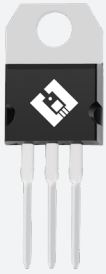


COOLCAD
ELECTRONICS
SiC for the rest of us

SiC POWER DISCRETES



COOLCAD
ELECTRONICS



CoolCAD Power SiC MOSFETs

CoolCAD Power MOSFETs exceed power, efficiency and portability capabilities of standard silicon devices and are available in a variety of breakdown voltages (650V, 1200V, 1700V & 3300V) and current ratings. They have low on-resistance and low leakage in the blocking state. Fabricated on high-quality SiC epitaxial layers, our proprietary fabrication process includes carefully chosen annealing procedures to ensure high-quality SiC-SiO₂ gate oxide dielectric layer. The doping profile, neck region and edge termination ensure extremely low Ron and high breakdown voltage.

SiC Solutions for Demanding Industries

CoolCAD designs and fabricates SiC semiconductor devices for a variety of industries, each with their own demanding specifications. However, they all have one thing in common – they need to operate reliably and efficiently in harsh environments.



GREEN ENERGY



MILITARY & DEFENSE



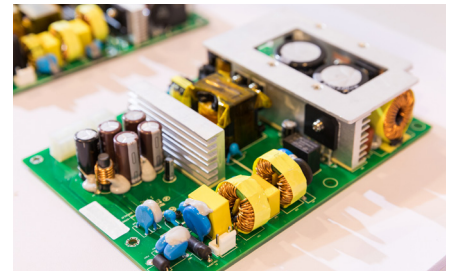
AUTOMOTIVE



PUBLIC INFRASTRUCTURES



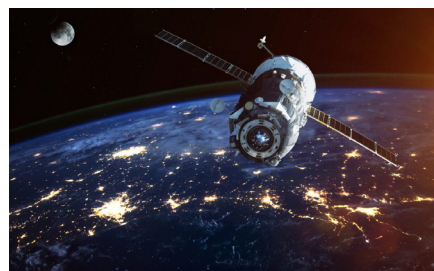
DATA CENTERS



POWER SUPPLIES



INDUSTRIAL EQUIPMENT



AEROSPACE



POWER GENERATION

1200V

FET Type	N-Channel
Technology	MOSFET
Drain to Source Voltage (Vdss)	1200V
Current - Continuous Drain (Id) at 25°C	5 – 40A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15 – 20V
Rds On (Max) at Id, Vgs	50 – 500mOhm at 10A
Vgs(th) (Max) at Id	2 – 4V at 5mA
Gate Charge (Qg) (Max) at Vgs	10 - 50nC
Vgs (Max)	20 – 15V, -5 – -8V
Input Capacitance (Ciss) (Max) at Vds	800 – 2500pF at 200V
FET Feature	Standard
Technology	100 – 300W (Tc)
Operating Temperature	175°C (Tj)
Mounting Type	Through Hole
Supplier Device Package	TO-247
Package / Case	TO-247-3

1200V

CC-CL-75-1023

CC-CN-23-0123

CC-C2-B15-0322

	CC-CL-75-1023	CC-CN-23-0123	CC-C2-B15-0322
FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V / 1405V (Max)	1200V / 1390V (Max)	1200V / 1500V (Max)
Current - Drain (Id) at 25°C	30A (Ta)	20A (Ta)	12A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	20V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	60mOhm at 10A, 20V 80mOhm at 10A, 15V	85mOhm at 10A, 15V	135mOhm at 10A, 15V
Vgs(th) (Max) at Id	2.65V at 10mA (Typ)	2.4V at 5mA (Typ)	3.2V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	15nC	16nC	40nC
Vgs (Max/Min)	22V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	960pF at 200 V	810pF at 200 V	1810pF at 200 V
Output Capacitance (Coss) at Vds	95pF at 200 V	108pF at 200 V	125pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	12pF at 200 V	19pF at 200 V	18pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

1200V

CNYX1200B1
CC-{CN/YX}-
{21/23/33/22}-0123

CNYX1200B2
CC-{CN/YX}-
{12/22/32}-0123

CNYX1200B3
CC-{CN/YX}-
{11/13/31}-0123

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V / 1406V (Max)	1200V / 1473V (Max)	1200V / 1496V (Max)
Current - Drain (Id) at 25°C	21A (Ta)	19A (Ta)	15A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	84mOhm at 5A, 15V	94mOhm at 5A, 15V	118mOhm at 5A, 15V
Vgs(th) (Max) at Id	2.3V at 5mA (Typ)	2.3V at 5mA (Typ)	2.6V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	27nC	19nC	14nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	1340pF at 200 V	969pF at 200 V	695pF at 200 V
Output Capacitance (Coss) at Vds	140pF at 200 V	138pF at 200 V	135pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	16pF at 200 V	8pF at 200 V	4.5pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

