



BCZ120N160W1

N-Channel Silicon Carbide Power MOSFET

1200 V, 22 A, 160 mΩ

Features

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

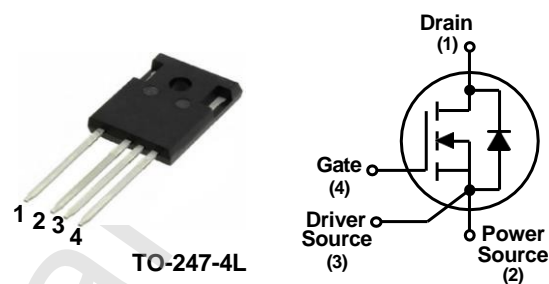
$BV_{DSS, T_C=25^\circ C}$	$I_D, T_C=25^\circ C$	$R_{DS(on), typ}$	$Q_{g, typ}$
1200 V	22 A	160 mΩ	40 nC

Benefits

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

Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power applications



Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value	Unit
V_{DSmax}	Drain - Source Voltage	$V_{GS}=0V, I_D=100\mu A$	1200	V
V_{GSmax}	Gate - Source Voltage	Absolute maximum values	-8 / +22	V
V_{GSop}	Gate - Source Voltage	Recommended operational values	-5 / +18	V
I_D	Continuous Drain Current	$V_{GS}=18V, T_C=25^\circ C$	22	A
		$V_{GS}=18V, T_C=100^\circ C$	16	
I_{DM}	Pulse Drain Current	Pulse width limited by T_{jmax}	58	A
T_J, T_{STG}	Operating Junction and Storage Temperature		-55 to 175	$^\circ C$

Electrical Characteristics (T_C = 25°C, Note1)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
BV _{DSS}	Drain to Source Breakdown Voltage	V _{GS} = 0 V, I _D =100 μA	1200			V
V _{GS(th)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D =5.0 mA, T _C =25°C	2.0	3.5	4.0	V
		V _{GS} = V _{DS} , I _D =5.0 mA, T _C =175°C		2.7		
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 1200 V, V _{GS} = 0 V		10	100	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = 18 V, V _{DS} = 0 V		10	200	nA
R _{DS(on)}	Static Drain to Source On Resistance	V _{GS} = 18 V, I _D = 10 A, T _C = 25°C		125	180	mΩ
		V _{GS} = 15 V, I _D = 10 A, T _C = 25°C		160	190	
		V _{GS} = 18 V, I _D = 10 A, T _C = 175°C		220		
g _{fs}	Transconductance	V _{GS} = 18 V, I _D = 10 A, T _J = 25°C		7.0		S
		V _{GS} = 18 V, I _D = 10 A, T _J = 175°C		6.0		
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =800 V, f=1MHz, V _{AC} =25 mV		550		pF
C _{oss}	Output Capacitance			28		
C _{rss}	Reverse Transfer Capacitance			8		
E _{ON}	Turn-On Switching Energy	V _{DS} =800V, V _{GS} = -5/18V, I _D = 10A, R _{G(ext)} = 0Ω, L= 256μH		200		μJ
E _{OFF}	Turn-Off Switching Energy			50		
t _{d(on)}	Turn-On Delay Time	V _{DS} =800V, V _{GS} = -5/18V, I _D = 100A, R _{G(ext)} = 0Ω, Timing relative to V _{DS}		20		ns
t _r	Rise Time			45		
t _{d(off)}	Turn-Off Delay Time			20		
t _f	Fall Time			15		
R _{G(int)}	Internal Gate Resistance	f=1 MHz, V _{AC} =25mV		10.0		Ω
Q _{gs}	Gate to Source Charge	V _{DD} =800V, V _{GS} = -5/18V, I _D = 10A		11		nC
Q _{gd}	Gate to Drain Charge			8		
Q _g	Total Gate Charge			40		

