

Ultra Fast Recovery Diodes

$V_{RM}: 70 \sim 400V$

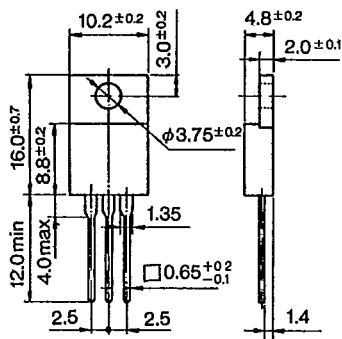
$I_o: 5.0 \sim 20A$

CTG

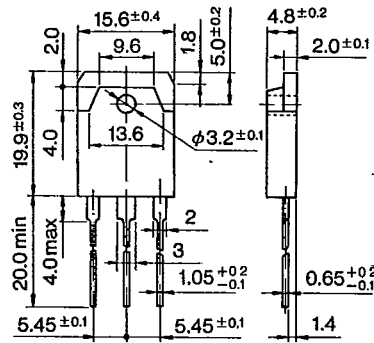
| Rating/ Characteristics | Absolute Maximum Ratings | | | | | | Electrical Characteristics (Ta = 25°C) | | | | | Others | | | |
|----------------------------|--------------------------|------------------------|-----------------------|-------------------------------------|------------------------|--------------------------|--|------------------------|---|---|---|--------------------|-----------|--------|------|
| | V _{RSM} (V) | V _{RM} (V) | I _o (A) | I _{FSM} (A) | T _j (°C) | T _{stg} (°C) | V _F (V) | I _R (mA) | I _{R(H)} (mA) | tr (μs) | I _F /I _{RP} (mA) | Outline Drawing | Weight(g) | Taping | Note |
| Type No. | per chip | | With Fin | 50Hz Half-Sine Wave Single Pulse | | | Max. per chip | I _F (A) | V _R = V _{RM} max(per chip) | V _R = V _{RM} , T _j = 140°C max (per chip) | | | | | |
| CTG-11S | 70 | 70 | 5.0 | 35 | | | 1.3 | | | | | | | | |
| CTG-11R | 70 | 70 | | | | | | | | | | | | | |
| CTG-12S | 200 | 200 | | | | | | | | | | | | | |
| CTG-12R | 200 | 200 | | | | | | | | | | | | | |
| CTG-14S | 400 | 400 | | | | | 2.0 | | | | | | | | |
| CTG-14R | 400 | 400 | | | | | | | | | | | | | |
| CTG-21S | 70 | 70 | 10 | 65 | | | 1.3 | 0.5 | | | | | | | |
| CTG-21R | 70 | 70 | | | | | | | | | | | | | |
| CTG-22S | 200 | 200 | | | | | | | | | | | | | |
| CTG-22R | 200 | 200 | | | | | | | | | | | | | |
| CTG-23S | 300 | 300 | | | | | 1.8 | 5.0 | | | | | | | |
| CTG-23R | 300 | 300 | | | | | | | | | | | | | |
| CTG-24S | 400 | 400 | 8.0 | | | | 2.0 | | | | | | | | |
| CTG-24R | 400 | 400 | | | | | | | | | | | | | |
| CTG-31S | 70 | 70 | 20 | 150 | | | 1.3 | | | | | | | | |
| CTG-31R | 70 | 70 | | | | | | | | | | | | | |
| CTG-32S | 200 | 200 | | | | | | | | | | | | | |
| CTG-32R | 200 | 200 | | | | | | | | | | | | | |
| CTG-33S | 300 | 300 | | | | | 1.8 | 10 | 1.0 | 5.0 | | | | | |
| CTG-33R | 300 | 300 | | | | | | | | | | | | | |
| CTG-34S | 400 | 400 | 16 | 100 | | | 2.0 | | | | | | | | |
| CTG-34R | 400 | 400 | | | | | | | | | | | | | |

Thermal Resistance R_{th(j-c)}: 3.0°C/W (CTG-11S~24R)
1.5°C/W (CTG-31S~34R)

