

$V_{RM} = 600\text{ V}$, $I_{F(AV)} = 60\text{ A}$, $t_{rr} = 80\text{ ns}$
Fast Recovery Diode
CTXR-5606S-SP

Description

The CTXR-5606S-SP is a fast recovery diode of 600 V / 60 A. The low Q_{rr} characteristic allows the product to have almost no ringing at turn-off, leading to the realization of low-noise systems. The maximum t_{rr} of 80 ns is realized by optimizing a life-time control. The low thermal resistance package achieves high performance in terms of heat dissipation.

Features

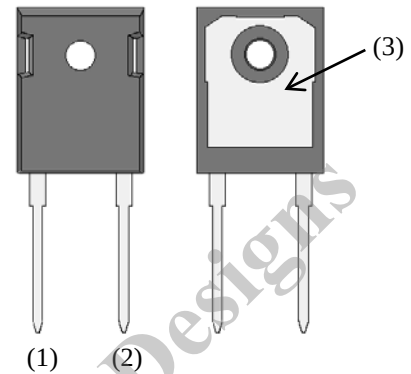
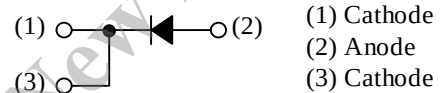
- V_{RM} ----- 600 V
- $I_{F(AV)}$ ----- 60 A
- V_F ----- 2.5 V
- t_{rr} ----- 80 ns
- Bare lead frame: Pb-free (RoHS compliant)

Applications

- CCM PFC Circuit
- Secondary Side Rectifier Diode
- Boost Diode

Package

TO247-2L



Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Rating	Unit	Conditions
Peak Repetitive Reverse Voltage	V_{RSM}	600	V	
Repetitive Reverse Voltage	V_{RM}	600	V	
Average Forward Current	$I_{F(AV)}$	60	A	See Figure 2 and Figure 3
Surge Forward Current	I_{FSM}	240	A	Half cycle sine wave, positive side, 10 ms, 1 shot
I^2t Limiting Value	I^2t	288	A^2s	$1\text{ ms} \leq t \leq 10\text{ ms}$
Junction Temperature	T_J	-40 to 150	$^{\circ}\text{C}$	
Storage Temperature	T_{STG}	-40 to 150	$^{\circ}\text{C}$	

Electrical Characteristics

Unless otherwise specified, $T_A = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	$T_J = 25\text{ }^{\circ}\text{C}$, $I_F = 60\text{ A}$	—	—	2.5	V
		$T_J = 100\text{ }^{\circ}\text{C}$, $I_F = 60\text{ A}$	—	2.0	—	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	—	10	μA
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, $T_J = 150\text{ }^{\circ}\text{C}$	—	—	3	mA
Reverse Recovery Time	t_{rr}	$I_F = 60\text{ A}$, $V_R = 400\text{ V}$, $di/dt = -200\text{ A}/\mu\text{s}$, 100% recovery point	—	—	80	ns
Reverse Recovery Charge	Q_{rr}	$I_F = 60\text{ A}$, $V_R = 400\text{ V}$, $di/dt = -200\text{ A}/\mu\text{s}$, 100% recovery point	—	—	210	nC
Thermal Resistance ⁽¹⁾	$R_{th(J-F)}$		—	—	0.9	$^{\circ}\text{C}/\text{W}$

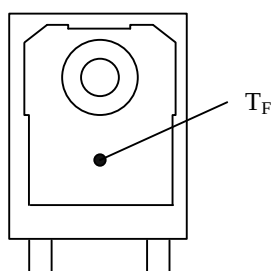


Figure 1. T_F Measurement Point

⁽¹⁾ $R_{th(J-F)}$ is thermal resistance between junction and the flame. T_F is the flame temperature ($^{\circ}\text{C}$), measured at the point defined in Figure 1

Rating and Characteristic Curves

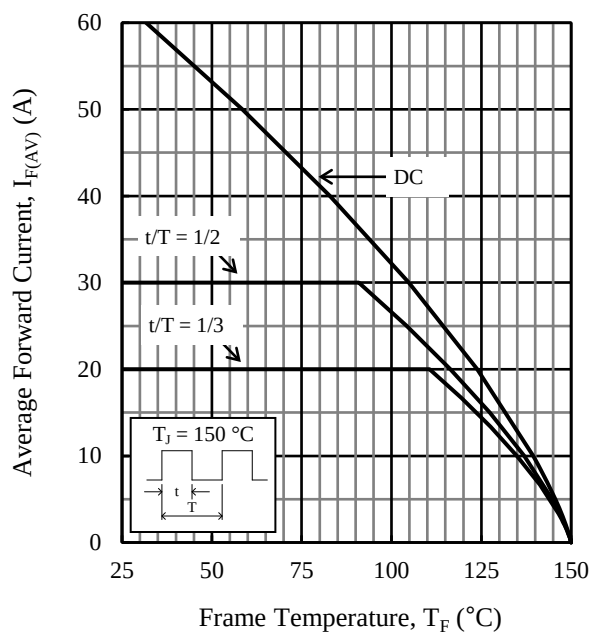


Figure 2. $I_{F(AV)}$ vs. T_F Typical Characteristics ($V_R = 0$ V)

