

SCD70

Power Rectifier Diodes



Features

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600V V_{RRM}

Typical Applications

- Battery charges
- Converters
- Power supplies
- Machine tool controls

Major Ratings and Characteristics

Parameters	SCD70		Units
	10 to 120	140 to 160	
$I_{F(AV)}$ @ T_C	70	70	A
	140	110	°C
$I_{F(RMS)}$	110		A
I_{FSM} @ 50Hz @ 60Hz	1200		A
	1250		A
I^2t @ 50Hz @ 60Hz	7100		A ² s
	6450		A ² s
V_{RRM} range	100 to 1200	1400 to 1600	V
T_J range	- 65 to 180	- 65 to 150	°C

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak reverse voltage V	$V_{R(BR)}$, minimum avalanche voltage V	I_{RRM} max. @ $T_J = T_{J \text{ max.}}$ mA
ZP70A(R)	10	100	200	200	15
	20	200	300	300	
	40	400	500	500	
	60	600	720	725	9
	80	800	960	950	
	100	1000	1200	1150	
	120	1200	1440	1350	
	140	1400	1650	1550	4.5
160	1600	1900	1750		

Forward Conduction

Parameter	SCD70		Units	Conditions		
	10 to 120	140 to 160				
$I_{F(AV)}$ Max. average forward current @ Case temperature	70	70	A	180° conduction, half sine wave		
	140	110	°C			
$I_{F(RMS)}$ Max. RMS forward current	110		A			
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	1200		A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
	1250			t = 8.3ms		
	1000			t = 10ms	100% V_{RRM} reapplied	
	1050			t = 8.3ms		
I^2t Maximum I^2t for fusing	7100		A ² s	t = 10ms	No voltage reapplied	
	6450			t = 8.3ms		
	5000			t = 10ms	100% V_{RRM} reapplied	
	4550			t = 8.3ms		
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	71000		A ² √s	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$ Low level value of threshold voltage	0.79		V	(16.7% x π x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$), $T_J = T_J$ max.		
$V_{F(TO)2}$ High level value of threshold voltage	1.00			(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f1} Low level value of forward slope resistance	2.33		mΩ	(16.7% x π x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$), $T_J = T_J$ max.		
r_{f2} High level value of forward slope resistance	1.53			(I > π x $I_{F(AV)}$), $T_J = T_J$ max.		
V_{FM} Max. forward voltage drop	1.35	1.46	V	$I_{pk} = 220A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ rectangular wave		

Thermal and Mechanical Specifications

Parameter	SCD70		Units	Conditions
	10 to 120	140 to 160		
T_J Max. junction operating temperature range	-65 to 180	-65 to 150	°C	
T_{stg} Max. storage temperature range	-65 to 180	-65 to 150		
R_{thJC} Max. thermal resistance, junction to case	0.45		K/W	DC operation
R_{thCS} Max. thermal resistance, case to heatsink	0.25			Mounting surface, smooth, flat and greased
T Allowable mounting torque	3.4 ^{+0-10%}		Nm	Not lubricated threads
	30		lbf · in	
	2.3 ^{+0-10%}		Nm	Lubricated threads
	20		lbf · in	
wt Approximate weight	17 (0.6)		g (oz)	
Case style	DO-203AB (DO5)			See Outline Table

 ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.08	0.06	K/W	$T_J = T_J$ max.
120°	0.10	0.11		
90°	0.13	0.14		
60°	0.19	0.20		
30°	0.30	0.30		