Outline Drawing ⑥⑥

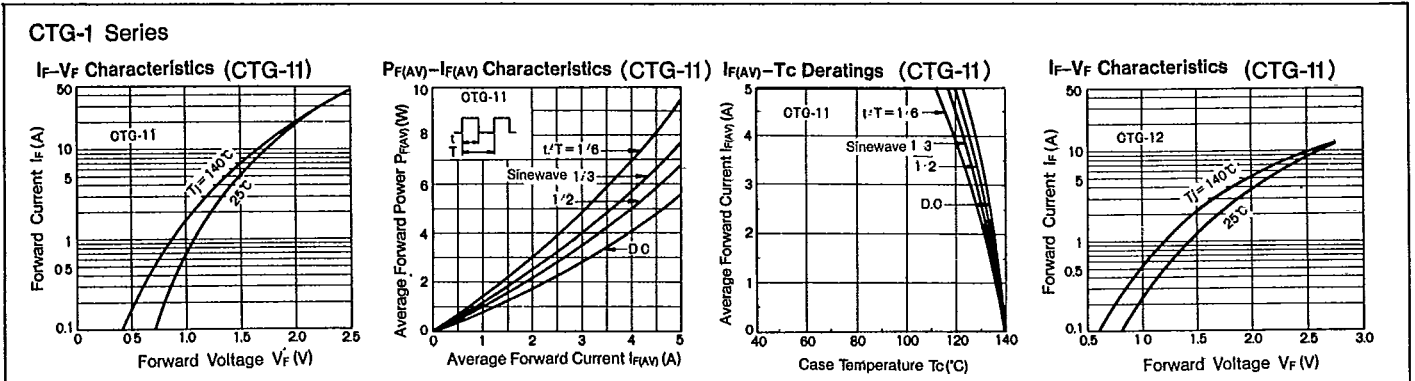


Outline Drawing ⑥⑦



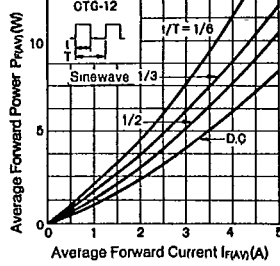
Center Tap Internal Connection: S Type R Type

⑥⑥⑦ Plastic Molded, Flammability : UL94V-0 or Equivalent

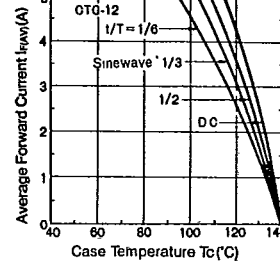


CTG-1 Series

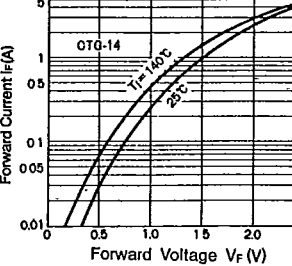
$P_{F(AV)}-I_{F(AV)}$ Characteristics (CTG-12)



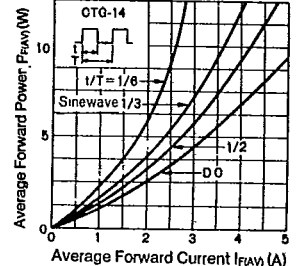
$I_{F(AV)}-T_c$ Deratings (CTG-12)



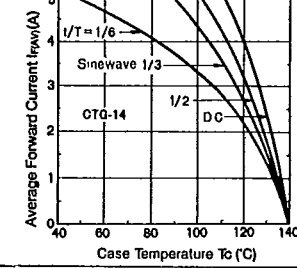
I_F-V_F Characteristics (CTG-14)



$P_{F(AV)}-I_{F(AV)}$ Characteristics (CTG-14)

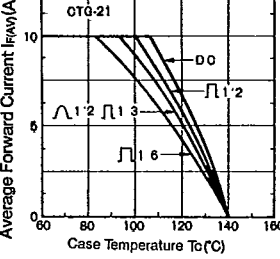


$I_{F(AV)}-T_c$ Deratings (CTG-14)

