

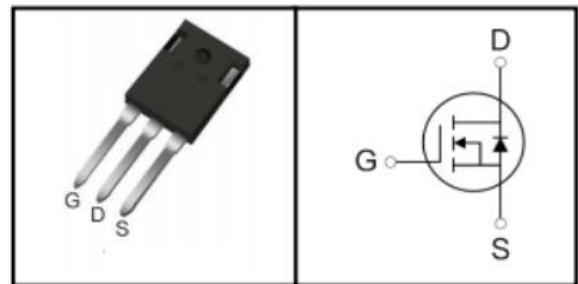
SiC N-Channel MOSFET

FEATURES

- High blocking voltage with low On-Resistance
- High Speed Switching with Low Capacitance
- Easy to Parallel and Simple to Drive

APPLICATIONS

- Solar Inverters
- Switch Mode Power Supplies
- DC-DC Converters
- Motor drives



Absolute Maximum Ratings(TC=25°C)

SYMBOL	PARAMETER	VALUE	UNIT
V _{DSS}	Drain-Source Voltage	1700	V
V _{GSS}	Gate-Source Opetation Voltage	-10/+25	V
I _D	Drain Current-Continuous	75	A
	Drain Current-Continuous@Tc=100°C	48	A
I _{DM}	Drain Current-Single Pluse	160	A
P _D	Total Dissipation @Tc=25°C	338	W
T _J	Max. Operating Junction Temperature	-40~150	°C
T _{stg}	Storage Temperature	-40~150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
R _{th j-c}	Thermal Resistance, Junction to Case	0.37	°C/W

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ELECTRICAL CHARACTERISTICS (T_C=25°C)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 0.1mA	1700	--	--	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = 10V, I _D = 18mA	2.0	--	4.0	V
R _{DS(ON)}	Drain-Source On-stage Resistance	V _{GS} = 20V, I _D =50A	--	40	70	mΩ
		V _{GS} = 20V, I _D =50A, T _C =25°C	--	80	--	
I _{GSS}	Gate Source Leakage Current	V _{GS} = 20V, V _{DS} = 0V	--	--	600	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 1700V, V _{GS} = 0V	--	2	100	μA
R _G	Internal Gate Resistance	f = 1 MHz, V _{AC} = 25 mV	--	1.3	--	Ω
g _{fs}	Transconductance	V _{DS} = 20 V, I _{DS} = 50 A	--	25	--	S
		V _{DS} = 20 V, I _{DS} = 50 A, T _J = 150°C	--	23.5	--	
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 1200V, f = 1.0MHz V _{AC} =25mV	--	3455	--	pF
C _{oss}	Output Capacitance		--	171	--	
C _{rss}	Reverse Transfer Capacitance		--	7	--	
Q _g	Total Gate Charge	V _{DD} =1200V I _D = 50A V _{GS} = - 5to +20V	--	43	--	nC
Q _{gs}	Gate-Source Charge		--	74	--	
Q _{gd}	Gate-Drain Charge		--	200	--	
t _{d(on)}	Turn-on Delay Time	V _{GS} = - 5to +20V I _D = 50A V _{DS} =400V R _g =2.5Ω inductive load	--	68	--	ns
t _r	Turn-on Rise Time		--	19	--	
t _{d(off)}	Turn-off Delay Time		--	35	--	
t _f	Turn-off Fall Time		--	19	--	
C _{o(er)}	Effective OutputCapacitance (Energy Related)	V _{GS} = 0 V, V _{DS} = 0... 1200V	--	188	--	pF
C _{o(tr)}	Effective Output Capacitance (Time Related)		--	255	--	