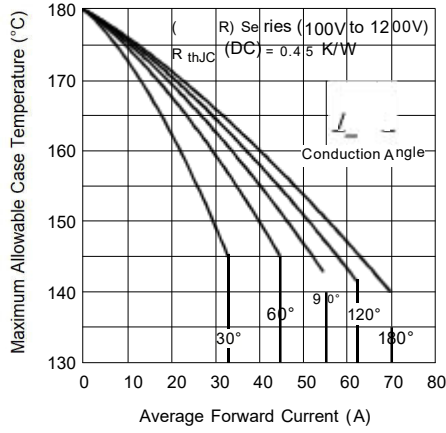


Fig. 1 - Current Ratings Characteristics

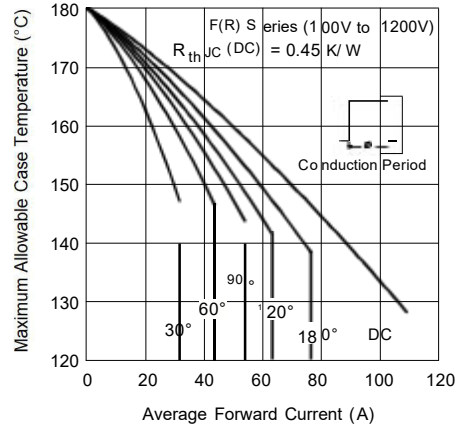


Fig. 2 - Current Ratings Characteristics

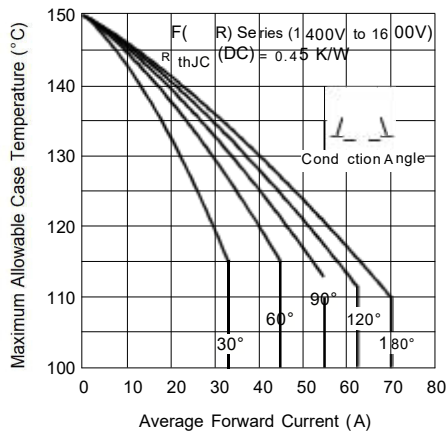


Fig. 3 - Current Ratings Characteristics

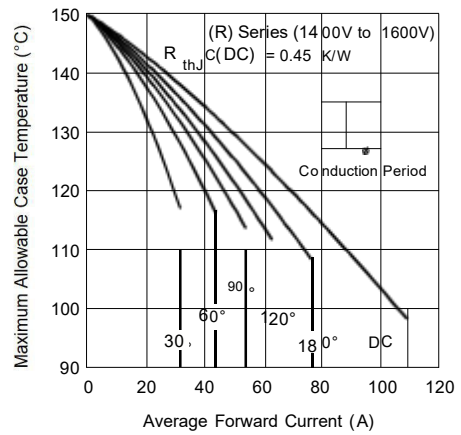


Fig. 4 - Current Ratings Characteristics

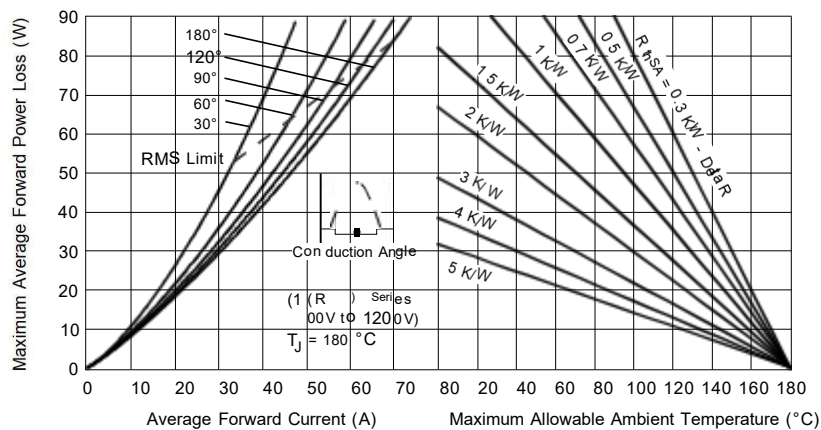


Fig. 5 - Forward Power Loss Characteristics

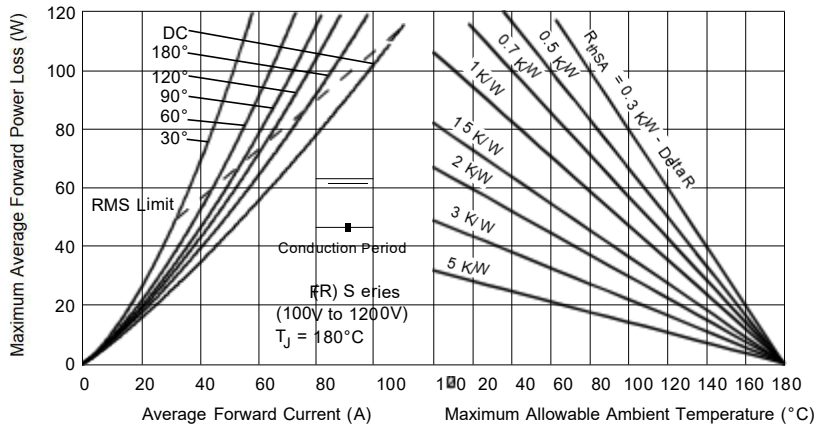


Fig. 6 - Forward Power Loss Characteristics