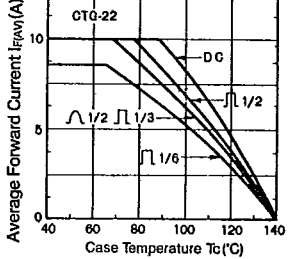


CTG-2 Series

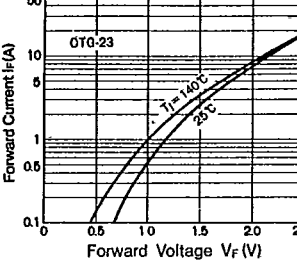
$I_{F(AV)}-T_c$ Deratings (CTG-21)



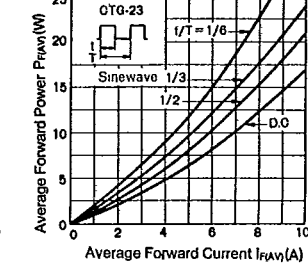
$I_{F(AV)}-T_c$ Deratings (CTG-22)



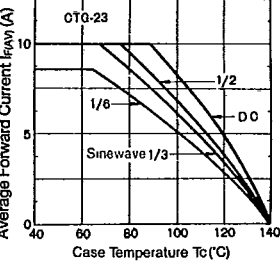
I_F-V_F Characteristics (CTG-23)



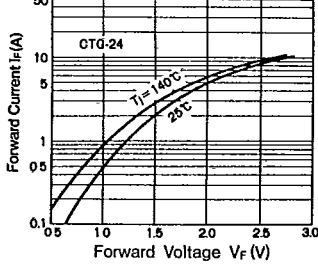
$P_{F(AV)}-I_{F(AV)}$ Characteristics (CTG-23)



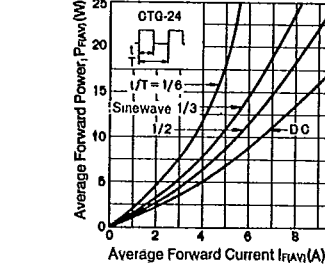
$I_{F(AV)}-T_c$ Deratings (CTG-23)



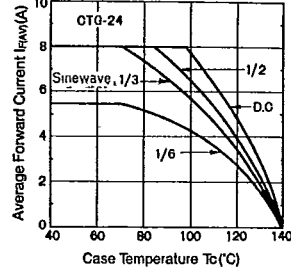
I_F-V_F Characteristics (CTG-24)



$P_{F(AV)}-I_{F(AV)}$ Characteristics (CTG-24)

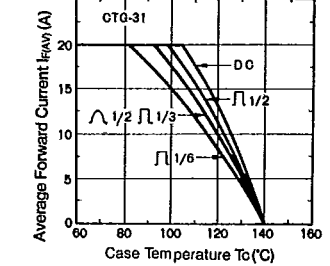


$I_{F(AV)}-T_c$ Deratings (CTG-24)

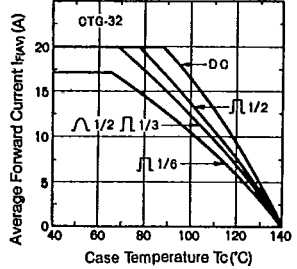


CTG-3 Series

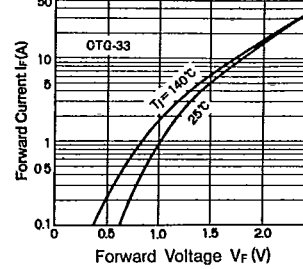
$I_{F(AV)}-T_c$ Deratings (CTG-31)



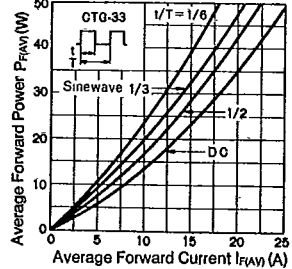
$I_{F(AV)}-T_c$ Deratings (CTG-32)



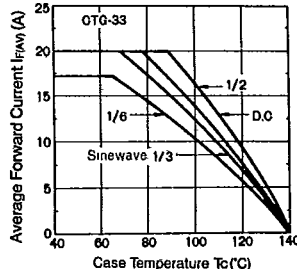
I_F-V_F Characteristics (CTG-33)



