

## 650V/40A Silicon Carbide Schottky Diode

### Features

- Positive temperature co-efficient
- Temperature-independent switching behavior
- Operation temperature up to 175°C
- Zero reverse recovery current
- Zero forward recovery voltage

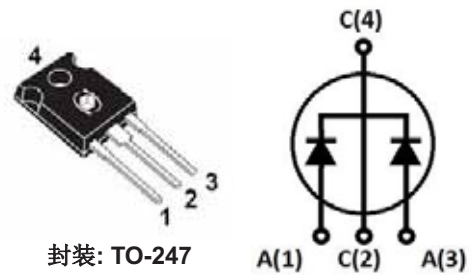
Description		
$V_{RRM}$	650	V
$I_F, T_c \leq 135^\circ\text{C}$	20*	A
$Q_C$	56*	nC

### Benefits

- Unipolar rectifiers
- Essentially no switching losses
- Parallel devices without thermal runaway
- Reduction of heat sink requirements

### Applications

- SMPS, PFC
- Motor driving, PV inverter, UPS, Wind engine, Rail traction, EV/HEV.



Part number	Package	Marking
SC3S06540B	TO-247-3 pin	06540B

**Maximum ratings(Tc=25°C unless otherwise specified)**

Parameter	Symbol	Test condition	Value	Unit
Repetitive peak reverse voltage	$V_{RRM}$		650	V
Surge peak reverse voltage	$V_{RSM}$		650	
DC Blocking voltage	$V_{DC}$		650	
Continuous forward current	$I_F$	$T_C=25^{\circ}C$ $T_C=135^{\circ}C$	45* 20*	A
Repetitive peak forward surge current	$I_{FRM}$	$T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave, $D=0.3$	100*	A
Non-repetitive peak forward surge current	$I_{FSM}$	$T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave	200*	A
Power dissipation	$P_{TOT}$	$T_C=25^{\circ}C$	141.5*	W
		$T_C=110^{\circ}C$	61.3*	W
Operation junction temperature	$T_j$		-55°C to 175°C	°C
Storage temperature	$T_{stg}$		-55°C to 175°C	°C
Mounting torque		M3 Screw	1	Nm
		6-32 Screw	8.8	lbf-in

\*single leg, \*\*two legs

**Thermal Characteristics**

Parameter	Symbol	Test condition	Value	Unit
			Typ.	
Thermal resistance from junction to case	$R_{th\ JC}$		1.06* 0.53**	°C/W

