

Pb Free Plating Product

F60SA60DS



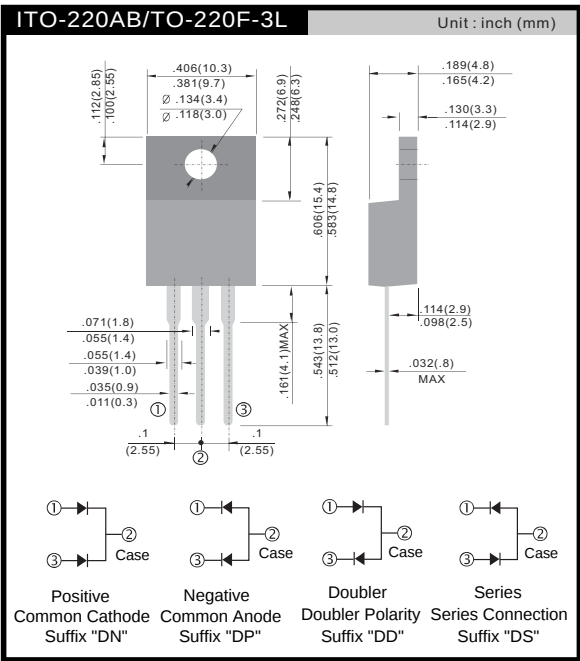
16Amperes,600Volts Insulated Dual Series Connection Ultra Fast Soft Recovery Rectifiers

APPLICATION

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

PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- 150 Operating Junction Temperature
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current



GENERAL DESCRIPTION

F60SA60DS using ThinkiSemi latest FRED FAB process(planar passivation pellet) with ultrafast soft recovery characteristics.

Absolute Maximum Ratings (per leg) $T_C=25^{\circ}\text{C}$ unless otherwise noted

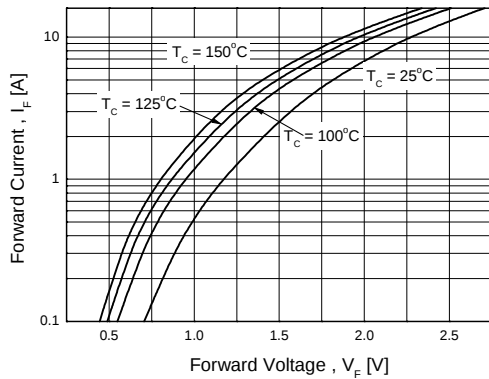
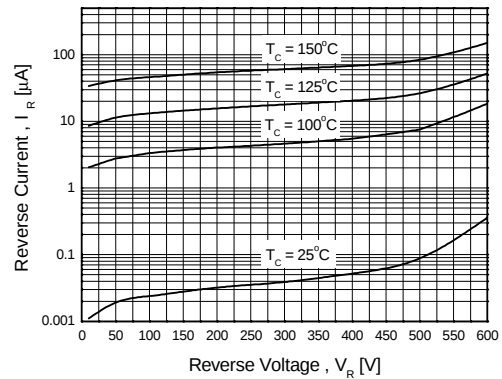
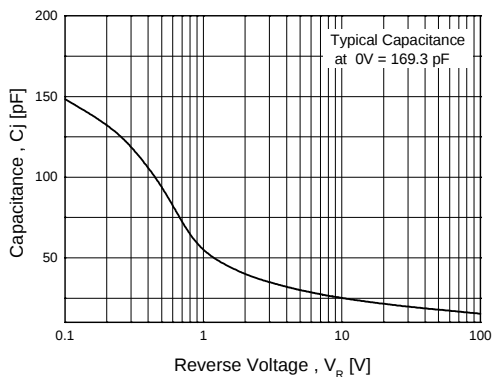
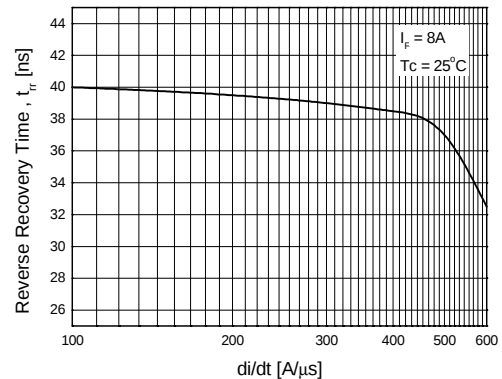
Symbol	Parameter	Value	Units
V_{RRM}	Peak Repetitive Reverse Voltage	600	V
V_{RWM}	Working Peak Reverse Voltage	600	V
V_R	DC Blocking Voltage	600	V
$I_{F(AV)}$	Average Rectified Forward Current @ $T_C = 95^{\circ}\text{C}$	8	A
I_{FSM}	Non-repetitive Peak Surge Current 60Hz Single Half-Sine Wave	80	A
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	$^{\circ}\text{C}$