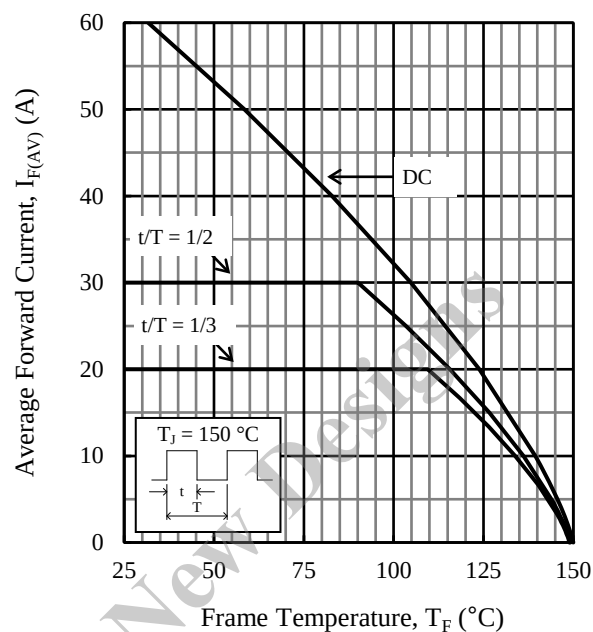


Figure 3. $I_{F(AV)}$ vs. T_F Typical Characteristics ($V_R = 600$ V)