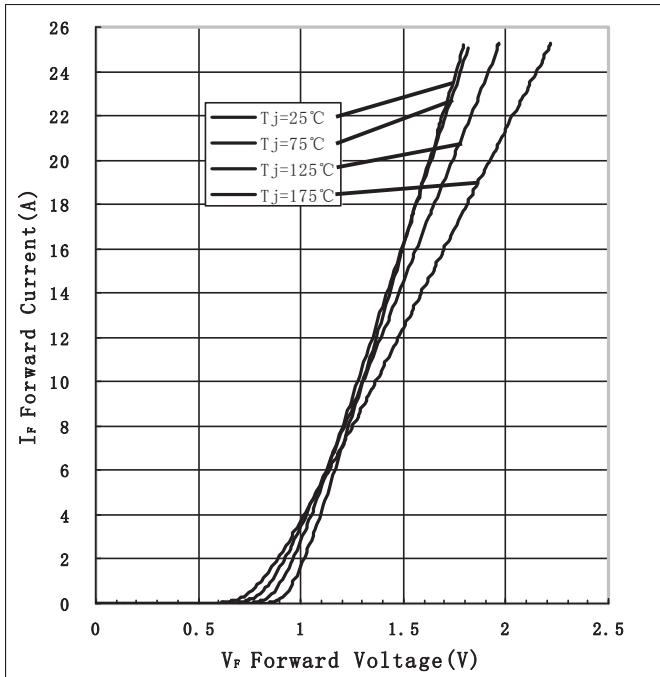
\*single leg, \*\*two legs

**Electrical characteristics**

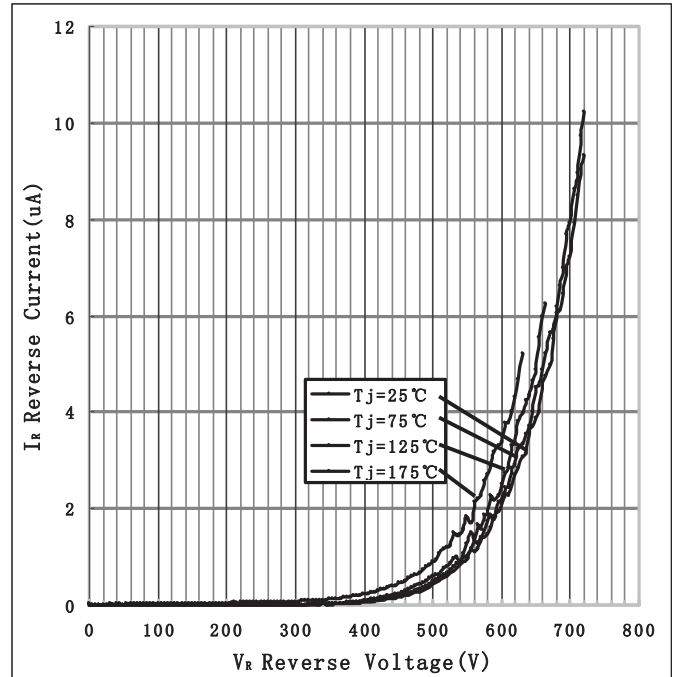
Parameter	Symbol	Test condition	Value		Unit
			Typ.	Max.	
Forward voltage	$V_F$	$I_F=20A$ , $T_j=25^{\circ}C$	1.7	1.8	V
		$I_F=20A$ , $T_j=175^{\circ}C$	2	2.5	
Reverse current	$I_R$	$V_R=650V$ , $T_j=25^{\circ}C$	30	100	μA
		$V_R=650V$ , $T_j=175^{\circ}C$	60	200	
Total capacitive charge	$Q_C$	$V_R=400V$ , $T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$	56	-	nC
Total capacitance	C	$V_R=0V$ , $T_j=25^{\circ}C$ , $f=1MHZ$	1170	1300	pF
		$V_R=200V$ , $T_j=25^{\circ}C$ , $f=1MHZ$	110	120	
		$V_R=400V$ , $T_j=25^{\circ}C$ , $f=1MHZ$	100	108	