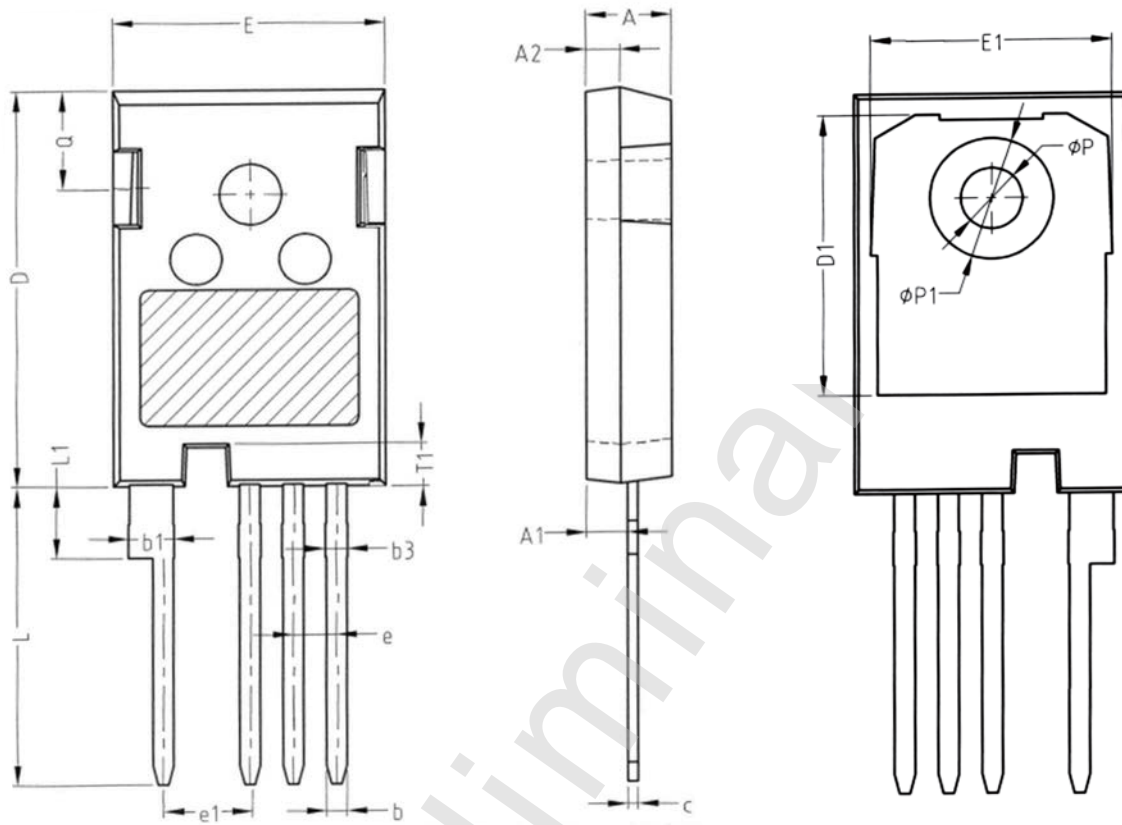
Reverse Diode Characteristics

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V _{SD}	Diode Forward Voltage	V _{GS} = -5 V, I _{SD} = 5 A, T _J = 25°C		3.5		V
		V _{GS} = -5 V, I _{SD} = 5 A, T _J = 175°C		3.2		
I _S	Continuous Diode Forward Current	T _C = 25°C			30	A
t _{rr}	Reverse Recovery time	V _{GS} = -5V, I _{SD} = 10 A, V _R = 800V, dif / dt=1200A/μs;		10		ns
Q _{rr}	Reverse Recovery Charge			40		nC
I _{rrm}	Peak Reverse Recovery Current			3		A

※. Note 1 : Limited by maximum junction temperature.

Package Outlines

TO247-4



SYMBOL	NM		
	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
Φp	3.40	3.60	3.80
$\Phi p1$	7.19 REF		

* Dimensions in millimeters

Disclaimer

Bestirpower reserve the right to make changes, corrections, enhancements, modifications, and improvements to Bestirpower products and/or to this document at any time without notice.

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. Bestirpower does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Products or technical information described in this document.

This document is the property of Bestirpower Co., LTD., and not allowed to copy or transformed to other format if not under the authority approval.

© 2024 bestirpower – All rights reserved

preliminary