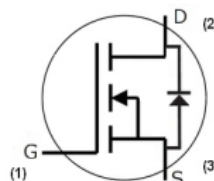
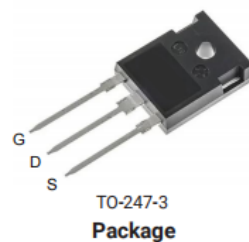


HMM120N120T

1200V 16mΩ Silicon Carbide Power MOSFET, TO-247-3

Features

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Resistant to Latch-Up
- Halogen Free, RoHS Compliant



Applications

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

SiC Power MOSFET

Maximum Rated Values ($T_c=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Value	Unit
Drain-Source Voltage	V_{DSmax}	$V_{GS}=0V, I_D=100\mu A$	1200	V
Gate-Source Voltage	V_{GSmax}	Absolute maximum values	-10/+22	V
Gate-Source Voltage	V_{GSop}	Recommended operational values	-5/+18	V
Continuous Drain Current	I_D	$V_{GS}=18V, T_c=25^\circ\text{C}$	120	A
		$V_{GS}=18V, T_c=100^\circ\text{C}$	84	
Pulsed Drain Current	$I_{D(pulse)}$	Pulse width t_p limited by T_{jmax}	TBD	A
Power Dissipation	P_D	$T_c=25^\circ\text{C}, T_J=175^\circ\text{C}$	555	W
Operating Junction Temperature	$T_{vj, op}$		-55~175	$^\circ\text{C}$
Storage Temperature Range	T_{stg}		-55~175	$^\circ\text{C}$

Electrical Characteristics ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition		Value			Unit
				Min	Typ.	Max	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=100\mu A$		1200			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=20mA$	$T_{vj}=25^{\circ}C$		2.9		V
			$T_{vj}=175^{\circ}C$		2.1		
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=1200V, V_{GS}=0V$			1	100	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=18V, V_{DS}=0V$			1	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=18V, I_D=75A$	$T_{vj}=25^{\circ}C$		13		m Ω
			$T_{vj}=175^{\circ}C$		20		
Transconductance	g_{fs}	$V_{DS}=20V, I_{DS}=75A$	$T_{vj}=25^{\circ}C$		TBD		S
			$T_{vj}=175^{\circ}C$		TBD		
Input Capacitance	C_{iss}	$V_{GS}=0V$ $V_{DS}=1200V$ $f=100KHz$ $V_{AC}=25mV$			3815		pF
Output Capacitance	C_{oss}				239		
Reverse Transfer Capacitance	C_{rss}				29		
C_{oss} Stored Energy	E_{oss}				TBD		μJ
Turn-On Switching Energy	E_{ON}	$V_{DS}=800V, V_{GS}=-5/18V$ $I_D=75A, R_{G(ext)}=2.5\Omega,$ $L=250\mu H$	$T_{vj}=25^{\circ}C$		TBD		μJ
Turn Off Switching Energy	E_{OFF}		$T_{vj}=175^{\circ}C$		TBD		
			$T_{vj}=25^{\circ}C$		TBD		
			$T_{vj}=175^{\circ}C$		TBD		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=800V, V_{GS}=-5/18V$ $I_D=75A, R_{G(ext)}=2.5\Omega,$ $T_J=25^{\circ}C, L=250\mu H$ Timing relative to V_{DS}			TBD		ns
Rise Time	t_r				TBD		
Turn-Off Delay Time	$t_{d(off)}$				TBD		
Fall Time	t_f				TBD		
Internal Gate Resistance	$R_{G(int)}$	$f=1MHz, V_{AC}=25mV$			TBD		Ω
Gate to Source Charge	Q_{gs}	$V_{DS}=800V, V_{GS}=-5/18V$ $I_D=75A$			46		nC
Gate to Drain Charge	Q_{gd}				100		
Total Gate Charge	Q_g				216		

Body Diode Characteristics ($T_{vj}=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ.	Max	
Diode Forward Voltage	V_{SD}	$V_{GS}=-5\text{V}, I_{SD}=37.5\text{A}$		4.7		V
				4.1		
Continuous Diode Forward Current	I_S	$V_{GS}=-5\text{V}, T_C=25^{\circ}\text{C}$			TBD	A
Diode Pulse Current	$I_{S(\text{pulse})}$	$V_{GS}=-5\text{V}$, Pulse width t_p limited by $T_{j\text{max}}$			TBD	A
Reverse Recovery Time	t_{rr}	$V_{GS}=-5\text{V}$ $I_{SD}=37.5\text{A}$ $R_{G(\text{ext})}=2.5\Omega$ $T_J=175^{\circ}\text{C}$ $V_R=800\text{V}$		TBD		ns
Reverse Recovery Charge	Q_{rr}			TBD		nC
Peak Reverse Recovery Current	I_{rrm}			TBD		A

Thermal Characteristics

Parameter	Symbol	Condition	Value			Unit
			Min	Typ.	Max	
Thermal Resistance: Junction to Case	$R_{th(J-C)}$			0.27	0.37	$^{\circ}\text{C/W}$