



DESCRIPTION

FRED from Samwin utilizes advanced processing techniques to achieve ultrafast recovery times and higher forward current. Its soft recovery characteristics and high reliability suit for wide industrial applications.

PRODUCT FEATURES

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

APPLICATIONS

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper UPS



TO-220
SW P 460D



1-Cathode

2-Anode

Back of Case-Cathode

Absolute Maximum Ratings

TC=25° C unless otherwise specified

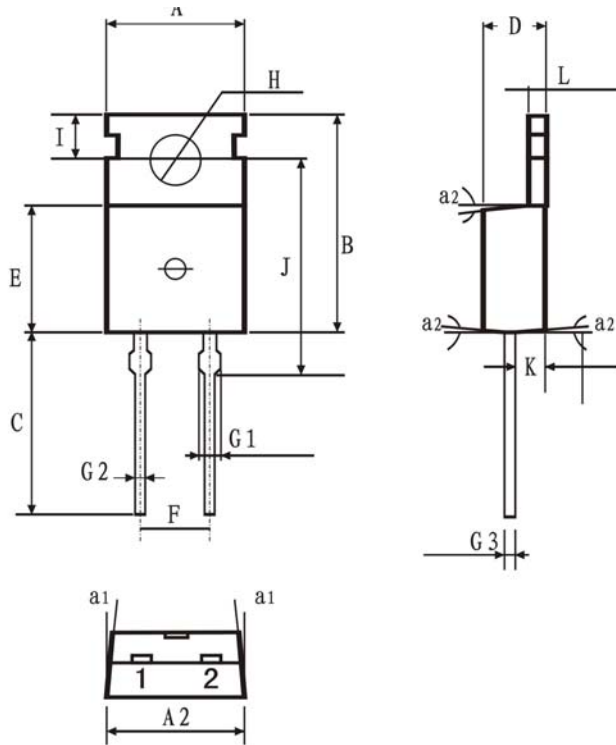
Symbol	Parameter	Test Conditions	Max.	Unit
V_R	D.C. Reverse Voltage		600	V
V_{RRM}	Repetitive Reverse Voltage		600	V
$I_{F(AV)}$	Average Forward Current	$T_C=125^\circ\text{C}$, Duty=0.5	4	A
$I_{F(RMS)}$	RMS Forward Current	$T_C=125^\circ\text{C}$, Duty=0.5	8	A
I_{FSM}	Non-Repetitive Surge Forward Current	$T_J=45^\circ\text{C}$, 8.3ms	60	A
T_J	Junction Temperature		-55 to +175	° C
T_{STG}	Storage Temperature Range		-55 to +175	° C

Electrical and Thermal Characteristics

TC=25° C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{RM}	Reverse Leakage Current	$V_R=600\text{V}$, $T_J=25^\circ\text{C}$	--	--	10	μA
		$V_R=600\text{V}$, $T_J=125^\circ\text{C}$	--	--	150	μA
V_F	Forward Voltage	$I_F=4\text{A}$, $T_J=25^\circ\text{C}$	--	1.4	2.0	V
		$I_F=4\text{A}$, $T_J=125^\circ\text{C}$	--	1.1	--	V
t_{rr}	Reverse Recovery Time ($I_F=1\text{A}$, $V_R=30\text{V}$, $di_F/dt=-200\text{A}/\mu\text{s}$)		--	22	--	ns
t_{rr}	Reverse Recovery Time	$I_F=4\text{A}$ $V_R=400\text{V}$ $di_F/dt=-200\text{A}/\mu\text{s}$	$T_J=25^\circ\text{C}$	--	45	ns
t_{rr}	Reverse Recovery Time		$T_J=125^\circ\text{C}$	--	75	ns
Q_{rr}	Reverse Recovery Charge		$T_J=125^\circ\text{C}$	--	160	nC
I_{RRM}	Max. Reverse Recovery Current		$T_J=125^\circ\text{C}$	--	4.5	A
$R_{\theta JC}$	Thermal Resistance	Junction-to-Case	--	--	2.5	° C/W

Package Dimensions TO-220



A(mm)	9.66~10.28
A2(mm)	9.80~10.20
B(mm)	15.6~15.8
C(mm)	12.70~14.27
D(mm)	4.30~4.70
E(mm)	8.59~9.40
F(mm)	typical 5.86
G1(mm)	1.32~1.72
G2(mm)	0.70~0.95
G3(mm)	0.4~0.60
H(mm) dia.	3.50~3.83
I(mm)	2.7~2.9
J(mm)	15.70~16.25
K(mm)	2.20~2.90
L(mm)	1.15~1.40
a(degree)	45°
a2(degree)	3° ±0.5°
a3(degree)	3° ±0