

General Features

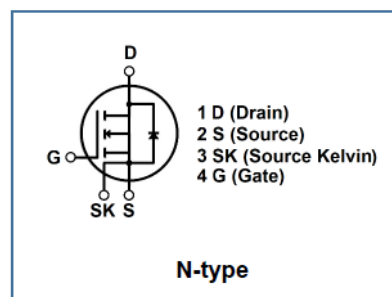
Order code	V _{ds}	R _{ds(on)}	I _d
ECKS120M080F4	1200V	80.0 mΩ	35A

- ◆ Robust semiconductor material – SiC
- ◆ Very Low Switching losses
- ◆ IGBT – compatible driving function
- ◆ Very good temperature related stability
- ◆ High avalanche ruggedness
- ◆ JEDEC Qualified
- ◆ Source Kelvin



Applications

- ◆ Solar inverters
- ◆ PFC
- ◆ UPS
- ◆ DC-DC Converter
- ◆ Welding
- ◆ EV Charging



General description

This Silicon Carbide Power MOSFET series realized from Tronkor to obtain higher breakdown voltage and robust gate.

Suitable for high switching frequency and high-charging efficiency systems, industrial motors driving and welding applications. It is also suitable for applications with high frequency switching and hard switching driving requirements.



Ordering code

Ordering code	Marking	Package	Packaging
TBD	TBD	TO 247-3L / TO 247-4L	Tube



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TA=25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		1200	V
V _{GSmax}	Gate-Source Voltage (Max)		-10V...+25V	
V _{GSS}	Gate-Source Voltage (Recommended)		-5V...+20V	
T _J	Maximum Junction Temperature		-55 to +175	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
I _S	Diode Continous Forward Current	T _C =25°C	40	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _C =25°C	82	A
I _D	Continuous Drain Current V _{GS} = 20V	T _C =25°C	35	A
		T _C =100°C	26	
P _D	Maximum Power Dissipation	T _C =25°C	190	W
R _{θJC}	Thermal Resistance-Junction to Case (Max)		0.80	°C/W
Avalanche Ratings				
E _{as}	Avalanche Energy	L=1mH, I _{as} =20A, V = 50V	205	mJ

Electrical Characteristic

Symbol	Parameter	Test Conditions	Min	TYP	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =1.0mA	1200	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =1200V, V _{GS} =0V	-	0.1	1.0	μA
		T _J =125°C	-	1.0	-	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =10mA	2.0	2.8	4.0	V
I _{GSS+}	Gate Leakage Current	V _{GS} =+20V, V _{DS} =0V	-	10	100	nA
I _{GSS-}	Gate Leakage Current	V _{GS} =-5V, V _{DS} =0V	-	10	100	nA
R _{DS(ON)}	Drain-Source On-state Resistance (A)	V _{GS} =20V, I _{DS} =20A	-	78	98	mΩ
		V _{GS} =20V, I _{DS} =10A	-	72	92	



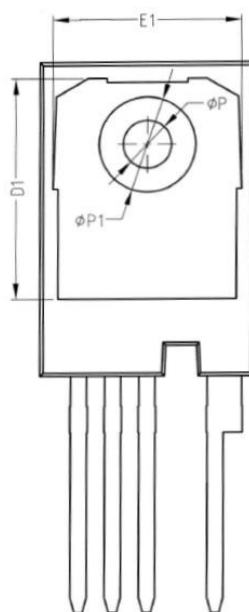
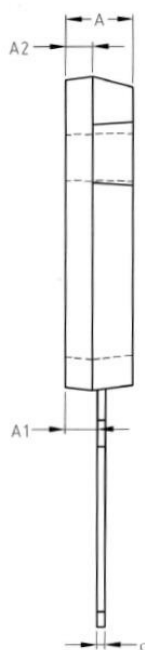
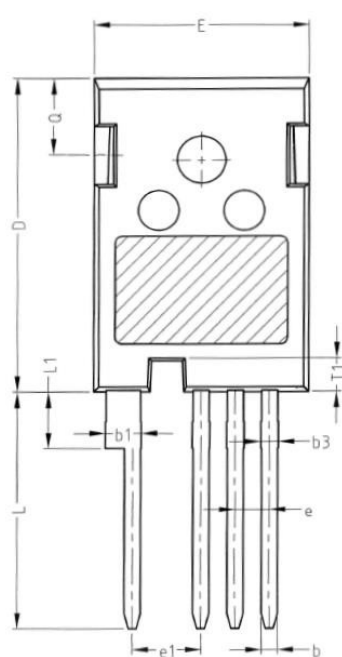
Diode Characteristics						
V _{SD}	Diode Forward Voltage (A)	I _{SD} =10A, V _{GS} =-5V	-	3.8	-	V
T _{rr}	Reverse Recovery Time	I _{SD} =20A, V _R =800V,	-	28	-	ns
Q _{rr}	Reverse Recovery Time	V _{GS} =-5V dI _{SD} /dt=3500A/μs	-	128	-	nC

Symbol	Parameter	Test Conditions	Min	TYP	Max	Unit
Dynamic Characteristics (B)						
RG	Gate Resistance	f=1MHz, VAC=25mV, D-S Short	-	2.9	-	Ω
Ciss	Input Capacitance	VGS=0V	-	1370	-	pF
Coss	Output Capacitance	VDS=1000V	-	60	-	
Crss	Reverse Transfer Capacitance	f=200kHz. Vac=25mV	-	3	-	
Td(ON)	Turn-on Delay Time	VDD=800V, IDS=20A,	-	9	-	ns
Tr	Turn-on Rise Time	RG(ext)=2.5Ω, VGS=-	-	5	-	
Td(OFF)	Turn-off Delay Time	5V/20V,	-	15	-	
Tf	Turn-off Fall Time	L=975μH	-	9	-	
EON	Turn-On Switching Energy	VDD=800V, IDS=20A,	-	405	-	μJ
EOFF	Turn-Off Switching Energy	RG(ext)=2.5Ω,	-	20	-	
ETOT	Total Switching Energy	VGS=-5/+20V, L=975μH	-	430	-	
Gate Charge Characteristics (B)						
Qg	Total Gate Charge	VDD=800V, IDS=20A	-	55	-	nC
Qgs	Gate-Source Charge	VGS=-5/20V	-	15	-	
Qgd	Gate-Drain Charge		-	15	-	

Note A: Pulse test; pulse width≤300μs, duty cycle≤2%.

Note B: Guaranteed by design, not subject to production testing.

Package Information



COMMON DIMENSIONS

SYMBOL	MM		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.80	2.00	2.20
b	1.06	1.21	1.36
b1	2.33	2.63	2.93
b3	1.07	1.30	1.60
c	0.51	0.61	0.75
D	23.30	23.45	23.60
D1	16.25	16.55	16.85
E	15.74	15.94	16.14
E1	13.72	14.02	14.32
T1	2.35	2.50	2.65
e	2.54 BSC		
e1	5.08 BSC		
Q	5.49	5.79	6.09
L	17.27	17.57	17.87
L1	3.99	4.19	4.39
Φ _p	3.40	3.60	3.80
Φ _{p1}	7.19 REF		