Thermal Characteristics

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

Electrical Characteristics (per leg) $T_C=25^\circ\text{C}$ unless otherwise noted

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

* Pulse Test: Pulse Width=300 μs , 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)

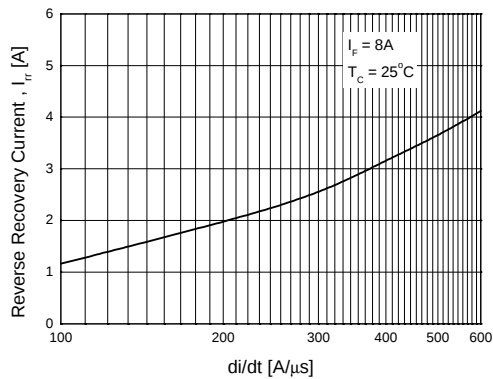


Figure 5. Typical Reverse Recovery Current vs. di/dt

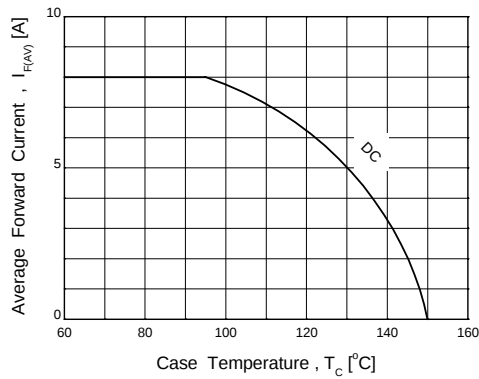


Figure 6. Forward Current Derating Curve

Test Circuits and Waveforms

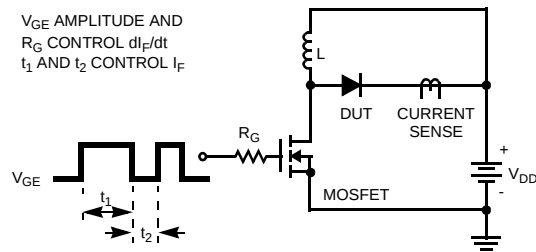


Figure 7. t_{rr} Test Circuit

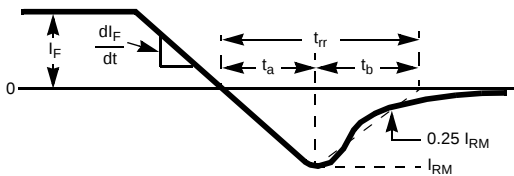


Figure 8. t_{rr} Waveforms and Definitions

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

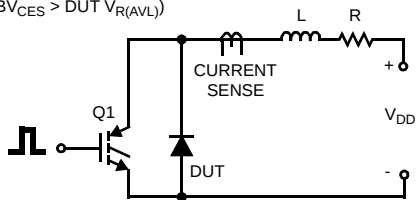


Figure 9. Avalanche Energy Test Circuit

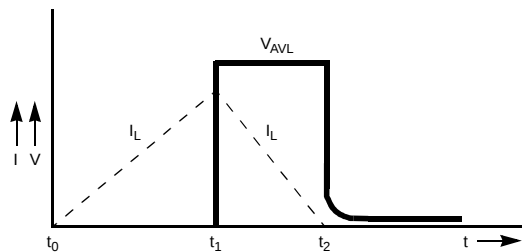


Figure 10. Avalanche Current and Voltage Waveforms