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SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
E_{ON}	Turn-On Switching Energy (SiC Diode FWD)	$V_{DS} = 1200\text{ V}$, $V_{GS} = -5/20\text{ V}$ $I_D = 50\text{ A}$, $R_G = 2.5\ \Omega$, $L = 99\ \mu\text{ H}$	--	2.5	--	mJ
E_{OFF}	Turn Off Switching Energy (SiC Diode FWD)	$T_J = 150^\circ\text{C}$ using SiC Diode as FWD	--	1.4	--	
E_{ON}	Turn-On Switching Energy (SiC Diode FWD)	$V_{DS} = 1200\text{ V}$, $V_{GS} = -5/20\text{ V}$ $I_D = 50\text{ A}$, $R_G = 2.5\ \Omega$, $L = 99\ \mu\text{ H}$	--	4.9	--	
E_{OFF}	Turn Off Switching Energy (SiC Diode FWD)	$T_J = 150^\circ\text{C}$ using MOSFET Diode as FWD	--	1.1	--	

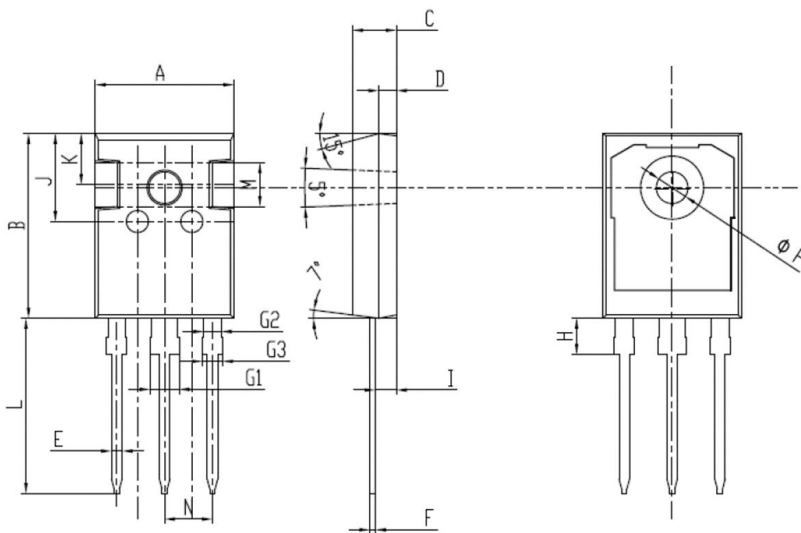
SOURCE-DRAIN BODY DIODE CHARACTERISTICS

Drain - Source Body Diode Characteristics

V_{SD}	Diode Forward Voltage	$I_{SD}=25\text{ A}$, $V_{GS} = -5\text{ V}$	--	3.8	--	V
		$I_{SD}=25\text{ A}$, $V_{GS} = -5\text{ V}$, $T_J = 150^\circ\text{C}$	--	3.4	--	
I_S	Continuous Diode Forward Current	$V_{GS} = -5\text{ V}$, $T_C = 25^\circ\text{C}$	--	--	76	A
t_{rr}	Reverse Recovery Time	$V_{GS} = -5\text{ V}$, $I_{SD} = 50\text{ A}$ $V_R = 1200\text{ V}$ $\text{dif}/\text{dt} = 1000\text{ A}/\mu\text{s}$ $T_J = 150^\circ\text{C}$	--	53	--	ns
Q_{rr}	Reverse Recovery Charge		--	461	--	uC
I_{rrm}	Peak Reverse Recovery Current		--	14	--	A
t_{rr}	Reverse Recovery Time	$V_{GS} = -5\text{ V}$, $I_{SD} = 50\text{ A}$ $V_R = 1200\text{ V}$ $\text{dif}/\text{dt} = 3040\text{ A}/\mu\text{s}$ $T_J = 150^\circ\text{C}$	--	40	--	ns
Q_{rr}	Reverse Recovery Charge		--	481	--	uC
I_{rrm}	Peak Reverse Recovery Current		--	22	--	A

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PACKAGE DIMENSIONS (UNIT: mm):
TO-247-3



SYMBOL S	MILLIMETERS	
	MIN	MAX
A	15.50	16.10
B	20.80	21.30
C	4.80	5.20
D	1.85	2.15
E	1.11	1.36
F	0.51	0.75
G1	2.91	3.21
G2	1.85	2.15
G3	1.91	2.21
H	4.00	4.30
I	2.21	2.59
J	9.90	10.10
K	6.15BSC	
L	19.82	20.22
M	4.80	5.20
N	5.29	5.59
ΦP	3.40	3.80

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