N-Channel SiC Power MOSFET

V_{DS}	=	650 V
$R_{DS(on)}$	=	60 mΩ
I_D@25℃	=	37 A

Features

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitance
- Easy to Parallel and Simple to Drive

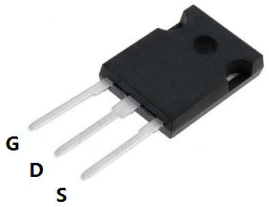
Benefits

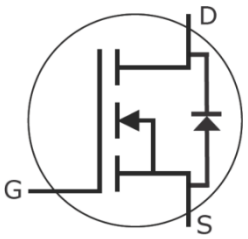
- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

Applications

- Power Supplies
- High Voltage DC/DC Converters
- Motor Drives

Package





Part Number	Package
H1M60065P	TO-247-3

Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{DSmax}	Drain-Source Voltage	650	V	V_{GS}=0V, I_D=1mA	
V_{GSmax}	Gate-Source Voltage	-10/+25	V	Absolute maximum values	
V_{GSop}	Gate-Source Voltage	-5/+20	V	Recommended operational values	
I_D	Continuous Drain Current	37	A	V_{GS}=20V, T_c=25°C	
		27		V_{GS}=20V, T_c=100°C	
$I_{D(pulse)}$	Pulsed Drain Current	TBD	A	Pulse width t_p limited by T_{Jmax}	
P_D	Power Dissipation	TBD	W	T_c=25°C, T_J=150°C	
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to +150	℃		

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	650			V	V_{GS}=0V, I_D=1mA	
$V_{GS(th)}$	Gate Threshold Voltage	2.0	2.5	4	V	V_{DS}=V_{GS}, I_D=6.6mA	
			1.8			V_{DS}=V_{GS}, I_D=6.6mA, T_J=150℃	
I_{DSS}	Zero Gate Voltage Drain Current		1	10	μA	V_{DS}=650V, V_{GS}=0V	
I_{GSS+}	Gate-Source Leakage Current		10	250	nA	V_{DS}=0V, V_{GS}=25V	
I_{GSS-}	Gate-Source Leakage Current		10	250	nA	V_{DS}=0V, V_{GS}=-10V	
$R_{DS(on)}$	Drain-Source On-State Resistance		60	78	mΩ	V_{GS}=20V, I_D=20A	
			66			V_{GS}=20V, I_D=20A, T_J=150℃	
C_{iss}	Input Capacitance		1690		pF	V_{GS}=0V V_{DS}=500V f=1MHz V_{AC}=25mV	
C_{oss}	Output Capacitance		209				
C_{rss}	Reverse Transfer Capacitance		28				
E_{oss}	C_{oss} Stored Energy		TBD		μJ		
E_{ON}	Turn-On Switching Energy		256		μJ	V_{DS}=400V, V_{GS}=-5V/20V I_D=20A, $R_{G(ext)}$=2.5Ω, L=200μH	
E_{OFF}	Turn-Off Switching Energy		164				
$t_{d(on)}$	Turn-On Delay Time		11.1		ns	V_{DS}=400V, V_{GS}=-5V/20V, I_D=20A $R_{G(ext)}$=2.5Ω, R_L=20Ω	
t_r	Rise Time		9.3				
$t_{d(off)}$	Turn-Off Delay Time		17.2				
t_f	Fall Time		6.5				
$R_{G(int)}$	Internal Gate Resistance		2.7		Ω	f=1MHz, V_{AC}=25mV	
Q_{GS}	Gate to Source Charge		30.7		nC	V_{DS}=400V V_{GS}=-5V/20V I_D=20A	
Q_{GD}	Gate to Drain Charge		21.7				
Q_G	Total Gate Charge		90				

Reverse Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	5.8		V	V_{GS}=-5V, I_{SD}=5A	
		5.3			V_{GS}=-5V, I_{SD}=5A, T_J=150°C	
I_S	Continuous Diode Forward Current		TBD	A	T_C=25°C	
t_{rr}	Reverse Recover Time	39		ns	V_R=400V, I_{SD}=20A dif/dt=230A/μs	
Q_{rr}	Reverse Recovery Charge	82		nC		
I_{rrm}	Peak Reverse Recovery Current	3.7		A		

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.6		℃/W		
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient		40			