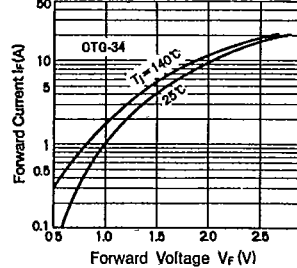
$P_{F(AV)}-I_{F(AV)}$ Characteristics (CTG-33)



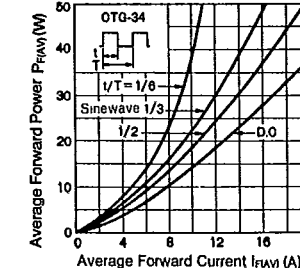
$I_{F(AV)}-T_c$ Deratings (CTG-33)



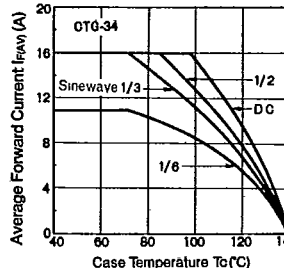
I_F-V_F Characteristics (CTG-34)



$P_{F(AV)}-I_{F(AV)}$ Characteristics (CTG-34)



$I_{F(AV)}-T_c$ Deratings (CTG-34)

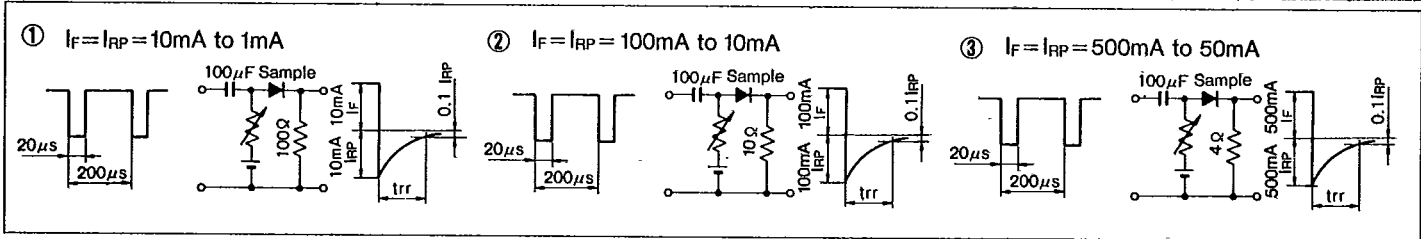


Symbols/trr Measurement Circuit

Symbols

| | | | | | |
|-------------|-----------------------------------|------------|------------------------------------|---------------|--|
| V_{RSM} | Peak Reverse Surge Voltage | I_{RSM} | Peak Reverse Surge Current | T_{stg} | Storage Temperature |
| V_{RM} | Peak Reverse Voltage | I_R | Reverse Current | t_{rr} | Reverse Recovery Time |
| V_{P-P} | Reverse Voltage (Peak to Peak) | I_{RP} | Peak Reverse Current | C_t | Total Capacitance Between Terminals |
| V_R | Reverse Voltage | $I_{R(H)}$ | Reverse Current (High Temperature) | $R_{th(j-c)}$ | Thermal Resistance, Junction to Case |
| V_F | Forward Voltage | I_Z | Avalanche Current | r_Z | Temperature Coefficient of Breakdown Voltage |
| V_B | Breakdown Voltage | I_{ZSM} | Allowable Avalanche Current | R_Z | Equivalent Resistance of Breakdown Region |
| I_o | Average Rectified Forward Current | T_a | Ambient Temperature | $P_{F(AV)}$ | Average Forward Power Dissipation |
| I_F | Forward Current | T_j | Junction Temperature | I^2_t | I^2_t limiting Value |
| $I_{F(AV)}$ | Average Forward Current | T_{opr} | Operating Ambient Temperature | | |
| I_{FSM} | Peak Forward Surge Current | T_c | Case Temperature | | |

