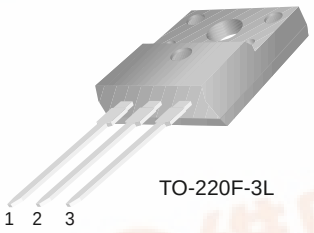
FAIRCHILD SEMICONDUCTOR®

Stealth™ Rectifier

FFPF60SA60DS

Features

- Soft Recovery (t_b / t_a > 1.2)
- Fast Recovery (t_{rr} < 25ns)
- Reverse Voltage, 600V
- Forward Voltage (@ T_C = 125°C), < 2.0 V
- Enhanced Avalanche Energy



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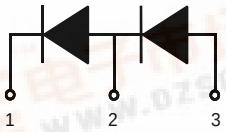


Applications

- Switch Mode Power Supplies
- Hard Swithed PFC Boost Diode
- UPS Free wheeling Diode
- Motor Drive FWD
- SMPS FWD
- Snubber Diode

Absolute Maximum Ratings (per leg) T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_{RWM}	Working Peak Reverse Voltage	600	V
V_R	DC Blocking Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ T_C = 95 °C	8	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	80	A
P_D	Power Dissipation	26	W
W_{AVL}	Avalanche Energy (1A, 40mH)	20	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature	- 65 to +150	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Maximum Thermal Resistance, Junction to Case	3.125	°C/W
$R_{\theta JA}$	Maximum Thermal Resistance, Junction to Ambient	62.5	°C/W

Electrical Characteristics (per leg) T_C=25 °C unless otherwise noted

Symbol	Parameter		Min.	Typ.	Max.	Units
V_{FM} *	Maximum Instantaneous Forward Voltage					V
	I_F = 8A	T_C = 25 °C	-	2.0	2.4	
	I_F = 8A	T_C = 125 °C	-	1.6	2.0	
I_{RM} *	Maximum Instantaneous Reverse Current					µA
	@ rated V_R	T_C = 25 °C	-	-	100	
		T_C = 125 °C	-	-	1000	
t_{rr}	Maximum Reverse Recovery Time (I_F =1A, di/dt = 100A/µs, V_R = 30V)		-	-	25	ns
t_{rr}	Maximum Reverse Recovery Time (I_F =8A, di/dt = 100A/µs, V_R = 30V)		-	-	30	ns
t_{rr}	Reverse Recovery Time		-	39	-	ns
I_{rr}	Reverse Recovery Current		-	2	-	A
Q_{rr}	Reverse Recovery Charge (I_F =8A, di/dt = 200A/µs, V_R = 390V)		-	39	-	nC

