V_{RM} = 600 V, $I_{F(AV)}$ = 60 A, t_{rr} = 50 ns
Fast Recovery Diode

CTXS-5606S

Data Sheet

Description

The CTXS-5606S is a fast recovery diode of 600 V, 60 A. The maximum t_{rr} of 50 ns is realized by optimizing a life-time control. The low thermal resistance package achieves high performance in terms of heat dissipation.

Features

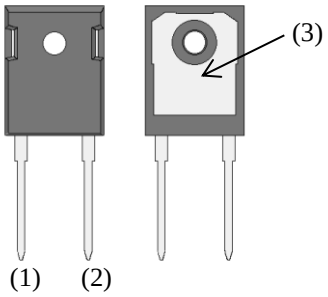
- Bare Lead Frame: Pb-free (RoHS Compliant)
- V_{RM} ---------- 600 V
- $I_{F(AV)}$ ---------- 60 A
- V_F ---------- 1.7 V
- t_{rr} ---------- 50 ns
- Flammability: Equivalent to UL94V-0

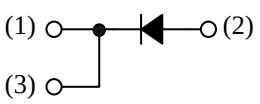
Applications

- PFC Circuit
- Inverter Circuit

Package

TO247-2L





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

Not to scale

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage	V_{RSM}		600	V
Repetitive Peak Reverse Voltage	V_{RM}		600	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 2	60	A
Surge Forward Current	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	320	A
I^2t Limiting Value	I^2t	1 ms ≤ t ≤ 10 ms	512	A^2s
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 = 60 A	—	—	1.7	V
		T_J = 100 °C, I_F = 60 A	—	1.3	—	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	—	200	µA
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, T_J = 150 °C	—	—	60	mA
Reverse Recovery Time	t_{rr}	$I_F = I_{RP}$ = 500 mA, 90% recovery point, T_J = 25 °C	—	—	50	ns
Thermal Resistance [1]	$R_{th(J-C)}$		—	—	1.5	°C/W

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Heatsink Mounting Screw Torque		0.686	—	0.882	N·m
Package Weight		—	6.1	—	g

[1] $R_{th\ (J-C)}$ is thermal resistance between junction and case.

Derating Curves

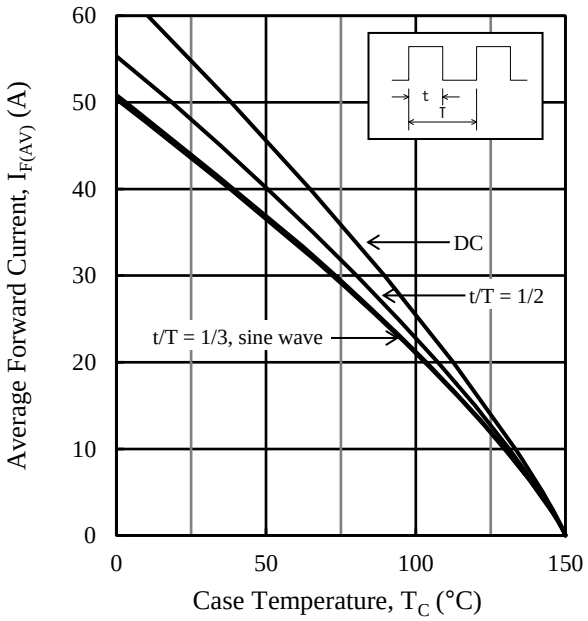


Figure 1. T_C vs. I_F (T_J = 150 °C, V_R = 0 V)