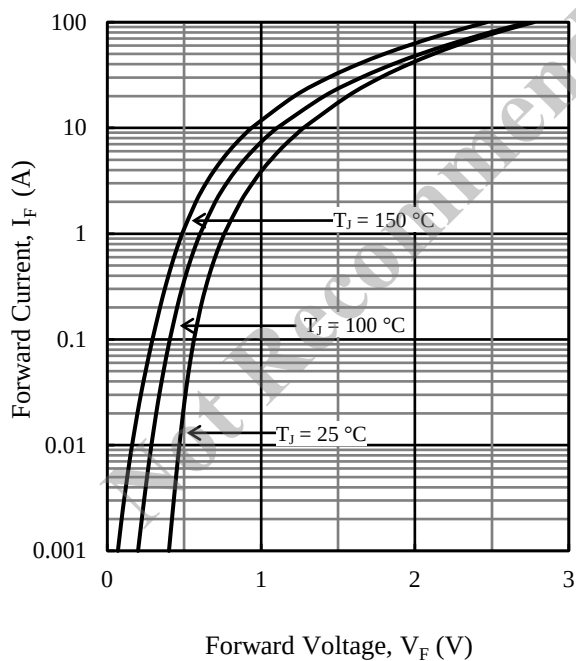


Figure 4. V_F vs. I_F Typical Characteristics

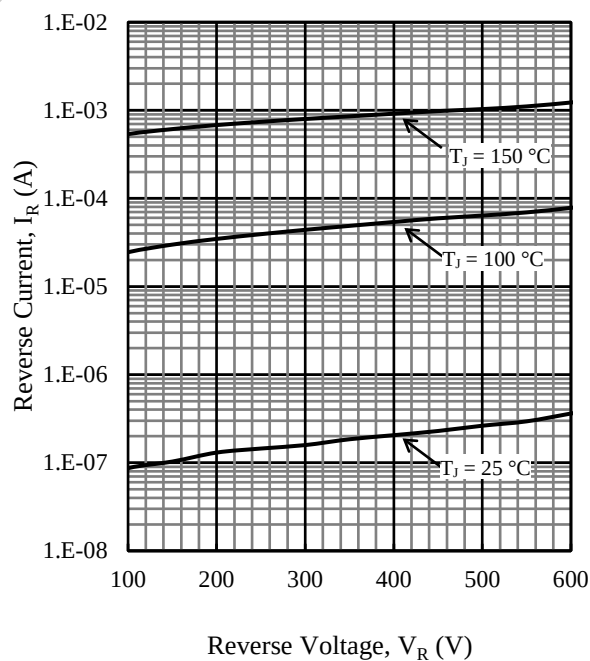


Figure 5. V_R vs. I_R Typical Characteristics

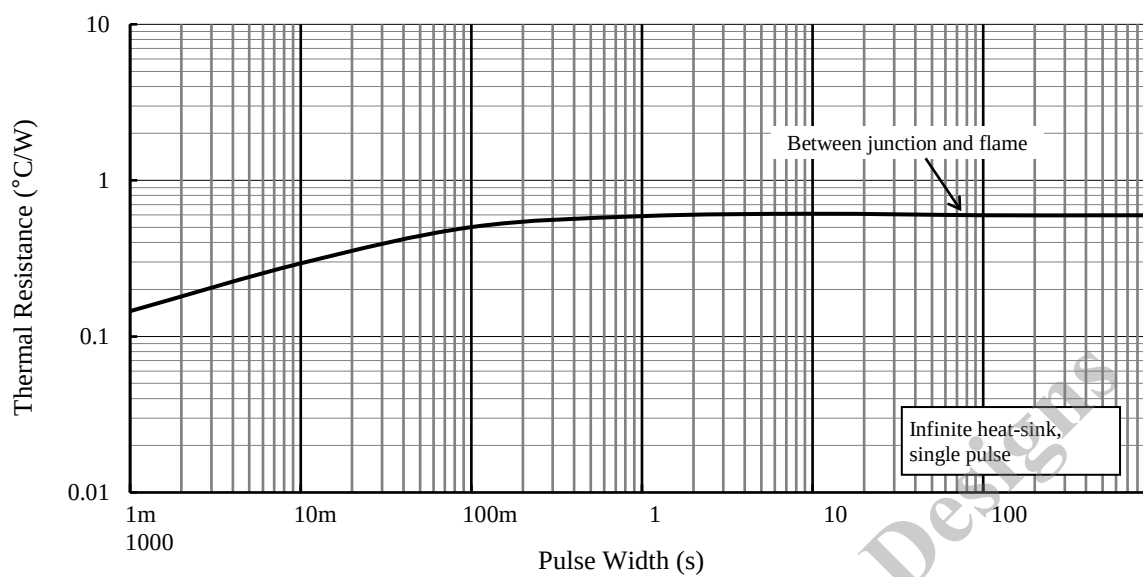
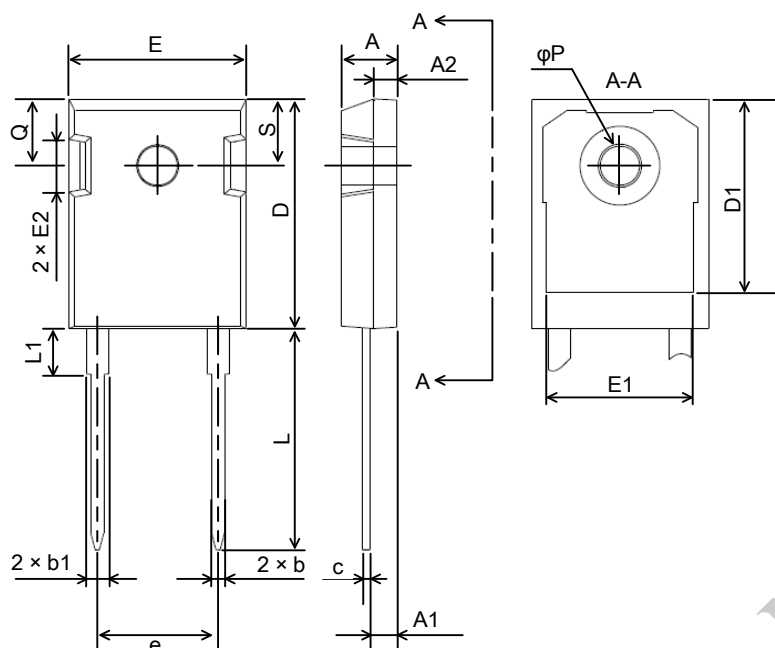


Figure 6. Typical Transient Thermal Resistance

Physical Dimensions

• TO247-2L

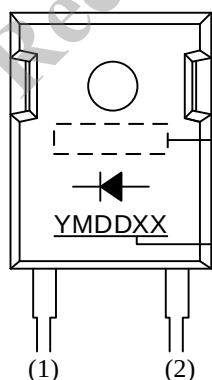


Symbol	Min.	Nom.	Max.
A	4.83	5.02	5.21
A1	2.29	2.41	2.54
A2	1.91	2.04	2.16
b	1.14	1.27	1.40
b1	1.91	2.10	2.20
c	0.61	0.71	0.80
D	20.80	21.07	21.34
D1	17.43	17.63	17.83
E	15.75	15.94	16.13
E1	13.06	13.26	13.46
E2	4.32	4.58	4.83
e	10.90 BSC		
L	19.81	20.19	20.57
L1	3.81	4.07	4.32
φP	3.55	3.60	3.65
Q	5.59	5.90	6.20
S	6.15 BSC		

NOTES:

- Dimensions in millimeters
- These dimensions do not include mold protrusion
- 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 TO247: 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
XR5606	CTXR-5606S-SP

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