

Dual Fast Recovery Diode

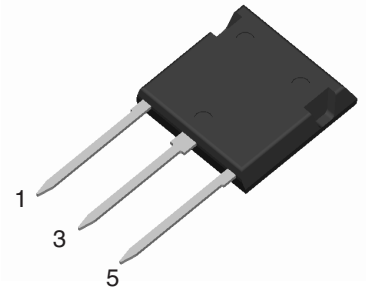
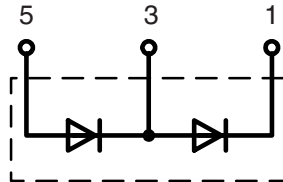
Sonic-FRD™ series

in ISOPLUS i4-PAC™

$$V_{RRM} = 3600 \text{ V}$$

$$I_{F(AV)M} = 50 \text{ A}$$

$$t_{rr} = 350 \text{ ns}$$



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

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

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

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

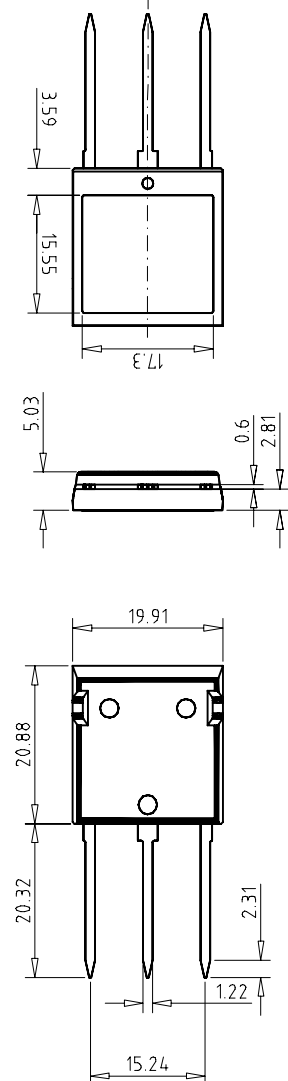
Data according to IEC 60747 and refer to a single diode unless otherwise stated.

① Diodes connected in series

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-55...+150	°C
T_{stg}		-55...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	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")


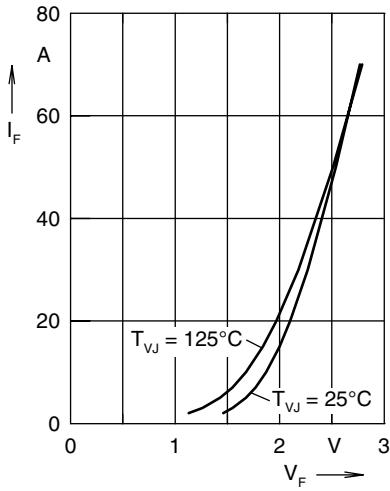


Fig. 1 Typ. forward current I_F versus V_F

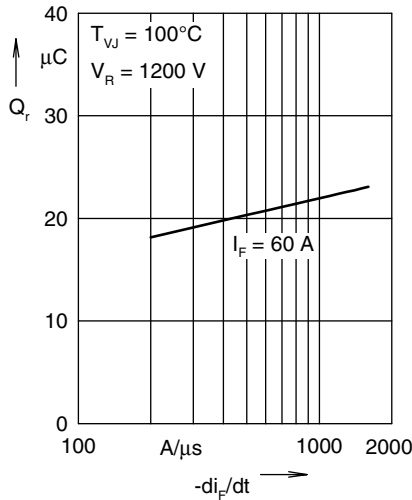


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

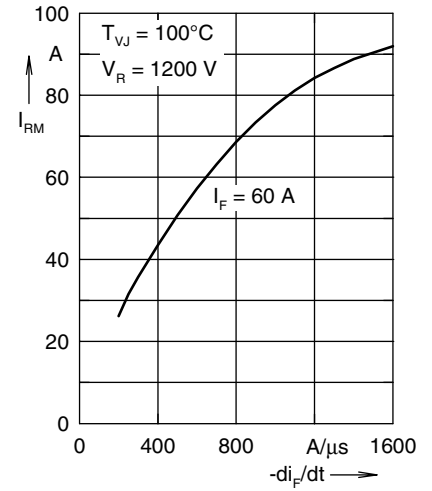


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

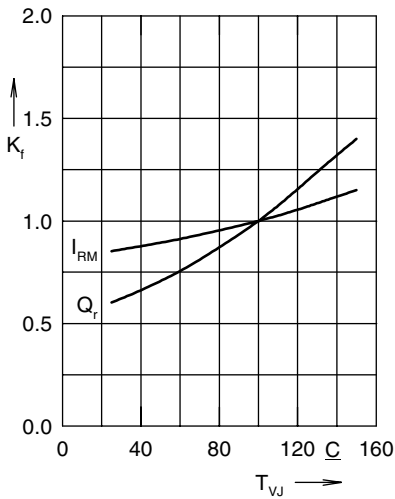


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

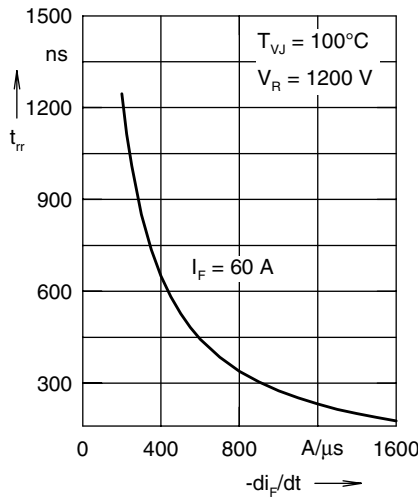


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

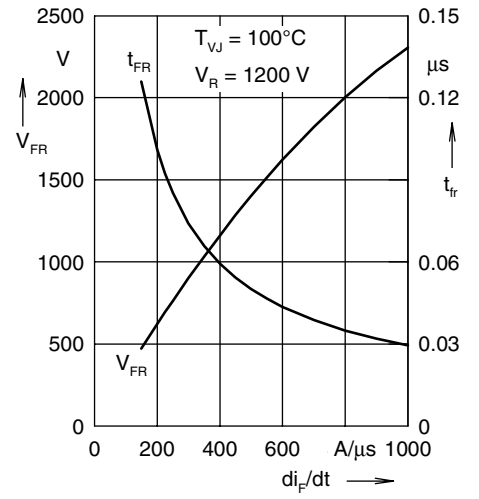


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

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