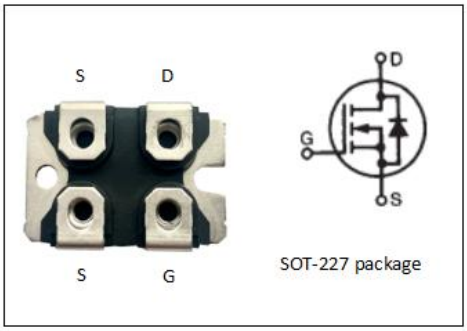
ISCF8010

eq MSC017SMA120

SiC N-Channel MOSFET

FEATURES

- High Blocking Voltage with Low On-Resistance
- $R_{DS(ON)}$= 22mΩ@V_{GS}=20V Tj=25℃
- 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℃)

SYMBOL	PARAMETER	VALUE	UNIT
V_{DSS}	Drain-Source Voltage	1200	V
V_{GSS}	Gate-Source Opetation Voltage	-10/+23	V
I_D	Drain Current-Continuous	88	A
	Drain Current-Continuous@Tc=100℃	62	A
I_{DM}	Drain Current-Single Pluse	280	A
P_D	Total Dissipation @T_C=25℃	278	W
T_J	Max. Operating Junction Temperature	175	℃
T_{stg}	Storage Temperature	-55~150	℃

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j\text{-}c}$	Thermal Resistance, Junction to Case	0.54	℃/W

ELECTRICAL CHARACTERISTICS (T_C=25℃)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}= 0V; I_D= 0.1mA	1200	--	--	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = 10V, I_D = 4.5mA	1.9	2.7	--	V
$R_{DS(ON)}$	Drain-Source On-stage Resistance	V_{GS}= 20V; I_D=40A	--	17.6	22	mΩ
I_{GSS}	Gate Source Leakage Current	V_{GS}= 20/-10VV; V_{DS}= 0V	--	--	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 1200V; V_{GS} = 0V	--	--	100	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 1200V; V_{GS} = 0V Tj=125℃	--	--	500	μA
g_{fs}	Forward Transconductance	V_{DS}= 20V; I_D=50A		51		S
E_{OSS}	COSS Stored Energy	V_{DS}= 20V;f = 1.0MHz		141		μJ
R_G	Internal Gate Resistance	V_{AC}= 25mV;f = 1.0MHz		3.5		Ω
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 1000V, f = 1.0MHz V_{AC}=25mV	--	6378	--	pF
C_{oss}	Output Capacitance		--	245	--	
C_{rss}	Reverse Transfer Capacitance		--	15	--	
Q_g	Total Gate Charge	V_{DD}=800V, I_D= 50A, V_{GS}= - 5to +20V	--	238	--	nC
Q_{gs}	Gate-Source Charge		--	76.7	--	
Q_{gd}	Gate-Drain Charge		--	78.3	--	

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SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$t_{d(on)}$	Turn-on Delay Time	V_{GS}= - 5to +20V I_D= 50A, V_{DS}=800V, Rg=2.5Ω, L=68uH	--	42	--	ns
t_r	Turn-on Rise Time		--	34	--	
$t_{d(off)}$	Turn-off Delay Time		--	71	--	
t_f	Turn-off Fall Time		--	13	--	
E_{On}	Turn-on Energy		--	2.6	--	mJ
E_{Off}	Turn-off Energy		--	0.73	--	

SOURCE-DRAIN BODY DIODE CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V_{SD}	Diode Forward Voltage	I_{SD}= 40A; V_{GS}= 0V	--	3.5	--	V
V_{SD}	Diode Forward Voltage	I_{SD}=40A; V_{GS}= -5V	--	3.9	--	V
t_{rr}	Reverse Recovery Time	V_{GS} = -5 V, I_{SD} = 50 A, V_R = 800V dif/dt=-2500 A/μs, Drive Rg = 4.0 Ω	--	40	--	ns
Q_{rr}	Reverse Recovery Charge		--	490	--	uC
I_{rrm}	Peak Reverse Recovery Current		--	22	--	A

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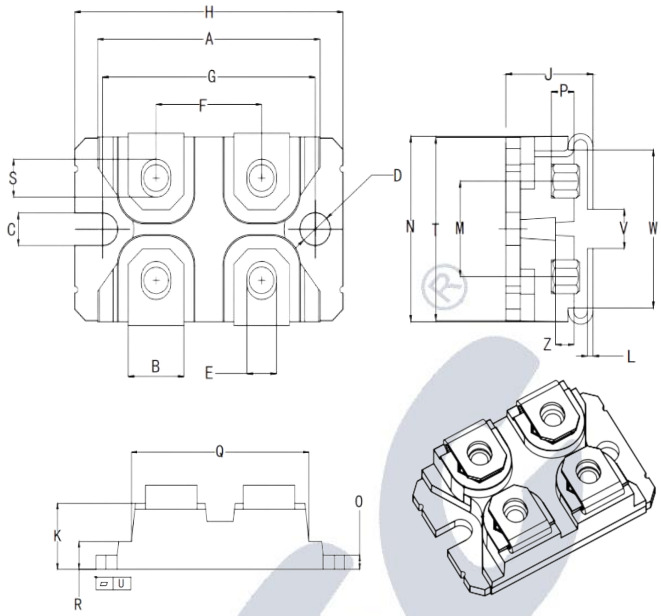
Package Dimensions (UNIT: MM):

TO-227



DIM	Millimeter	
	min	max
A	31.40	31.60
B	7.70	8.10
C	4.20	4.40
D	4.20	4.40
E	4.10	4.40
F	14.90	15.10
G	30.10	30.30
H	38.00	38.40
J	12.00	12.60
K	9.35	9.65
L	0.74	0.84
M	12.30	12.70
N	24.40	25.00
O	1.90	2.10
P	2.92	3.32
Q	26.60	27.00
R	3.80	4.20
S	4.95	5.45
T	23.70	24.30
U	0	0.10
V	3.50	5.50
W	20.15	20.45
Z	2.50	2.70

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