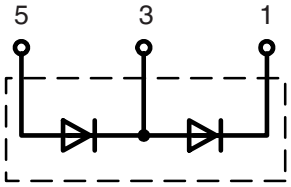
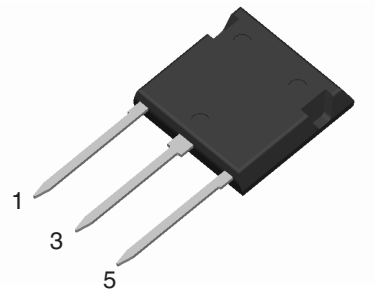
Dual Fast Recovery Diode
Sonic-FRD™ series
in ISOPLUS i4-PAC™

V_{RRM} = 3600 V
$I_{F(AV)M}$ = 50 A
t_{rr} = 350 ns





Diode

Symbol	Conditions	Maximum Ratings	
V_{RRM} ①		3600	V
V_{RRM}		1800	V
I_{FAV}	T_C = 80°C; sine 180°	47	A
$I_{F(AV)M}$	T_C = 80°C; d = 0.5 rectangular	50	A
I_{FSM}	T_{VJ} = 25°C; t = 10 ms; sine 50 Hz	650	A
E_{AS}	I_{AS} = tbd A; L_{AS} = tbd µH; T_C = 25°C; non repetitive	tbd	mJ
P_{tot}	T_C = 25°C (per diode)	280	W

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
V_F	I_F = 60 A; T_{VJ} = 25°C		2.3	2.7	V
	T_{VJ} = 125°C		2.7		V
V_{T0}	For power-loss calculations only			1.95	V
r_T	T_{VJ} = T_{VJM}			12	mΩ
I_R	V_R = V_{RRM}; T_{VJ} = 25°C			0.2	mA
	V_R = V_{RRM}; T_{VJ} = 125°C		1		mA
I_{RM}	I_F = 100 A; di_F/dt = -600 A/µs; T_{VJ} = 125°C		55		A
t_{rr}	V_R = 600 V		350		ns
R_{thJC}	(per diode)			0.45	K/W

Data according to IEC 60747 and refer to a single diode unless otherwise stated.

① Diodes connected in series

Features

- Small temperature dependence for
  - forward voltage drop
  - reverse recovery current
- Optimized for
  - dynamic avalanche ruggedness
  - low loss performance
- Exceptionally soft recovery
- Low reverse recovery current characteristic
- Soft recovery current without tail
- Optimized for high frequency hard switching
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - low coupling capacity between pins and heatsink
  - enlarged creepage towards heatsink
  - enlarged creepage between pins
  - application friendly pinout
  - high reliability
  - industry standard outline

Applications

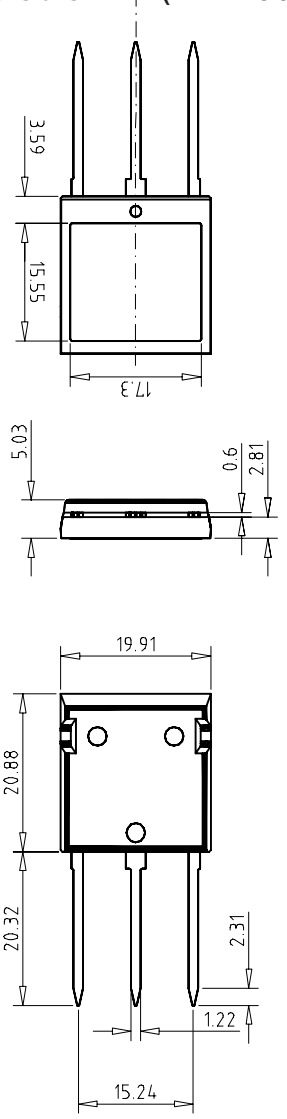
- Antiparallel diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Induction heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners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

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-55...+150	°C
T_{stg}		-55...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1$ mA; 50/60 Hz	2500	V~
F_C	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values min.	typ.	max.	
C_P	coupling capacity between shorted pins and mounting tab in the case		40		pF
d_S, d_A	pin - pin	5.5			mm
d_S, d_A	pin - backside metal	5.5			mm
R_{thCH}	with heatsink compound		0.15		K/W
Weight			9		g

Dimensions in mm (1 mm = 0.0394")



