

HiPerDyn™ Schottky Diode (Electrically Isolated Back Surface)

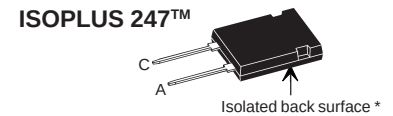
$$I_{FAV} = 17 \text{ A}$$

$$V_{RRM} = 600 \text{ V}$$

$$t_{rr} = 45 \text{ ns}$$

Preliminary Data

V_{RSM} V	V_{RRM} V	Type
600	600	DSS 17-06CR



A = Anode, C = Cathode

* Patent pending

Symbol	Conditions	Maximum Ratings	
I_{FRMS}		50	A
I_{FAVM}	$T_C = 95^\circ\text{C}$; rectangular, $d = 0.5$	17	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	tbd	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine	200	A
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 2 \text{ A}$; $L = 180 \mu\text{H}$	tbd	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive	tbd	A
T_{VJ}		-55...+175	$^\circ\text{C}$
T_{VJM}		175	$^\circ\text{C}$
T_{stg}		-55...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	105	W
V_{ISOL}	50/60 Hz RMS; $I_{ISOL} \leq 1 \text{ mA}$	2500	V~
F_C	mounting force with clip	20...120	N
Weight	typical	6	g

Features

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 2500V electrical isolation
- Low cathode to tab capacitance (<25pF)
- International standard package
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -values
- Soft recovery behaviour
- Epoxy meets UL 94V-0
- Isolated and UL registered E153432

Applications

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_R ①	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$ $V_R = V_{RRM}$		0.5 mA 5 mA
V_F ②	$I_F = 15 \text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$		2.71 V 3.32 V
R_{thJC} R_{thCH}		0.25	1.4 K/W K/W
t_{rr}	$I_F = 10 \text{ A}$; $-di/dt = 100 \text{ A}/\mu\text{s}$; $V_R = 100 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	45	ns
I_{RM}	$V_R = 100 \text{ V}$; $I_F = 10 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$	4.0	A

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %
② Pulse Width = 300 μs , Duty Cycle < 2.0 %

Data according to IEC 60747 and per diode unless otherwise specified

IXYS reserves the right to change limits, test conditions and dimensions.

