

## FEATURES

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on VF
- Temperature-independent Switching
- 175°C Operating Junction Temperature

## BENEFITS

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

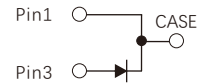
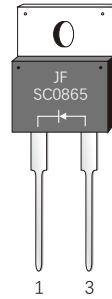
## APPLICATIONS

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station

## MAXIMUM RATINGS

TO-220AC

SC0865



$V_{RRM}$	=	650	V
$I_F (T_C \leq 135^\circ\text{C})$	=	11	A
$Q_C$	=	22	nC

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V	$T_J=25^\circ\text{C}$	
$V_{RSM}$	Surge Peak Reverse Voltage	650	V	$T_J=25^\circ\text{C}$	
$V_R$	DC Blocking Voltage	650	V	$T_J=25^\circ\text{C}$	
$I_F$	Forward Current	24 11 8	A	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=153^\circ\text{C}$	
$I_{FSM}$	Non-Repetitive Forward Surge Current	50	A	$T_J=25^\circ\text{C}, t_p=8.3\text{ms}$ , Half Sine Wave	
$P_{tot}$	Power Dissipation	107	W	$T_J=25^\circ\text{C}$	Fig. 3
$T_J/T_{STG}$	Operating Junction and Storage Temperature	-55 to 175	$^\circ\text{C}$		

## ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
VF	Forward Voltage	1.4 1.7	1.65 2.3	V	$I_F=8A, T_J=25^{\circ}C$ $I_F=8A, T_J=175^{\circ}C$	Fig.1
IR	Reverse Current	- -	20 200	$\mu A$	$V_R=650V, T_J=25^{\circ}C$ $V_R=650V, T_J=175^{\circ}C$	Fig.2
C	Total Capacitance	52 0 50 41	/	pF	$V_R=0V, T_J=25^{\circ}C, f=1MHz$ $V_R=200V, T_J=25^{\circ}C, f=1MHz$ $V_R=400V, T_J=25^{\circ}C, f=1MHz$	Fig.5
QC	Total Capacitive Charge	22	/	nC	$V_R=650V, I_F=8A, di/dt=200A/\mu s,$ $T_J=25^{\circ}C$	Fig.4

## THERMAL CHARACTERISTICS

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.4	$^{\circ}C/W$	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	$^{\circ}C/W$	
Tsold	Soldering Temperature	260	$^{\circ}C$	

