V_{RM} = 300 V, $I_{F(AV)}$ = 60 A, t_{rr} = 100 ns
Fast Recovery Diode

CTNS-4603S

Data Sheet

Description

The CTNS-4603S is a 300 V, 60 A, fast recovery diode. The maximum V_F of 1.2 V and the maximum t_{rr} of 100 ns (I_F : I_{RP} = 1 : 1) are realized by optimizing the trade-off relationship between V_F and t_{rr}. The low thermal resistance package achieves high performance in terms of heat dissipation.

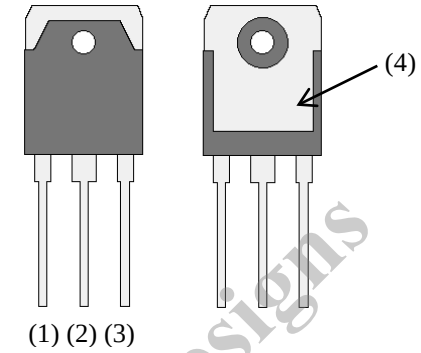
Features

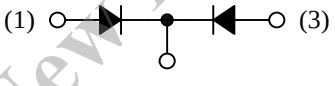
- V_{RM} ---------- 300 V
- $I_{F(AV)}$ ---------- 60 A
- V_F ---------- 1.2 V
- t_{rr1} ---------- 100 ns
- Bare lead frame: Pb-free (RoHS compliant)

Applications

- Secondary Side Rectifier Diode
  (Flyback Converter, LLC Converter, etc.)
- Freewheel Diode
  (Offline Buck and Buck-boost Converter)

Package
TO3P-3L





(1) Anode
(2) Cathode
(3) Anode
(4) Cathode

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage	V_{RSM}	300	V	
Repetitive Reverse Voltage	V_{RM}	300	V	
Average Forward Current	$I_{F(AV)}$	60	A	See Figure 1 and Figure 2
Surge Forward Current	I_{FSM}	400	A	Half cycle sine wave, positive side, 10 ms, 1 shot
I^2t Limiting Value	I^2t	800	A^2s	1 ms ≤ t ≤ 10 ms
Junction Temperature	T_J	−40 to 150	°C	
Storage Temperature	T_{STG}	−40 to 150	°C	

Electrical Characteristics

Unless otherwise specified, T_A = 25 °C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	T_J = 25 °C, I_F = 30 A	—	—	1.2	V
		T_J = 100 °C, I_F = 30 A	—	0.85	—	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$,	—	—	100	μA
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, T_J = 150 °C	—	—	10	mA
Reverse Recovery Time	t_{rr1}	$I_F = I_{RP}$ = 500 mA 90% recovery point, T_J = 25 °C	—	—	100	ns
Thermal Resistance(1)	$R_{th(J-C)}$		—	—	1.0	°C/W

(1) $R_{th\ (J-C)}$ is thermal resistance between junction and the case. The case temperature is measured at the back side near the screw hole.

Rating and Characteristic Curves

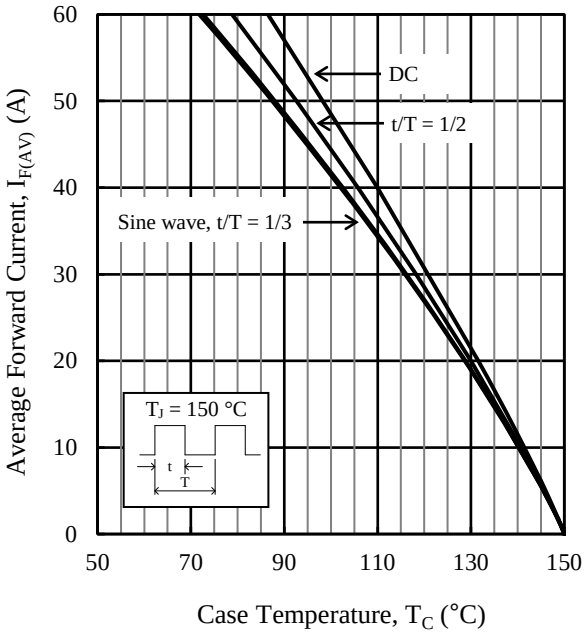


Figure 1. $I_{F(AV)}$ vs. T_C Typical Characteristics (V_R = 0 V)

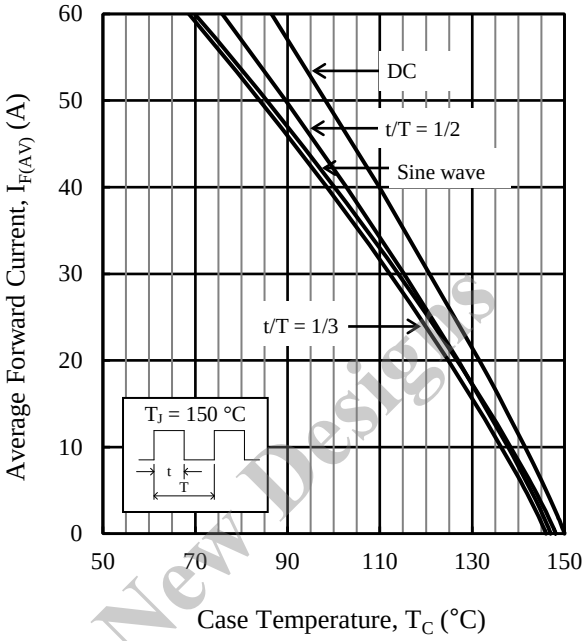


Figure 2. $I_{F(AV)}$ vs. T_C Typical Characteristics (V_R = 300 V)