Reverse Recovery Time Measurement Circuit



Taping Specifications

Excluding High Voltage Diodes

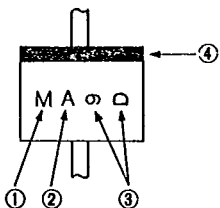
| Designation | Dimension (in mm) | Packaging Dimension and Marking | Quantity |
|--|--|---|--|
| V Add Suffix [V] to Type No. | <p>Tape Carrier Method</p> <p>(1) Right side of taping direction is cathode. (2) Place electrode side down when casing. (3) Provide leader tape of 150~200mm at beginning of tape. (4) Provide space of more than 10 pitches each for beginning and end of tape.</p> | <p>Reel</p> <p>Marking of Type No., Lot No. and Quantity</p> | 1,800 pcs per reel |
| V Add Suffix [V] to type No. | <p>Axial Taping</p> | <p>Reel</p> <p>Markings of Type No. Lot No. and Quantity</p> | 5,000 pcs per reel (2.7φ body) 3,000 pcs per reel (4.0φ body) |

Taping Specifications

| Designation | Dimension (in mm) | Packaging Dimension and Marking | Quantity |
|---|---|--|---|
| <p>V1</p> <p>Add Suffix [V1] to Type No.</p> | <p>Axial Taping</p> | <p>Ammunition Pack</p> <p>Broken Line: Perforation</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>2,000 pcs per box (2.7 φ body)</p> <p>1,000 pcs per box (4.0 φ body)</p> |
| <p>VO</p> <p>Add Suffix [VO] to Type No.</p> | <p>Axial Taping</p> | <p>Ammunition Pack</p> <p>Broken Line: Perforation</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>2,000 pcs per box (2.7 φ body)</p> <p>(2.4 φ body)</p> |
| <p>V3</p> <p>Add Suffix [V3] to Type No.</p> | <p>Axial Taping</p> | <p>Reel</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>1,500 pcs per reel (5.2 φ body)</p> |
| <p>V4</p> <p>Add Suffix [V4] to Type No.</p> | <p>Axial Taping</p> | <p>Ammunition Pack</p> <p>Broken Line: Perforation</p> <p>Trade Mark</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>1,000 pcs per box (5.2 φ body)</p> |
| <p>W</p> <p>Add Suffix [W] to Type No.</p> | <p>Radial Taping</p> | <p>Ammunition Pack</p> <p>Broken Line: Perforation</p> <p>ANODE</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>4,000 pcs per box (2.7 φ body)</p> <p>(0.6 φ lead)</p> |
| <p>WS</p> <p>Add Suffix [WS] to Type No.</p> | <p>Radial Taping (Applicable to AO Series)</p> | <p>Ammunition Pack</p> <p>ANODE</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>2,500 pcs per box (2.4 φ body)</p> |
| <p>WK</p> <p>Add Suffix [WK] to Type No.</p> | <p>Radial Taping (Applicable to AO Series)</p> | <p>Ammunition Pack</p> <p>ANODE</p> <p>Markings of Type No, Lot No, and Quantity</p> | <p>2,500 pcs per box (2.4 φ body)</p> |

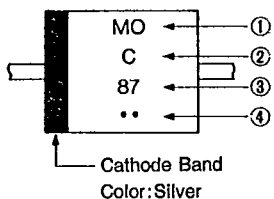
Marking Guide

1 Small TMD



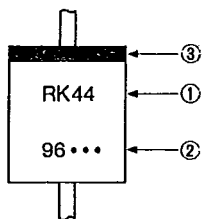
- ① Type Designation (in abbreviation)
AM01 is abbreviated as M.
- ② Class Designation
Z: 200V, No Letter: 400V, A: 600V
- ③ A: Year (Last Number of AD Year)
B: Month (Jan. to Sept. are represented by numbers 1 to 9 respectively, and Oct., Nov., and Dec. are abbreviated as O, N and D respectively)
- ④ Cathode Band: Successive Band, however AU02 Type is Non-Successive Band.

