MBR20200CT

Switch-mode Power Rectifier

Dual Schottky Rectifier

Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- 20 A Total (10 A Per Diode Leg)
- This is a Pb-Free Device*

Applications

- Power Supply − Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94, V−0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperatures for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B
  Machine Model C

ON Semiconductor®

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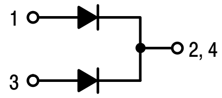
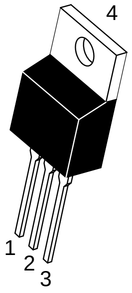
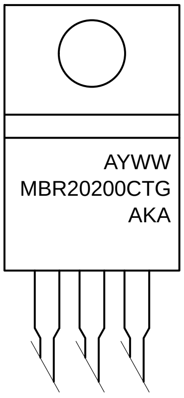
SCHOTTKY BARRIER RECTIFIER
20 AMPERES, 200 VOLTS





TO−220
CASE 221A
PLASTIC
STYLE 6

MARKING DIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
G	= Pb−Free Package
AKA	= Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping
MBR20200CTG	TO−220 (Pb−Free)	50 Units / Rail

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MAXIMUM RATINGS (Per Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	200	V
Average Rectified Forward Current (T_C = 161°C) Per Leg Per Package	$I_{F(AV)}$	10 20	A
Peak Repetitive Forward Current per Leg (Square Wave, 20 kHz, T_C = 158°C)	I_{FRM}	20	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	150	A
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	I_{RRM}	1.0	A
Storage Temperature Range	T_{stg}	−65 to +175	°C
Operating Junction Temperature	T_J	−65 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-Case	Minimum Pad	$R_{\theta JC}$	2.0	°C/W
Maximum Thermal Resistance, Junction-to-Ambient	Minimum Pad	$R_{\theta JA}$	60.0	°C/W

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Min	Typical	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1)	V_F				V
(I_F = 10 A, T_J = 25°C)		–	0.80	0.90	
(I_F = 10 A, T_J = 125°C)		–	0.66	0.80	
(I_F = 20 A, T_J = 25°C)		–	0.89	1.00	
(I_F = 20 A, T_J = 125°C)		–	0.76	0.90	
Maximum Instantaneous Reverse Current (Note 1)	I_R				mA
(Rated dc Voltage, T_J = 25°C)		–	0.0002	1.0	
(Rated dc Voltage, T_J = 125°C)		–	0.4	50	

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

DYNAMIC CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Capacitance (V_R = −5.0 V, T_C = 25°C, Frequency = 1.0 MHz)	C_T	500	pF