1200V

CC1200B1
CC-{C/E/H}-
{B/1/21}-0322

CC1200B2
CC-{C/E/H}-
{B/1/21}-0322

CC1200B3
CC-{C/E/H}-
{B/1/21}-0322

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V / 1565V (Max)	1200V / 1565V (Max)	1200V / 1570V (Max)
Current - Drain (Id) at 25°C	16A (Ta)	15A (Ta)	14A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	109mOhm at 5A, 15V	119mOhm at 5A, 15V	128mOhm at 5A, 15V
Vgs(th) (Max) at Id	2.4V at 5mA (Typ)	2.45V at 5mA (Typ)	2.55V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	40nC	40nC	40nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	1800pF at 200 V	1800pF at 200 V	1800pF at 200 V
Output Capacitance (Coss) at Vds	125pF at 200 V	125pF at 200 V	125pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	18pF at 200 V	18pF at 200 V	18pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

1200V

CC1200B4
CC-{C/E/H}-
{B/1/21}-0322

CC1200B5
CC-{C/E/H}-
{B/1/21}-0322

CC1200B6
CC-{C/E/H}-
{B/1/21}-0322

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V / 1570V (Max)	1200V / 1570V (Max)	1200V / 1560V (Max)
Current - Drain (Id) at 25°C	13A (Ta)	12A (Ta)	11.5A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	137mOhm at 5A, 15V	146mOhm at 5A, 15V	154mOhm at 5A, 15V
Vgs(th) (Max) at Id	2.45V at 5mA (Typ)	2.55V at 5mA (Typ)	2.6V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	40nC	36nC	36nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	1800pF at 200 V	1750pF at 200 V	1750pF at 200 V
Output Capacitance (Coss) at Vds	125pF at 200 V	110pF at 200 V	110pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	18pF at 200 V	15pF at 200 V	15pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

1200V

CC1200B7
CC-{C/E/H}-
{B/1/21}-0322

CC1200B8
CC-{C/E/H}-
{B/1/21}-0322

CC1200B9
CC-{C/E/H}-
{B/1/21}-0322

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V / 1580V (Max)	1200V / 1540V (Max)	1200V / 1580V (Max)
Current - Drain (Id) at 25°C	11A (Ta)	10A (Ta)	10A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	163mOhm at 5A, 15V	173mOhm at 5A, 15V	181mOhm at 5A, 15V
Vgs(th) (Max) at Id	2.4V at 5mA (Typ)	2.5V at 5mA (Typ)	2.7V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	36nC	36nC	34nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	1750pF at 200 V	1750pF at 200 V	1700pF at 200 V
Output Capacitance (Coss) at Vds	110pF at 200 V	110pF at 200 V	100pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	15pF at 200 V	15pF at 200 V	10pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

1200V

CC1200B10
CC-{C/E/H}-
{B/1/21}-0322

CC1200B11
CC-{C/E/H}-
{B/1/21}-0322

CC1200B12
CC-{C/E/H}-
{B/1/21}-0322

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V / 1545V (Max)	1200V / 1580V (Max)	1200V / 1580V (Max)
Current - Drain (Id) at 25°C	10A (Ta)	9A (Ta)	9A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	189mOhm at 5A, 15V	200mOhm at 5A, 15V	208mOhm at 5A, 15V
Vgs(th) (Max) at Id	2.6V at 5mA (Typ)	2.7V at 5mA (Typ)	2.7V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	34nC	34nC	34nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	1700pF at 200 V	1700pF at 200 V	1700pF at 200 V
Output Capacitance (Coss) at Vds	100pF at 200 V	100pF at 200 V	100pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	10pF at 200 V	10pF at 200 V	10pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

3300V

CC3300B1
CC-{W1/6}-
{11-44}-1022

CC3300B2
CC-{W1/6}-
{11-44}-1022

CC3300B3
CC-{W1/6}-
{11-44}-1022

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	3300V	3300V	3300V
Current - Drain (Id) at 25°C	3A (Ta)	2.5A (Ta)	2A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	475mOhm at 3A, 15V	655mOhm at 3A, 15V	885mOhm at 3A, 15V
Vgs(th) (Max) at Id	3.1V at 5mA (Typ)	3.1V at 5mA (Typ)	3.1V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	18nC	17nC	16nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	900pF at 200 V	850pF at 200 V	800pF at 200 V
Output Capacitance (Coss) at Vds	100pF at 200 V	96pF at 200 V	90pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	3pF at 200 V	3pF at 200 V	3pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3

