

1700V/ 15A Silicon Carbide Power Schottky Barrier Diode

Features

- Rated to 1700V at 15 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behaviour
- High temperature operation
- High frequency operation

Key Characteristics

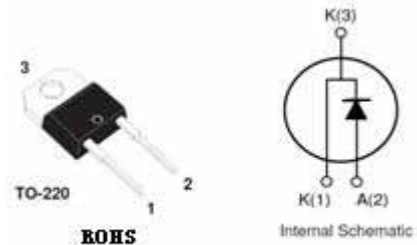
V_{RRM}	1700	V
$I_F, T_c \leq 105^\circ\text{C}$	15	A
Q_C	120	nC

Benefits

- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

- SMPS, e.g., CCM PFC;
- Motor drives, Solar application, UPS,
Wind turbine, Rail traction, EV/HEV



Part No.	Package Type	Marking
SC3S17015A	TO-220AC	SC17015

Maximum Ratings

Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		1700	V
Surge Peak Reverse Voltage	V_{RSM}		1700	
DC Blocking Voltage	V_{DC}		1700	
Continuous Forward Current	I_F	$T_C=25^{\circ}\text{C}$ $T_C=75^{\circ}\text{C}$ $T_C=105^{\circ}\text{C}$	24 19 15	A
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$	50	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	100	A
Power Dissipation	P_{TOT}	$T_C=25^{\circ}\text{C}$	192	W
		$T_C=110^{\circ}\text{C}$	83	W
Operating Junction	T_j		-55°C to 175°C	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-55°C to 175°C	$^{\circ}\text{C}$
Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in

Thermal Characteristics

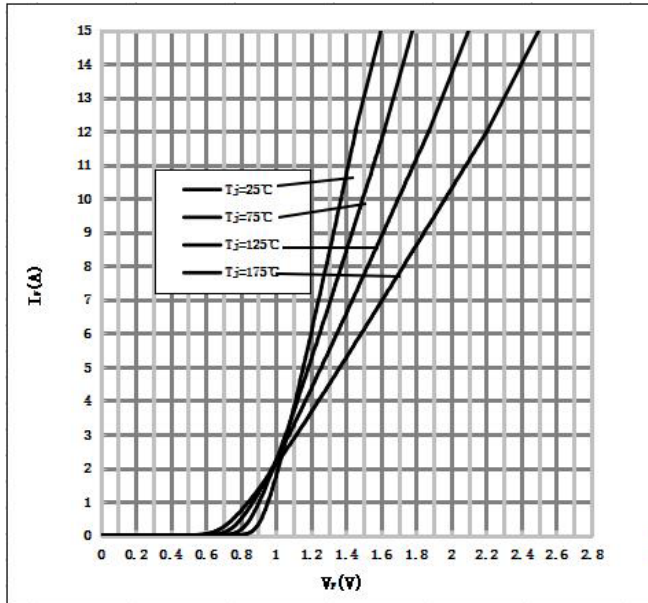
Parameter	Symbol	Test Condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{th\text{ JC}}$		0.78	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

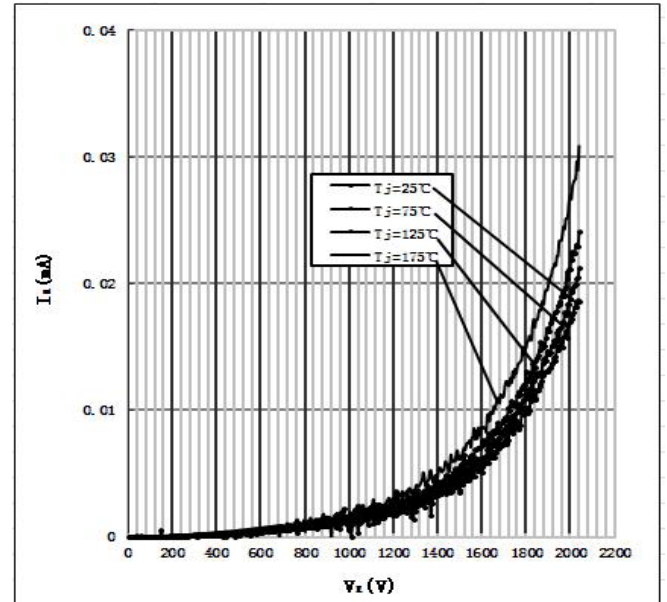
Parameter	Symbol	Test Conditions	Numerical		Unit
			Typ.	Max.	
Forward Voltage	V_F	$I_F=15\text{A}$, $T_j=25^{\circ}\text{C}$	1.6	1.7	V
		$I_F=15\text{A}$, $T_j=175^{\circ}\text{C}$	2.5	2.8	
Reverse Current	I_R	$V_R=1700\text{V}$, $T_j=25^{\circ}\text{C}$	10	100	μA
		$V_R=1700\text{V}$, $T_j=175^{\circ}\text{C}$	20	200	
Total Capacitive Charge	Q_C	$V_R=1200\text{V}$, $T_j=150^{\circ}\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$	120	-	nC
Total Capacitance	C	$V_R=0\text{V}$, $T_j=25^{\circ}\text{C}$, $f=1\text{MHz}$	1500	1600	pF
		$V_R=400\text{V}$, $T_j=25^{\circ}\text{C}$, $f=1\text{MHz}$	87	95	
		$V_R=800\text{V}$, $T_j=25^{\circ}\text{C}$, $f=1\text{MHz}$	63	70	