# RATING AND CHARACTERISTICS CURVES(SC3S06540B)

## 1) Forward characteristics

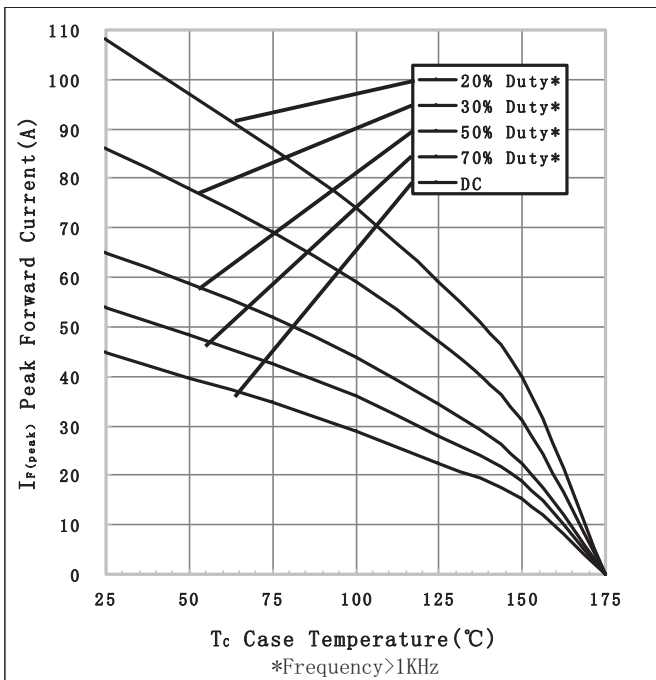


## 2) Reverse characteristics

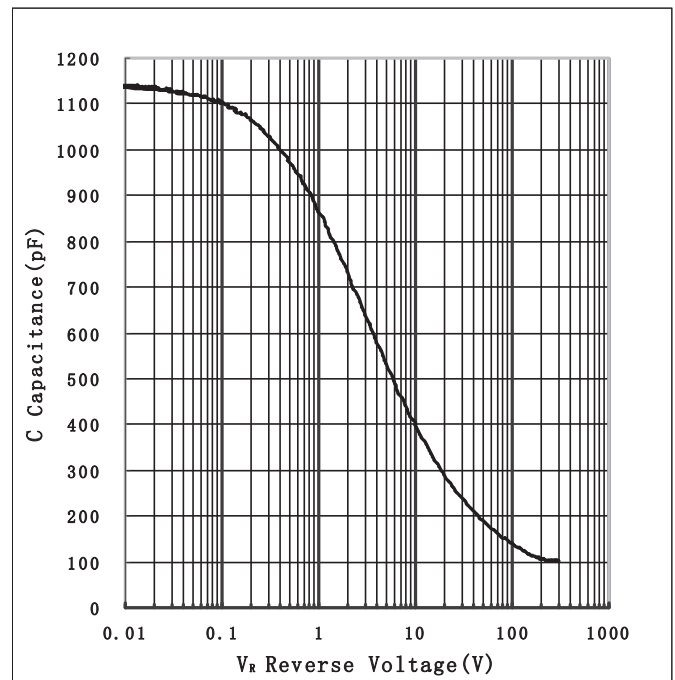


## 3) Current Derating

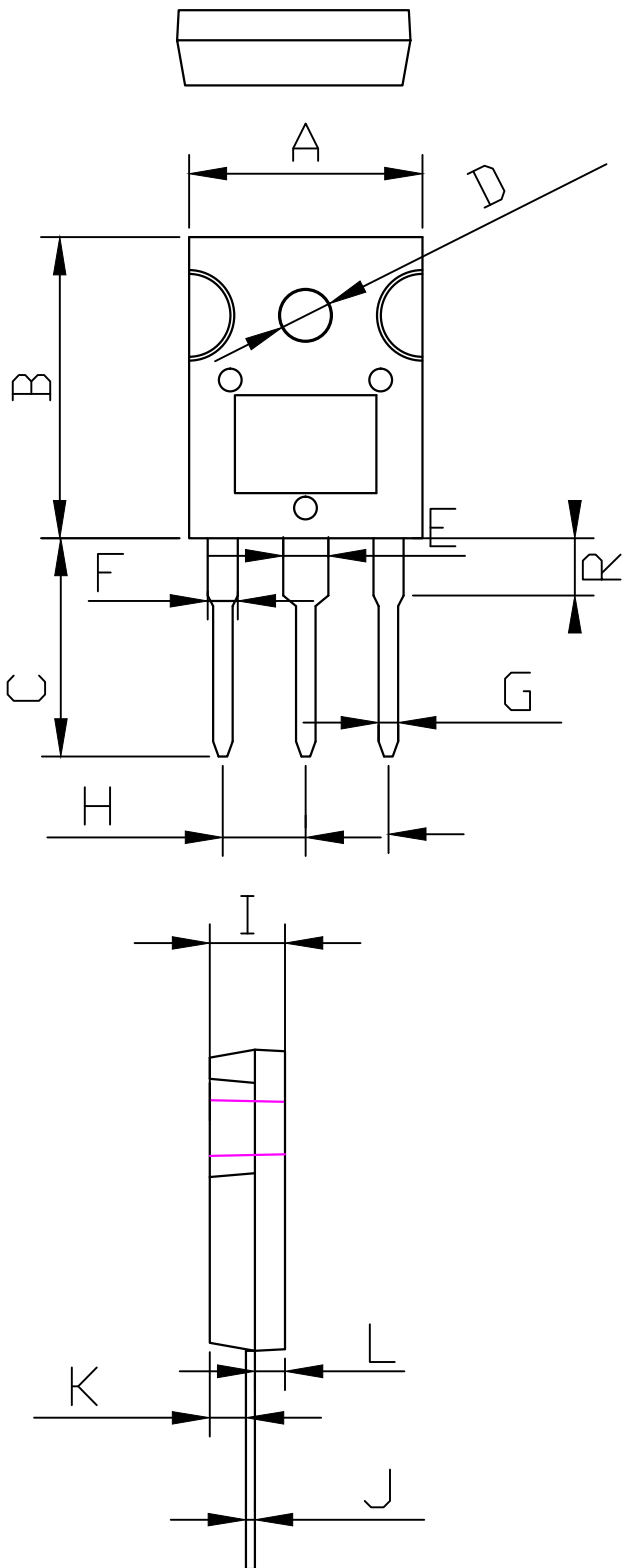
(10%, 30%, 50%, 70% duty , DC)



## 4) Capacitance vs. Reverse voltage



# TO-247



项目	mm		
	标准值	Min	Max
A	15.5	15.45	15.55
B	20	19.9	20.1
C	14.5	14.4	14.6
D	3.5	3.3	3.6
E	3	2.95	3.05
F	2	1.95	2.05
G	1.3	1.2	1.4
H	5.5	5.4	5.6
I	5	4.95	5.05
J	0.6	0.58	0.62
K	2.4	2.3	2.5
L	2	1.9	2.1
R	3.8	3.6	4

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