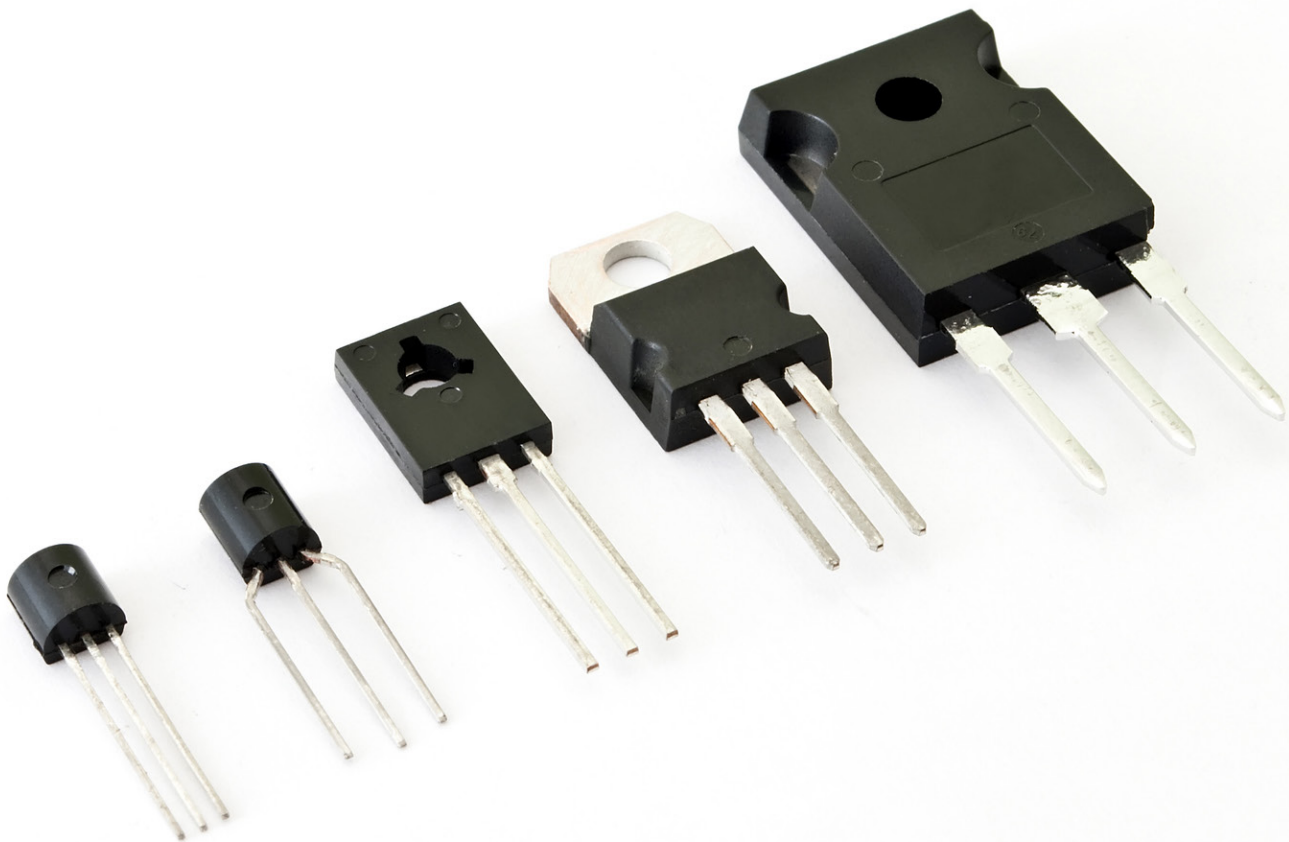
650V

CC650B1M22-1
CC-{PQ/TO}-
{32/23/22/21}-0522C

CC650B2M22-1
CC-{PQ/TO}-
{31/33}-0522C

CC650B3M22-1
CC-{PQ/TO}-
{11/12/13/33}-0522C

FET Type	N-Channel	N-Channel	N-Channel
Technology	SiC MOSFET	SiC MOSFET	SiC MOSFET
Drain to Source Voltage (Vdss)	650V	650V	650V
Current - Drain (Id) at 25°C	18A (Ta)	15A (Ta)	14A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15V (VGS)	15V (VGS)	15V (VGS)
Rds On (Max) at Id, Vgs	98mOhm at 5A, 15V	118mOhm at 5A, 15V	123mOhm at 5A, 15V
Vgs(th) (Max) at Id	2.5V at 5mA (Typ)	2.5V at 5mA (Typ)	2.5V at 5mA (Typ)
Gate Charge (Qg) (Max) at Vgs	20nC	19nC	18nC
Vgs (Max/Min)	20V, -5V	20V, -5V	20V, -5V
Input Capacitance (Ciss) at Vds	980pF at 200V	968pF at 200 V	918pF at 200 V
Output Capacitance (Coss) at Vds	138pF at 200V	136pF at 200 V	142pF at 200 V
Reverse transfer Capacitance (Crss) at Vds	15pF at 200V	6pF at 200 V	6pF at 200 V
FET Feature	Standard	Standard	Standard
Technology	100W (Tc)	100W (Tc)	100W (Tc)
Operating Temperature	175°C (Tj)	175°C (Tj)	175°C (Tj)
Mounting Type	Through Hole	Through Hole	Through Hole
Supplier Device Package	TO-247	TO-247	TO-247
Package / Case	TO-247-3	TO-247-3	TO-247-3



650 – 1200V

FET Type	N-Channel
Technology	SiC MOSFET
Drain to Source Voltage (Vdss)	650 – 1200
Current - Continuous Drain (Id) at 25°C	5 – 40A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15 – 20V
Rds On at Id, Vgs	50 – 500mOhm
Vgs(th) at Id/10K	2 – 4V
Gate Charge (Qg) at Vgs	10 – 50nC
Vgs	15 – 20V, -5 – -8V
Input Capacitance (Ciss) at Vds	800 – 2500pF at 200V
FET Feature	Standard
Technology	100 – 300W (Tc)
Operating Temperature	175°C (Tj)
Mounting Type	Through Hole
Supplier Device Package	TO-247
Package / Case	TO-247-3

1200 – 1700V

FET Type	N-Channel
Technology	SiC MOSFET
Drain to Source Voltage (Vdss)	1200 – 1700V
Current - Continuous Drain (Id) at 25°C	5 – 30A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15 – 20V