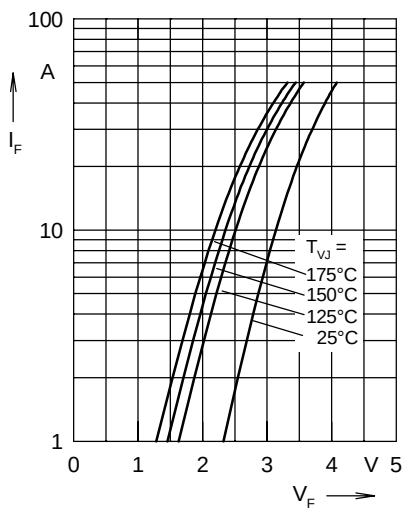


Fig. 1 Maximum forward voltage drop characteristics

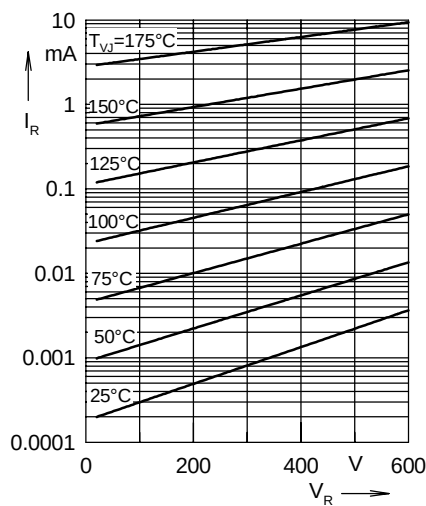


Fig. 2 Typ. value of reverse current I_R versus reverse voltage V_R

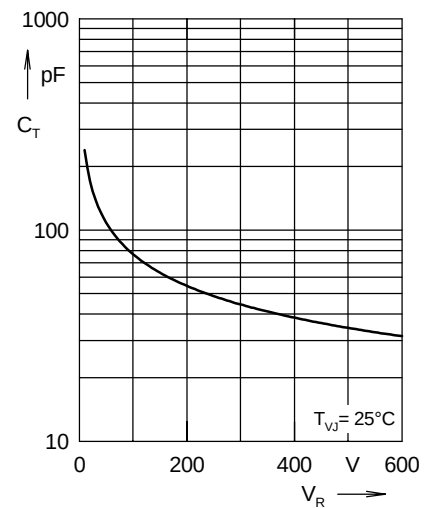


Fig. 3 Typ. junction capacitance C_T versus reverse voltage V_R

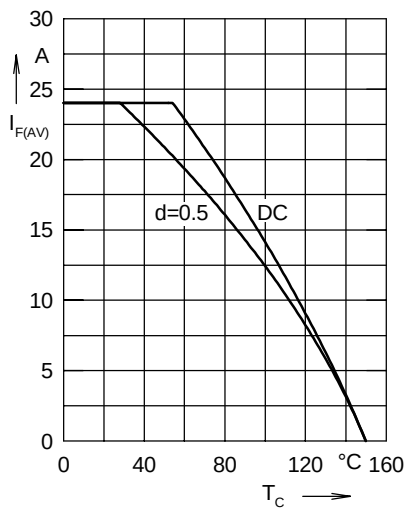


Fig. 4 Average forward current $I_{F(AV)}$ versus case temperature T_C

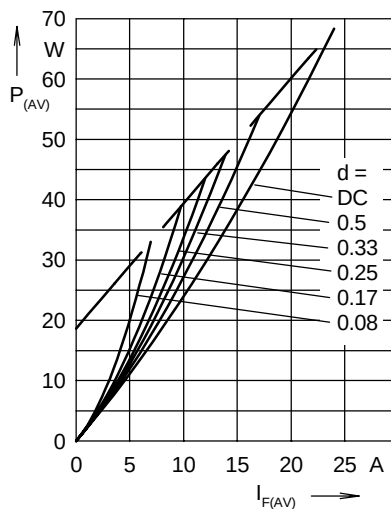


Fig. 5 Forward power loss characteristics

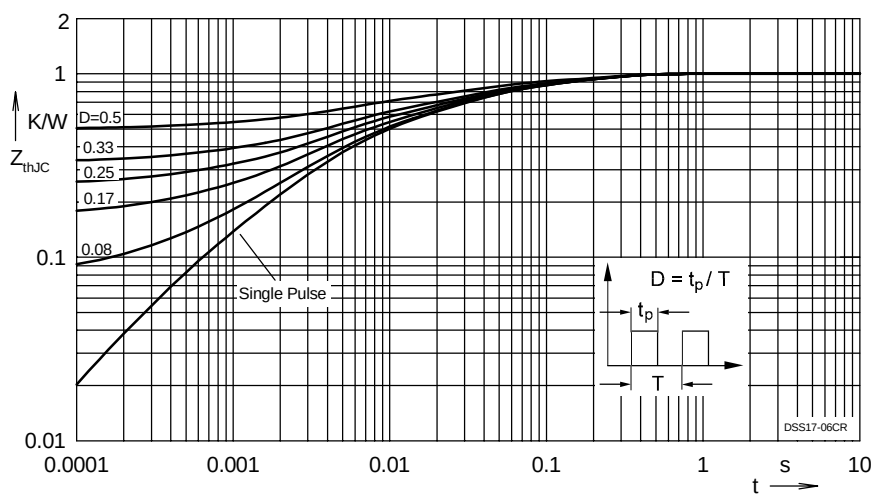


Fig. 6 Transient thermal impedance junction to case at various duty cycles

Note: All curves are per diode