* Pulse Test: Pulse Width=300µs, Duty Cycle=2%

Typical Characteristics

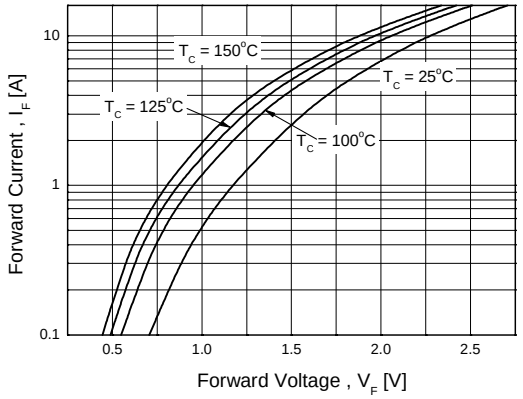


Figure 1. Typical Forward Voltage Drop vs. Forward Current

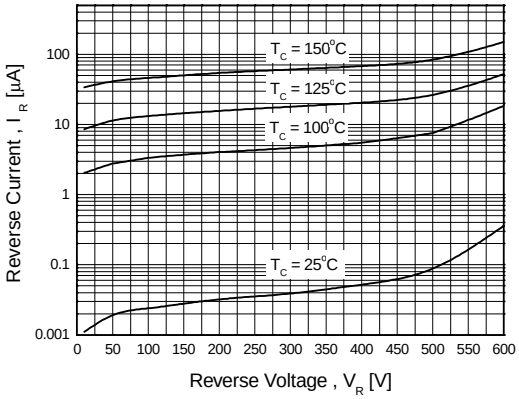


Figure 2. Typical Reverse Current vs. Reverse Voltage

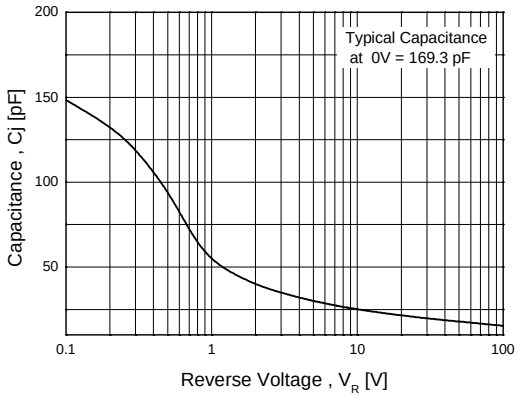


Figure 3. Typical Junction Capacitance

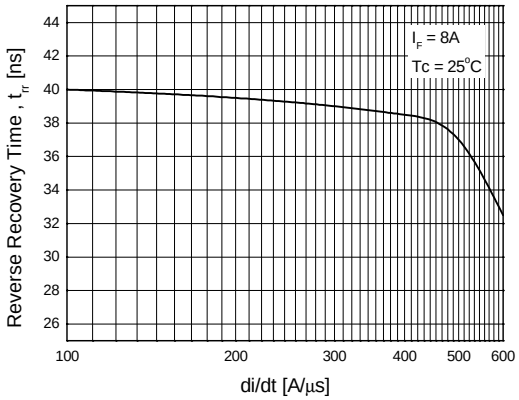


Figure 4. Typical Reverse Recovery Time vs. di/dt

Typical Characteristics (Continued)

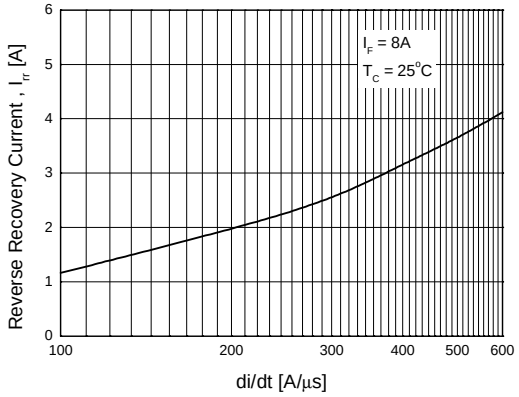


Figure 5. Typical Reverse Recovery Current vs. di/dt

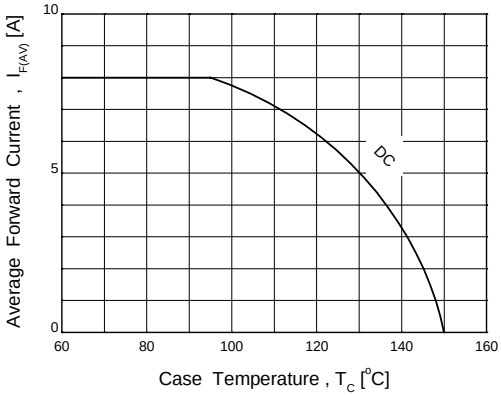


Figure 6. Forward Curent Derating Curve

Test Circuits and Waveforms

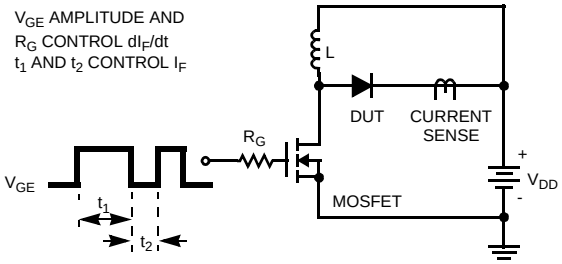


Figure 7. t_{rr} Test Circuit

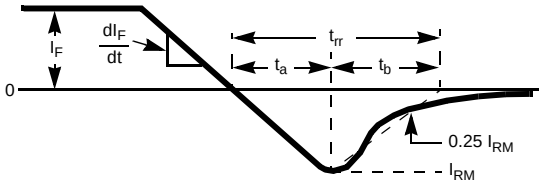


Figure 8. t_{rr} Waveforms and Definitions

I = 1A
L = 40mH
R < 0.1Ω
V_{DD} = 50V
E_{AVL} = 1/2LI^2 [$V_{R(AVL)}$/($V_{R(AVL)}$ - V_{DD})]
Q_1 = IGBT (BV_{CES} > DUT $V_{R(AVL)}$)