Rds On at Id, Vgs	60 – 1000mOhm
Vgs(th) at Id/10K	2 – 4V
Gate Charge (Qg) at Vgs	10 – 50nC
Vgs	15 – 20V, -5 – -8V
Input Capacitance (Ciss) at Vds	800 – 2500pF at 200V
FET Feature	Standard
Technology	100 – 300W (Tc)
Operating Temperature	175°C (Tj)
Mounting Type	Through Hole
Supplier Device Package	TO-247
Package / Case	TO-247-3

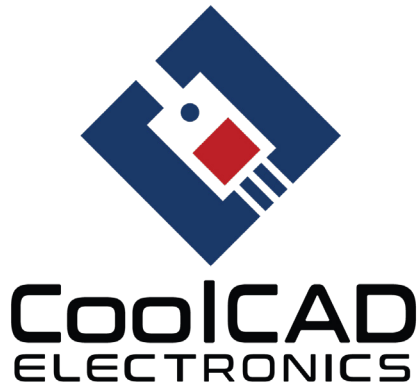
1700 – 3300V

FET Type	N-Channel
Technology	SiC MOSFET
Drain to Source Voltage (Vdss)	1700 – 3300V
Current - Continuous Drain (Id) at 25°C	5 – 20A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15 – 20V
Rds On at Id, Vgs	90 – 5500mOhm
Vgs(th) at Id/10K	2 – 4V
Gate Charge (Qg) at Vgs	10 – 50nC
Vgs	15 – 20V, -5 – -8V
Input Capacitance (Ciss) at Vds	800 – 2500pF at 200V
FET Feature	Standard
Technology	100 – 300W (Tc)
Operating Temperature	175°C (Tj)
Mounting Type	Through Hole
Supplier Device Package	TO-247
Package / Case	TO-247-3

> 3300V

FET Type	N-Channel
Technology	SiC MOSFET
Drain to Source Voltage (Vdss)	1200V
Current - Continuous Drain (Id) at 25°C	5 – 10A (Ta)
Drive Voltage (Max Rds On, Min Rds On)	15 – 20V
Rds On at Id, Vgs	200 – 7500mOhm
Vgs(th) at Id/10K	2 – 4V
Gate Charge (Qg) at Vgs	10 – 50nC
Vgs	15 – 20V, -5 – -8V
Input Capacitance (Ciss) at Vds	800 – 2500pF at 200V
FET Feature	Standard
Technology	100 – 300W (Tc)
Operating Temperature	175°C (Tj)
Mounting Type	Through Hole
Supplier Device Package	TO-247
Package / Case	TO-247-3





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Our CoolCAD Team possess a unique combination of expertise in electronics, excelling in semiconductor physics, fabrication, design, and integrated and board-level circuit development and manufacturing. Together we have published over 100 research papers in professional scientific and engineering journals and have multiple patents on our key discoveries in the area of wide bandgap SiC electronics.