RATING AND CHARACTERISTICS CURVES (SC3S17015A)

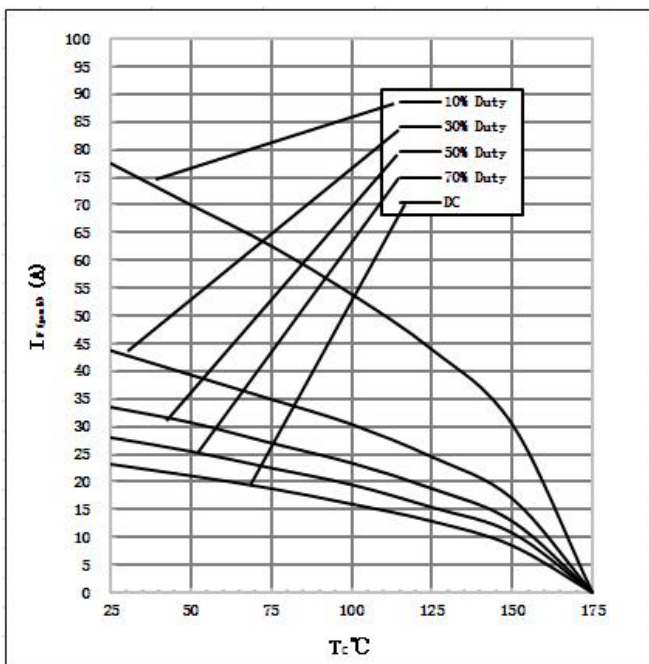
1) Forward IV characteristics as a function of T_j :



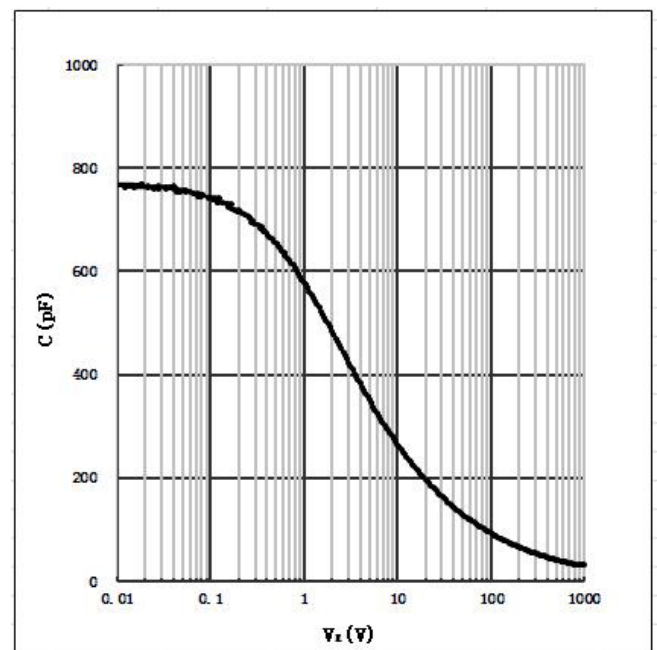
2) Reverse IV characteristics as a function of T_j :



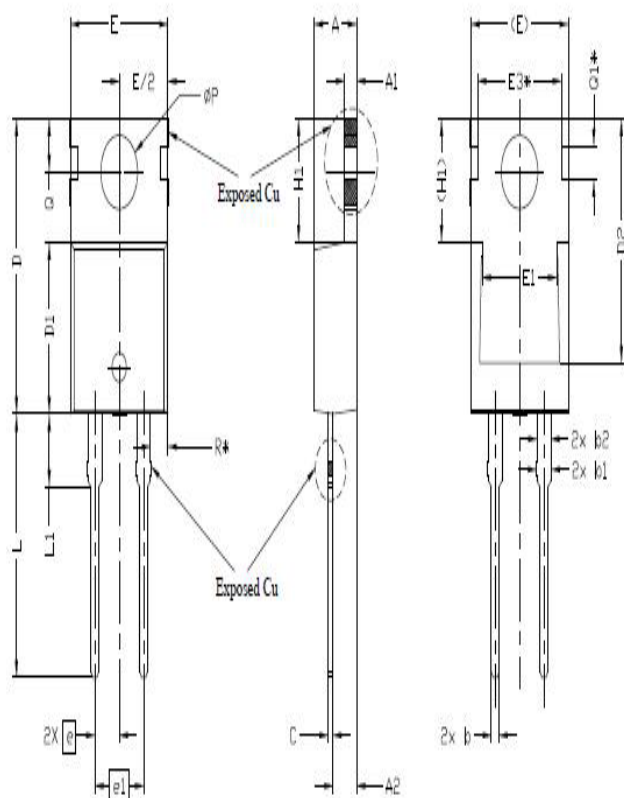
3) Current Derating
(10%, 30%, 50%, 70%, DC)



4) Capacitance vs. reverse voltage :



Package TO-220AC



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.63	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.86	7.77	8.89	5
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6.30	6.45	6.60	5,6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
Q	2.60	2.80	3.00	
Q1*	1.73REF.			
R*	1.82REF.			

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