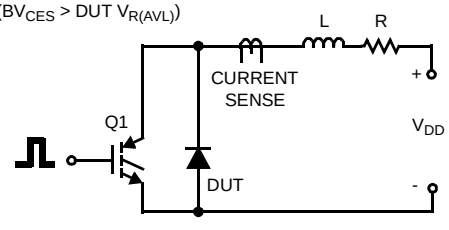


Figure 9. Avalanche Energy Test Circuit

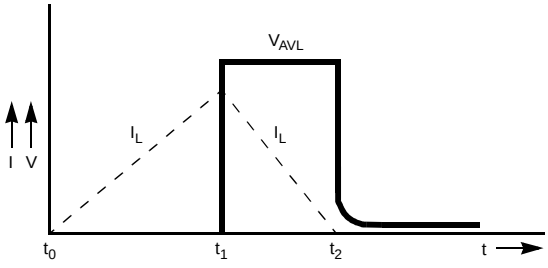
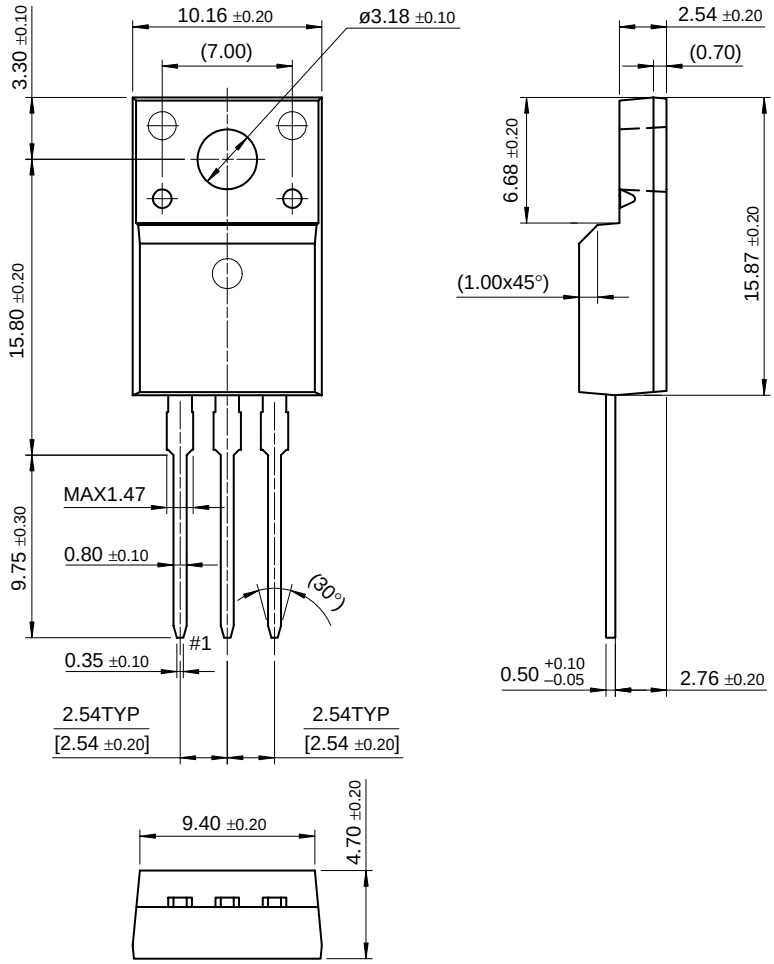


Figure 10. Avalanche Current and Voltage Waveforms

Package Dimensions

TO-220F



Dimensions in Millimeters

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DOME™	GTO™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	HiSeC™	MSX™	QT Optoelectronics™	TinyLogic®
E^2CMOS™	I^2C™	MSXPro™	Quiet Series™	TINYOPTO™
EnSigna™	*i-Lo*™	OCX™	RapidConfigure™	TruTranslation™
FACT™	ImpliedDisconnect™	OCXPro™	RapidConnect™	UHC™
FACT Quiet Series™		OPTOLOGIC®	µSerDes™	UltraFET®
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