2 E/EO Type TMD



- ① Type Designation (in abbreviation)
EM01 is abbreviated as MO, EM2 is abbreviated as M2.
- ② Class Designation
Z: 200V, No Letter: 400V, A: 600V
B: 800 V, C: 1000V, F: 1500V
However, EU02A to be marked 2A, and EU2YX to be marked Y.
- ③ Abbreviations Representing Production Period
A: Year (Last Number of AD Year)
B: Month (1~9, O, N, D)
- ④ Production Period Divided in 3 ten day terms
• : 1st 10days •• : 2nd 10days ••• : 3rd 10days

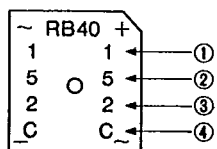
3 R Type TMD



- ① Type Designation: Mark in 2 sets
- ② Production Period: Mark in 4 sets
A: Year (Last Number of AD Year)
B: Month (1~9, O, N, D)
- ③ Production Period Divided in 3 ten day terms
• : 1st 10days •• : 2nd 10days ••• : 3rd 10days
- ④ Cathode Band Color: Silver: For Power Supply
Yellow: For Middle Speed
Red : For High Speed and Ultra-High Speed

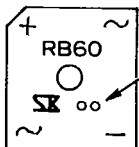
4 RB40/60

(RB40 Series)



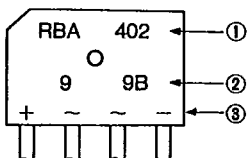
- ① Peak Reverse Voltage Designation
1, 2, 4, 6, C
Production Period
- ② Year (Last Number of AD Year)
- ③ Month (1~9, O, N, D)
- ④ Divided in 3 ten day terms
A: 1st 10days, B: 2nd 10days
C: 3rd 10days
Color Designation: Silver

(RB60 Series)



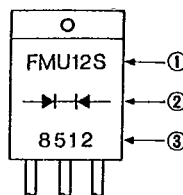
Dot Designation RB601 Violet
RB602 No Color
RB604 Blue
RB606 White

5 RBV/RBA



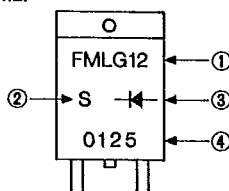
- ① Type Designation
- ② Lot Number
1st : Year (Last Number of AD Year)
2nd: Month (1~9, O, N, D)
3rd : Divided 1~3 ten day Terms
A: 1st 10 days B: 2nd 10 days
C: 3rd 10 days
- ③ In-Put Designation

6 T0220 Type (FM or CT Type)



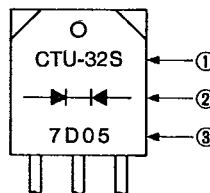
- ① Type Designation
Show FMU-12S as FMU12S.
- ② Polarity: Rectifier Symbols
- ③ Lot Number (Laser Marking)
1st : Year (Last Number of AD Year)
2nd : Month (0~9, O, N, D)
3rd, 4th: Day

7 T0220 Type (FM or CT Type, single chip)



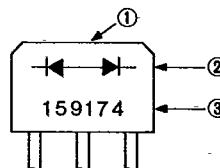
- ① Type Designation: Omit Last Letter
Show FML-G12S as FMLG12.
- ② Last Letter of Type Designation
- ③ Polarity: Rectifier Symbols
- ④ Lot Number (Laser Marking)
1st : Year (Last Number of AD Year)
2nd : Month (0~9, O, N, D)
3rd, 4th: Day

8 T03P Type (FM or CT Type)



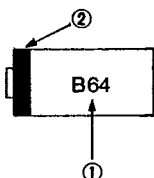
- ① Type shown in full designation
However, CTB-34/34S/34M are marked as CTB-34, CTU-G3DR is marked as CTUG3DR.
- ② Polarity: Rectifier Symbols
- ③ Lot Number:
1) M, U, G and L Types
First Number : Last Digit of AD Year
Second Number : Month
Third and Fourth Numbers: Day
Fifth Number : None
2) For types CTB-34/34S/34M, the fifth letter shows type designation. If no fifth number, the type is CTB-33 or CTB-34.
- 3) Marking Color: Silver

9 MI-10/15 Type



- ① MI-10/15 is die-stamped on the top of the case.
- ② Rectifier Symbols
- ③ Lot Number:
First Number : Peak Reverse Voltage:
(Letter) 0=50V, 1=100V, 2=200V,
4=400V, 6=600V, C=1000V
Second Number : Last Digit of AD Year
Third Number : Month
Fourth and Fifth Numbers: Day
Sixth Number : Production number and
U: Voltage Doubler Type

10 SFP Type



- ① Type Designation:
SFPB-64 is abbreviated at B64,
- ② Cathode Band