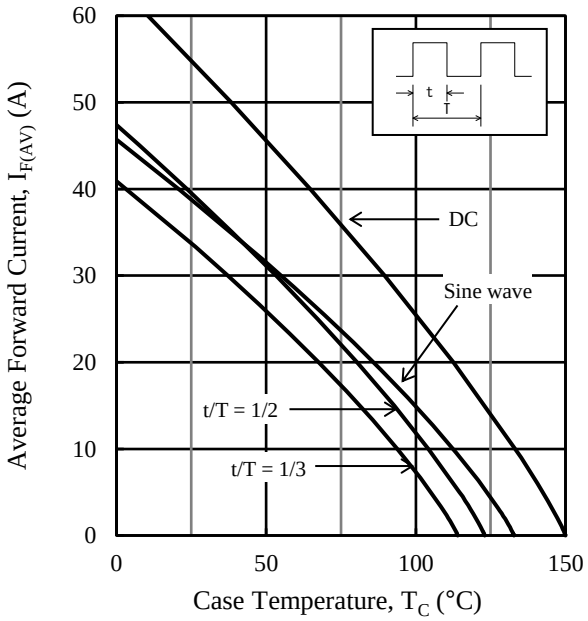


Figure 2. T_C vs. I_F (T_J = 150 °C, V_R = 600 V)

Characteristic Curves

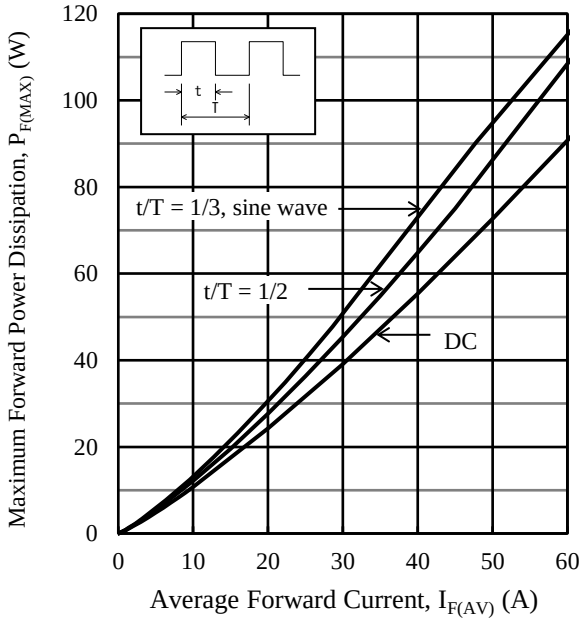


Figure 3. $P_{F(MAX)}$ vs. $I_{F(AV)}$ (T_J = 150 °C)

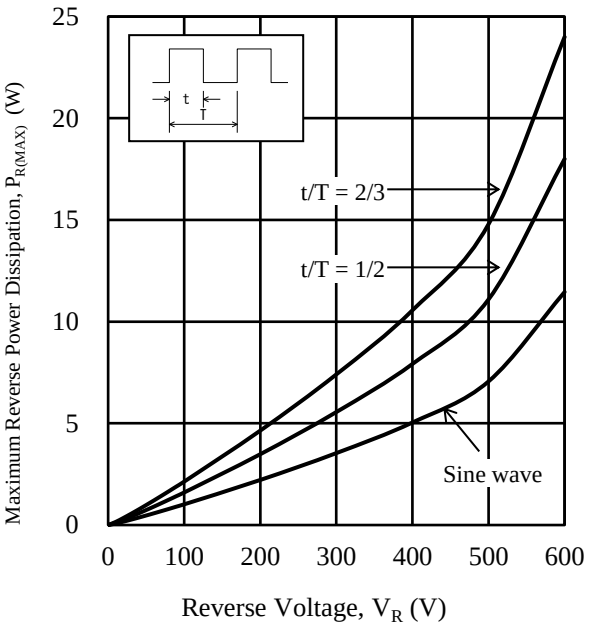


Figure 4. $P_{R(MAX)}$ vs. V_R (T_J = 150 °C)