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

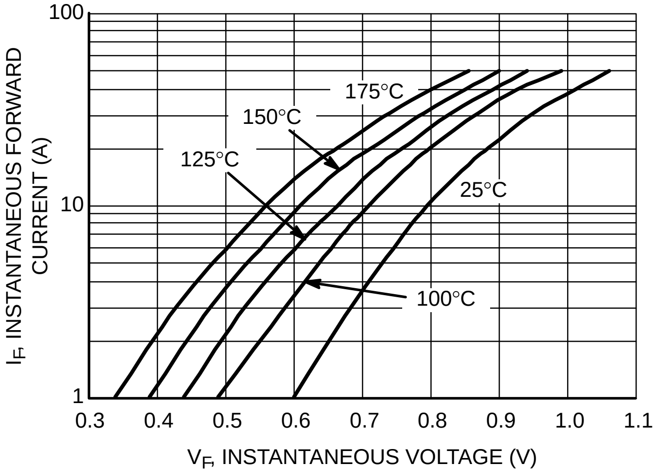


Figure 1. Typical Forward Voltage

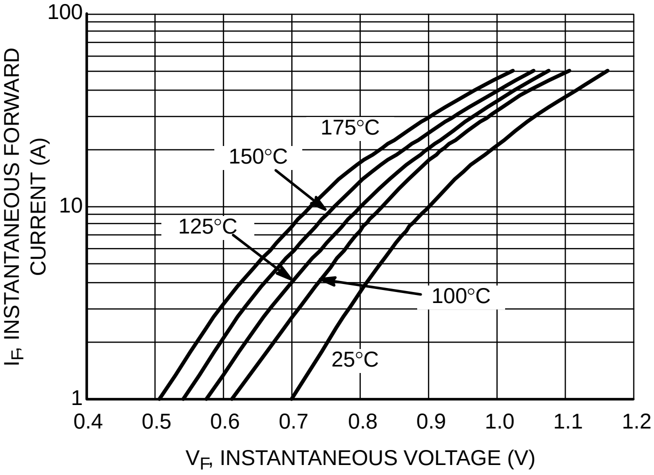


Figure 2. Maximum Forward Voltage

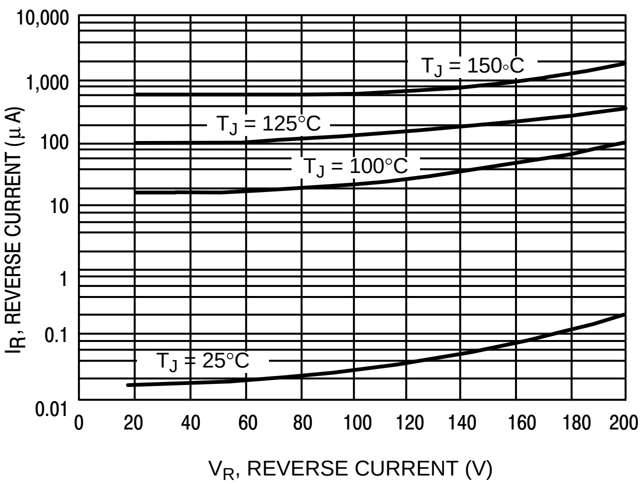


Figure 3. Typical Reverse Current (Per Leg)