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

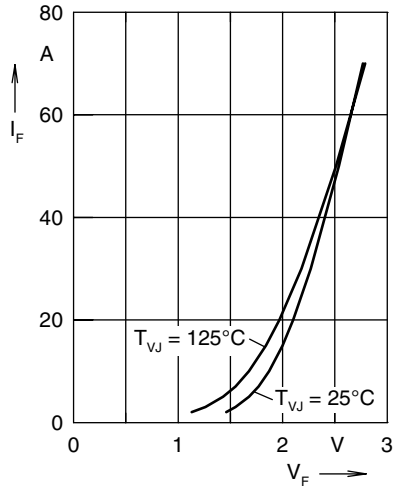


Fig. 1 Typ. forward current I_F versus V_F

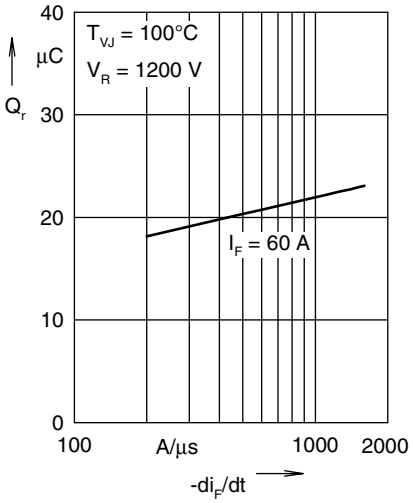


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

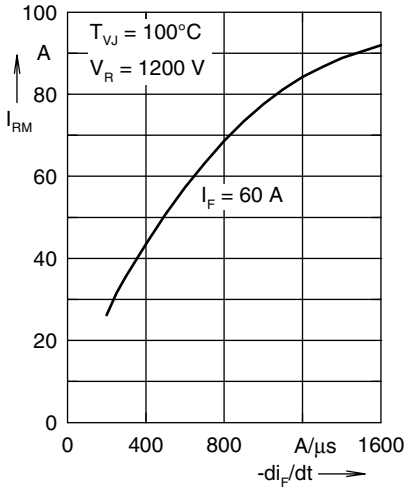


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

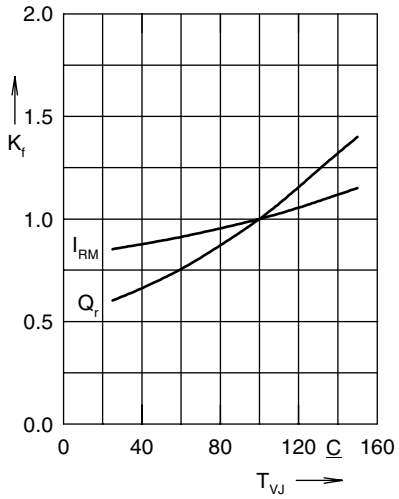


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

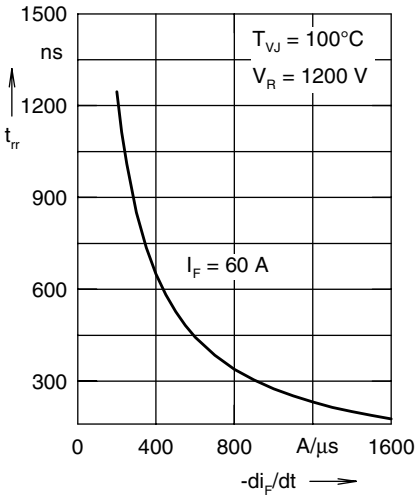


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

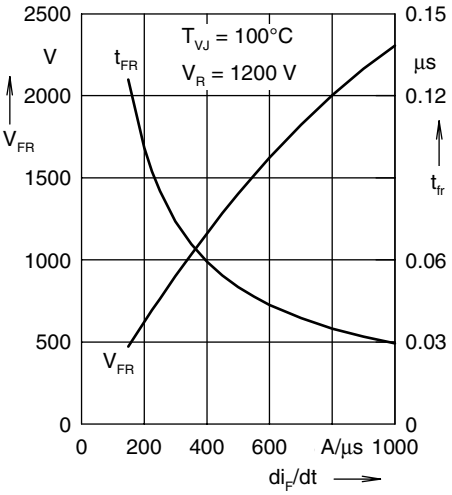


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

NOTE: Fig. 2 to Fig. 6 shows typical values

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