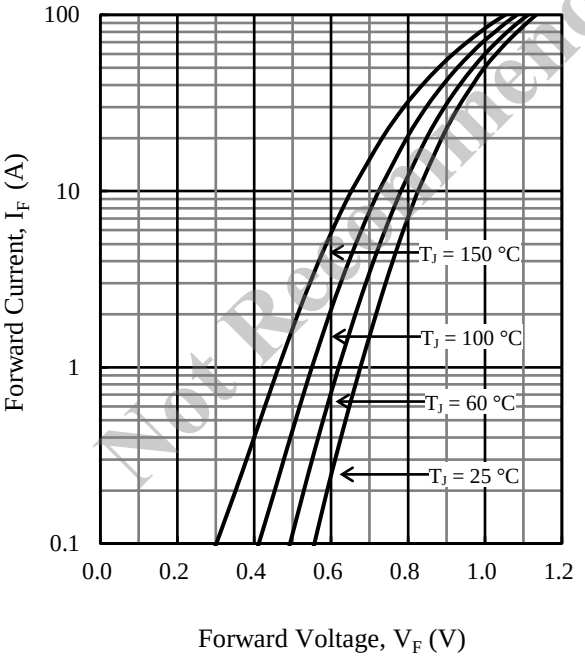


Figure 3. V_F vs. I_F Typical Characteristics

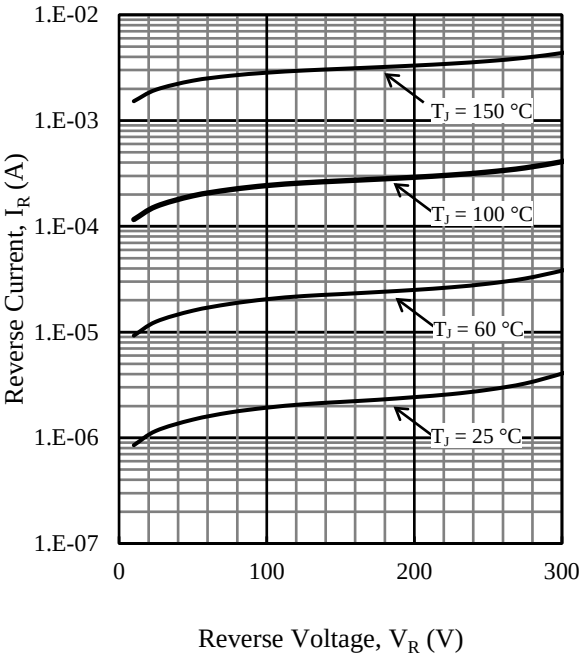
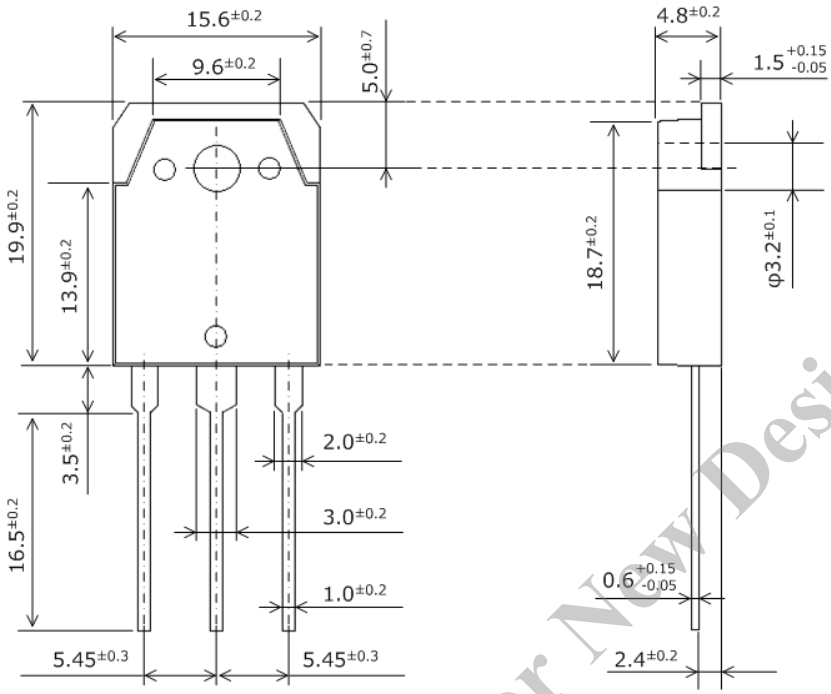


Figure 4. V_R vs. I_R Typical Characteristics

Physical Dimensions

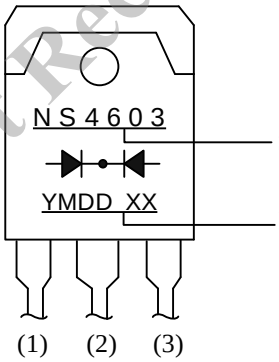
● **TO3P-3L**



NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- When soldering the products, it is required to minimize the working time, within the following limits:
  Flow: 260 ± 5 °C / 10 ± 1 s, 2 times
  Soldering Iron: 380 ± 10 °C / 3.5 ± 0.5 s, 1 time
  Soldering should be at a distance of at least 1.5 mm from the body of the product.
- The recommended screw torque for TO3P: 0.686 to 0.882 N·m (7 to 9 kgf·cm)

Marking Diagram



Specific Device Code (See Table 1)

Lot Number:
Y is the last digit of the year of manufacture (0 to 9)
M is the month of the year (1 to 9, O, N, or D)
DD is the day of the month (01 to 31)
XX is the control number

Table 1. Specific Device Code

Specific Device Code	Part Number
NS4603	CTNS-4603S

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