23V	
I_{GSS-}	Gate-Source Leakage Current	/	/	500	nA	V_{DS}=0V, V_{GS}=-10V	
$R_{DS(on)}$	Drain-Source On-State Resistance	/	7.5	9.8	mΩ	V_{GS}=18V, I_D=150A	
		/	12.5	/		V_{GS}=18V, I_D=150A, T_J=175℃	
g_{fs}	Transconductance	/	80	/	S	V_{DS}=20V, I_{DS}=150A	
		/	70	/		V_{DS}=20V, I_{DS}=150A, T_J=175℃	
C_{iss}	Input Capacitance	/	9.0	/	nF	V_{GS}=0V	
C_{oss}	Output Capacitance	/	300	/	pF	V_{DS}=800V	
C_{rss}	Reverse Transfer Capacitance	/	20	/		f=100kHz	
E_{oss}	C_{oss} Stored Energy	/	152	/	μJ	V_{AC}=25mV	
$R_{G(int)}$	Internal Gate Resistance	/	0.65	/	Ω	f=1MHz, V_{AC}=25mV	
Q_{GS}	Gate to Source Charge	/	84	/	nC	V_{DS}=800V	
Q_{GD}	Gate to Drain Charge	/	42	/		V_{GS}=-5V/18V	
Q_G	Total Gate Charge	/	276	/		I_D=150A	

Reverse Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	3.9	/	V	V_{GS}=-5V, I_{SD}=75A, T_J=25℃	
		3.6	/		V_{GS}=-5V, I_{SD}=75A, T_J=175℃	
I_S	Continuous Diode Forward Current	/	75	A	T_H=80℃	

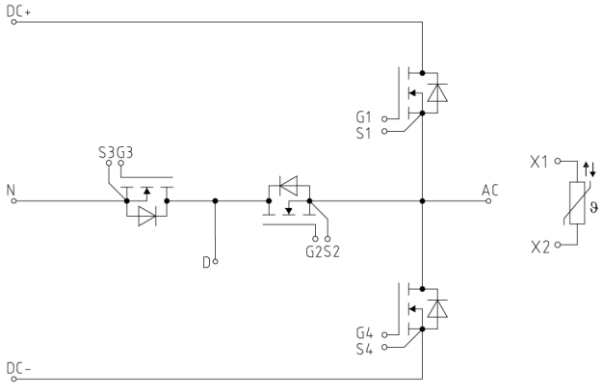
Package Characteristics

Symbol	Parameter	Note or test condition	Characteristics			Unit
			Min.	Typ.	Max.	
	Internal isolation	Basic insulation	/	AlN	/	
CTI	Comperative tracking index		200	/	/	
L_p	Stray inductance module		/	20	/	nH
R_{pkg}	Package Resistance	T_H=80℃		0.5		mΩ
V_{ISOL}	Isolation test voltage	RMS, f=50Hz, t=1min	3	/	/	kV
$R_{\theta JH}$	Thermal Resistance from Junction to Heatsink		/	0.32	/	℃/W
d_{Creep}	Creepage distance	terminal to heatsink	/	11.5	/	mm
		terminal to terminal	/	6.3	/	
d_{Clear}	Clearance	terminal to heatsink	/	10.0	/	
		terminal to terminal	/	5.0	/	
F	Mounting force per clamp		40	/	80	N
G	Weight		/	40	/	g

NTC-Thermistor Characteristics

Symbol	Parameter	Value	Unit	Test Conditions	Note
T_{NTC}	NTC operating temperature range	-40 ~ +180	℃		
R_{25}	NTC R25-value	10 ± 1%	kΩ	T_{NTC} = 25 ± 1%℃	
$B_{25/85}$	B-value	3610 ± 1%	K		

Circuit Diagram



Package information