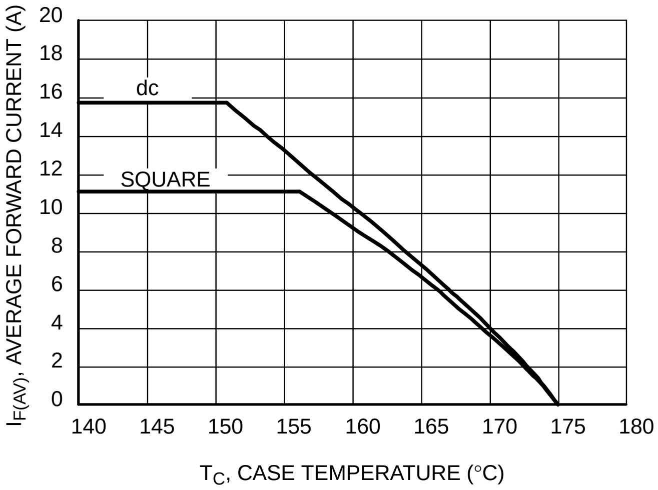


Figure 4. Current Derating, Case, Per Leg

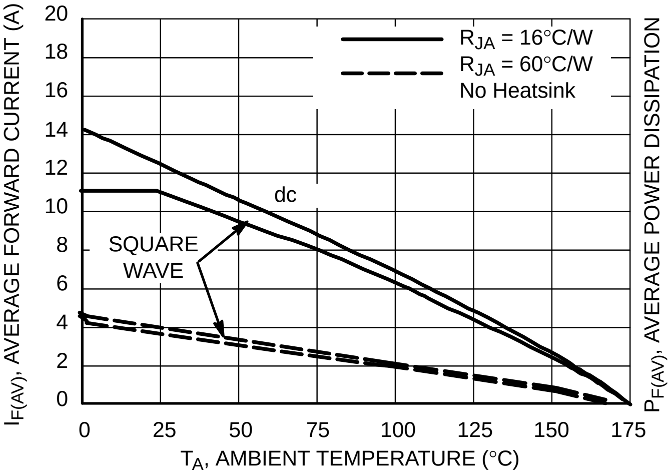


Figure 5. Current Derating, Ambient, Per Leg

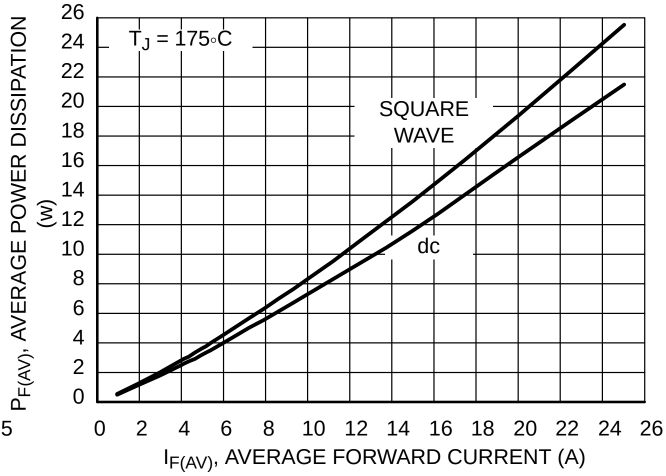


Figure 6. Forward Power Dissipation

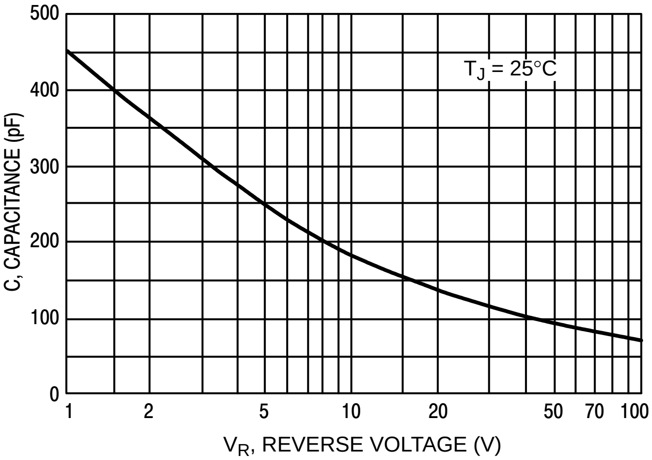


Figure 7. Typical Capacitance (Per Leg)

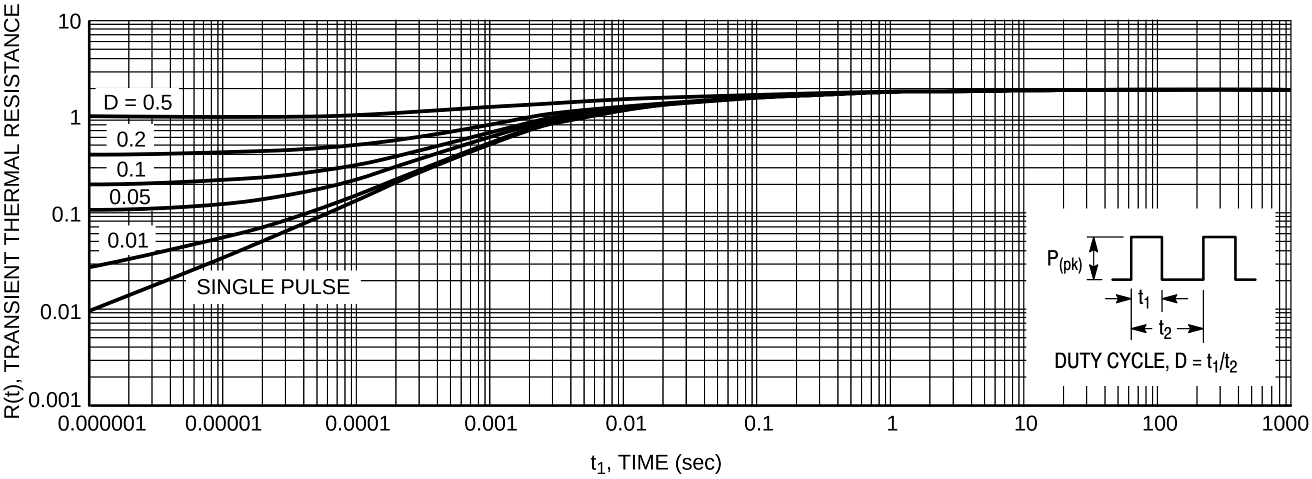
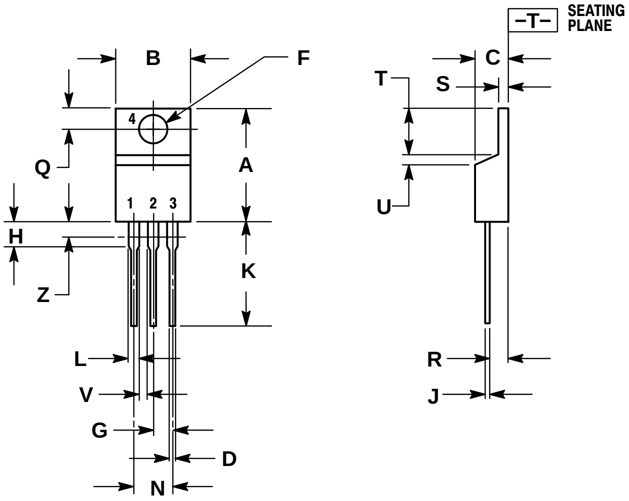


Figure 8. Thermal Response Junction-to-Case

PACKAGE DIMENSIONS

TO−220

CASE 221A−09
ISSUE AH



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

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