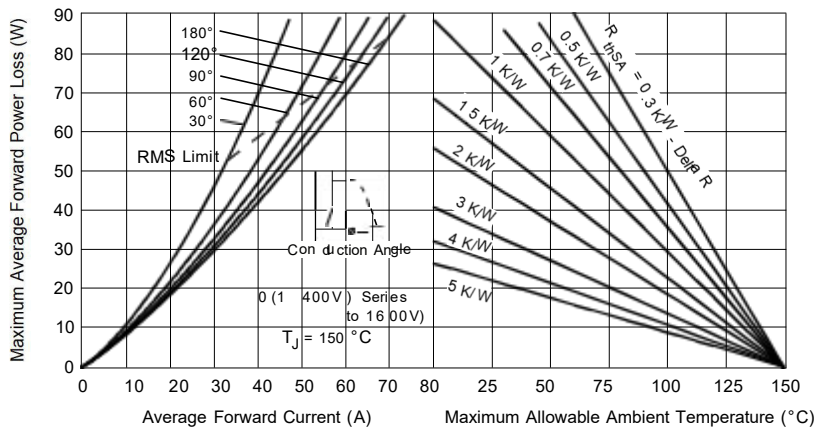


Fig. 7 - Forward Power Loss Characteristics

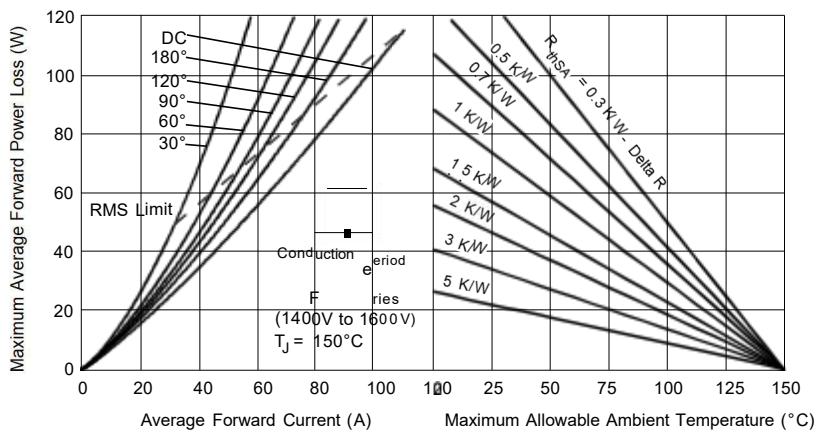


Fig. 8 - Forward Power Loss Characteristics

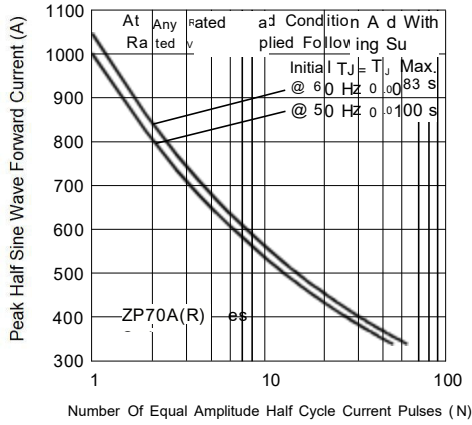


Fig. 9 - Maximum Non-Repetitive Surge Current

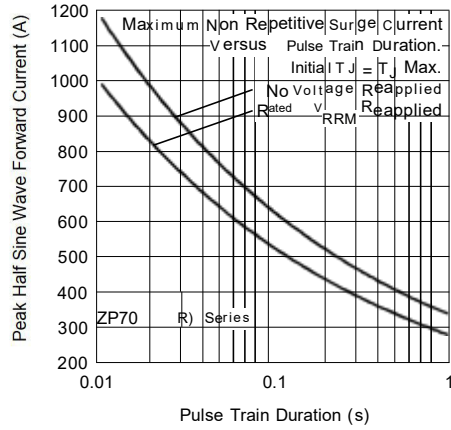


Fig. 10 - Maximum Non-Repetitive Surge Current

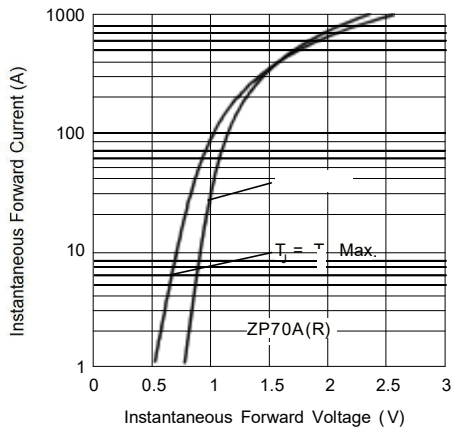


Fig. 11 - Forward Voltage Drop Characteristics

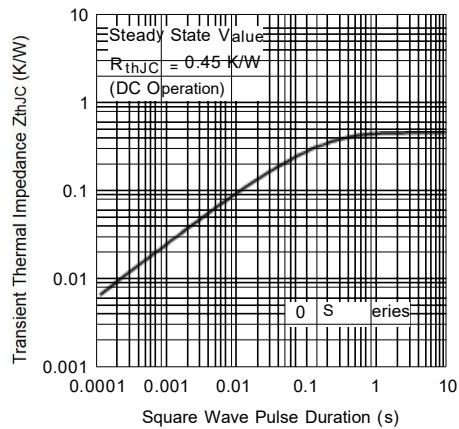


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