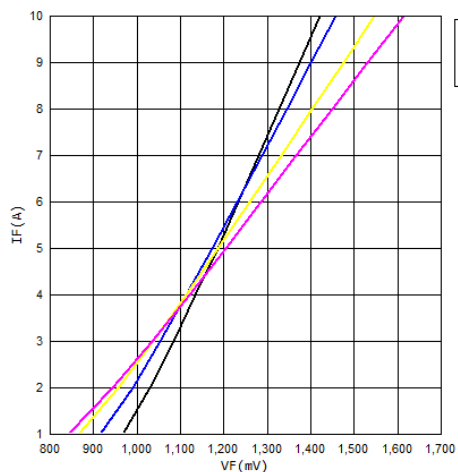


Figure 1. Forward Characteristics

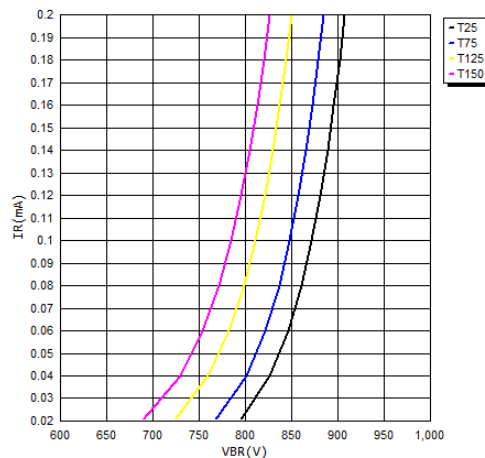


Figure 2. Reverse Characteristics

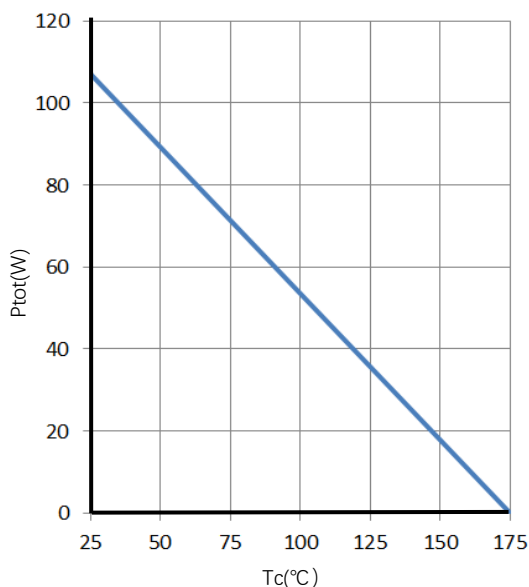


Figure 3. Power Derating

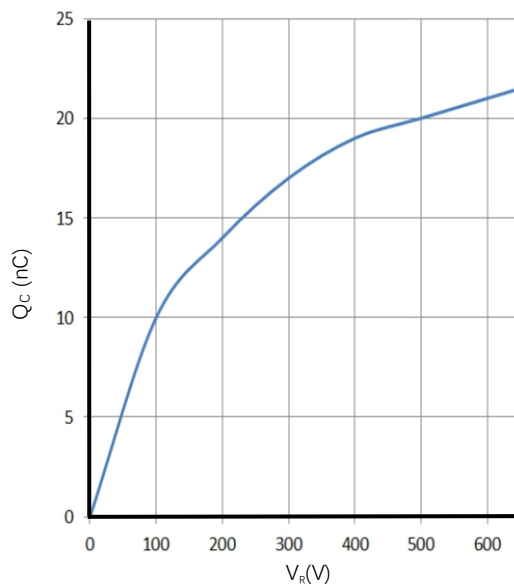


Figure 4. Total Capacitive Charge vs. Reverse Voltage

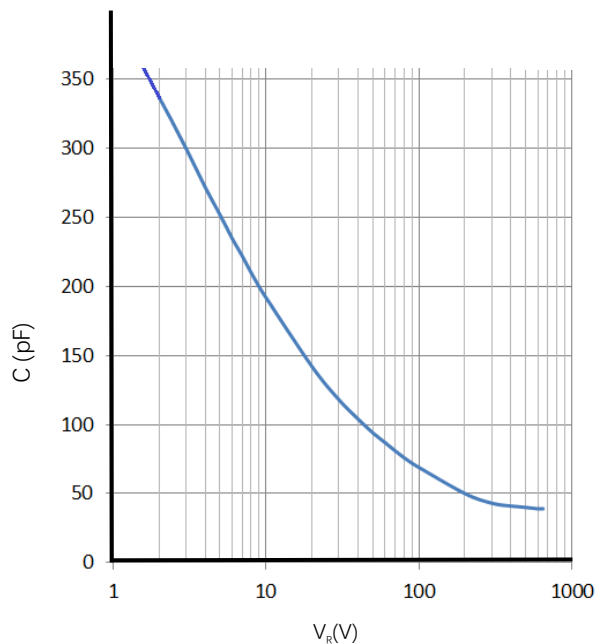


Figure 5. Total Capacitance vs. Reverse Voltage

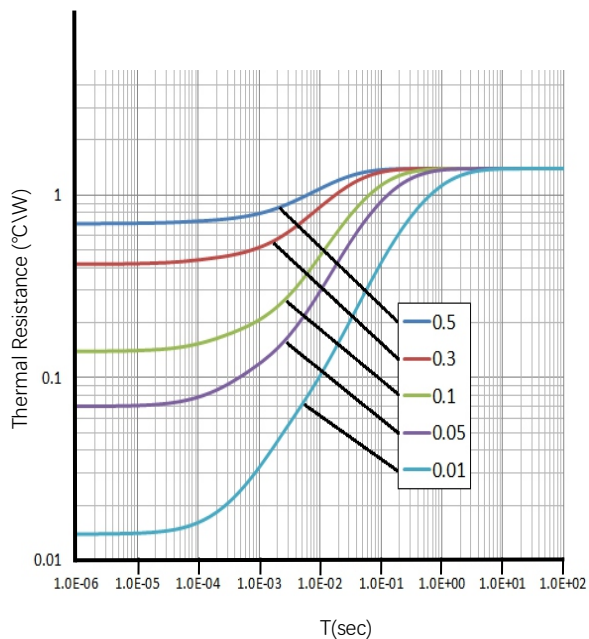
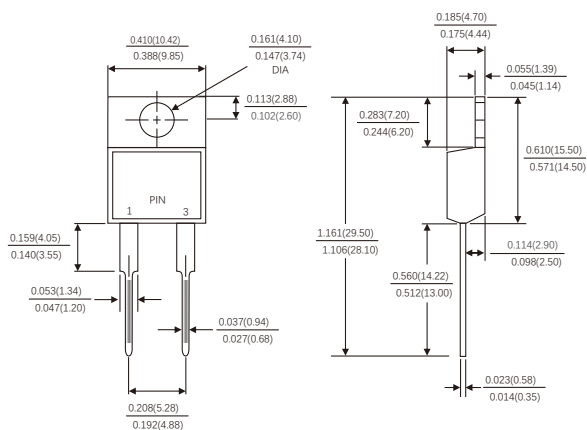


Figure 6. Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS

### TO-220AC



Dimensions in inches and (millimeters)

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