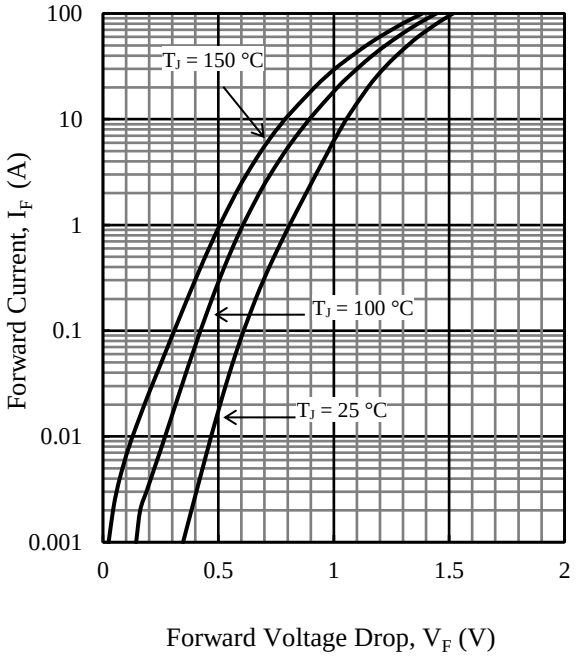


Figure 5. Typical Characteristics: V_F vs. I_F

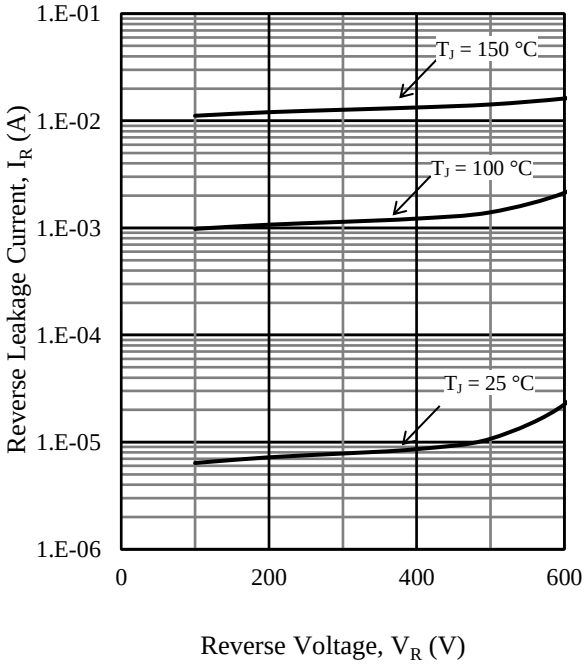


Figure 6. Typical Characteristics: V_R vs. I_R

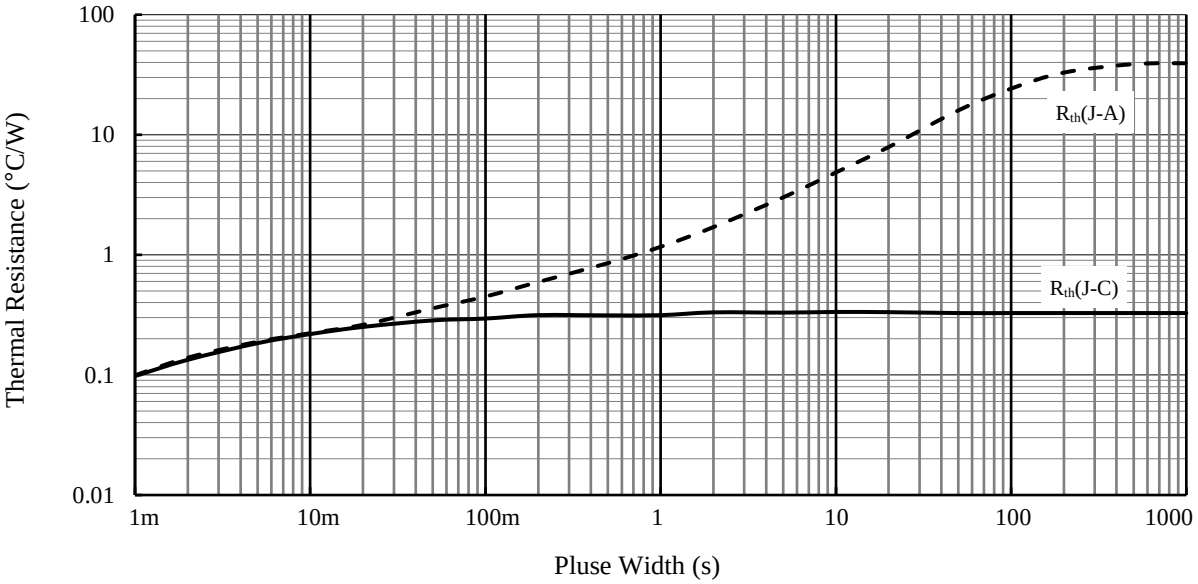
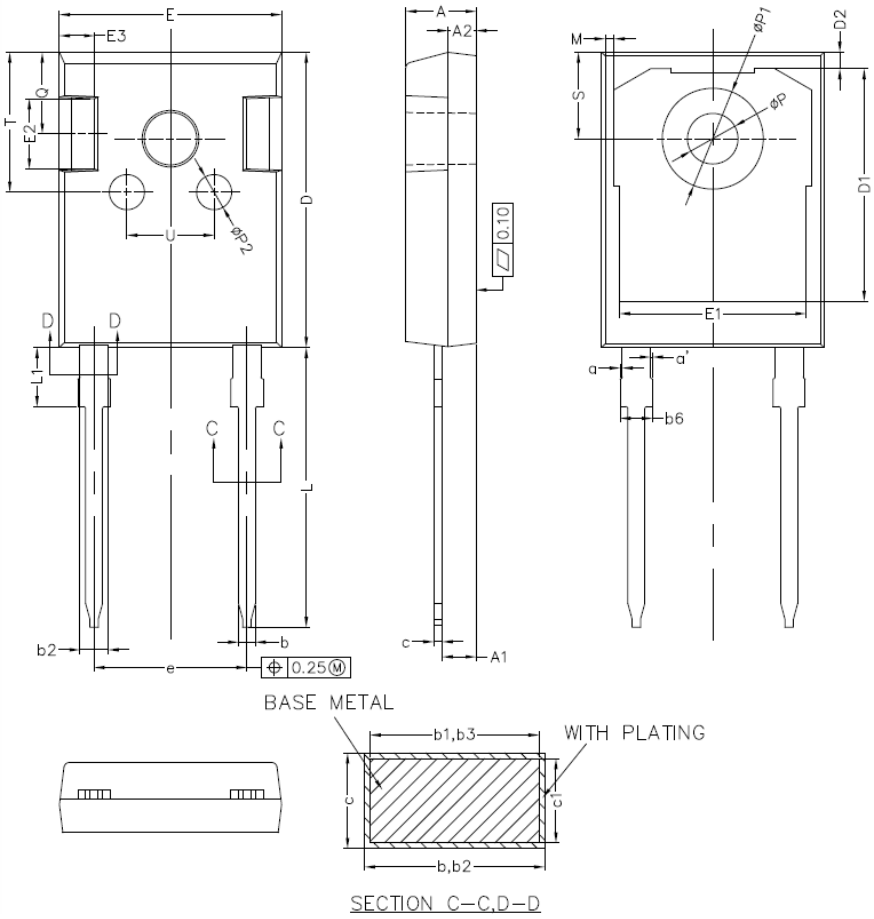


Figure 7. Typical Transient Thermal Resistance Characteristics

Physical Dimension

● **TO247-2L**

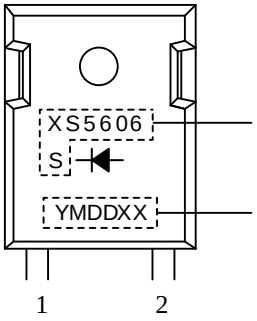


Symbol	Min.	Typ.	Max.
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
a	0	—	0.15
a’	0	—	0.15
b	1.16	—	1.26
b1	1.15	1.20	1.25
b2	1.96	—	2.06
b3	1.95	2.00	2.02
b6	—	—	2.25
c	0.59	—	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
E	15.70	15.80	15.90
E1	13.06	13.26	13.46
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
e	10.78	10.88	10.98
L	19.80	19.92	20.10
L1	3.93	—	4.46
M	0.35	—	0.95
P	3.50	3.60	3.70
P1	7.00	—	7.40
P2	2.40	2.50	2.60
Q	5.60	—	6.00
S	6.05	6.15	6.25
T	9.80	—	10.20
U	6.00	—	6.40

NOTES:

- Dimensions in millimeters
- All the dimensions exclude mold flashes.
- 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 °C / 10 s, 1 time
  Soldering Iron: 350 °C / 3.5 s, 1 time
  Soldering should be at a distance of at least 1.5 mm from the body of the product.

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
XS5606S	CTXS-5606S

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