



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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V_R	650V
I_F	8A
Q_C	21nC

●Features

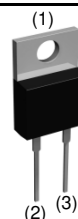
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible
- 4) High surge current capability

●Construction

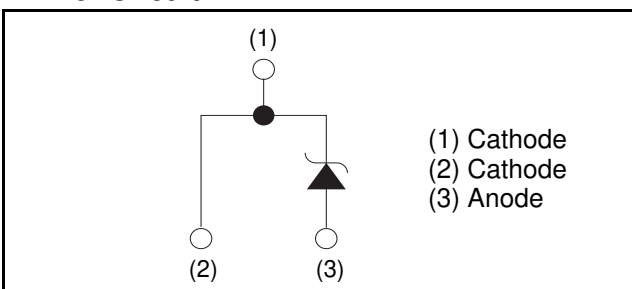
Silicon carbide epitaxial planar type

●Outline

TO-220ACP



●Inner Circuit



●Packaging Specifications

Type	Packaging	Tube
	Reel size (mm)	-
	Tape width (mm)	-
	Basic ordering unit (pcs)	50
	Packing code	C9
	Marking	SCS308AH

●Absolute Maximum Ratings ($T_j = 25^\circ\text{C}$)

Parameter		Symbol	Value	Unit
Reverse voltage (repetitive peak)		V_{RM}	650	V
Reverse voltage (DC)		V_R	650	V
Continuous forward current ($T_c=135^\circ\text{C}$)		I_F	8	A
Surge non-repetitive forward current	PW=10ms sinusoidal, $T_j=25^\circ\text{C}$	I_{FSM}	67	A
	PW=10ms sinusoidal, $T_j=150^\circ\text{C}$		57	A
	PW=10μs square, $T_j=25^\circ\text{C}$		250	A
Repetitive peak forward current		I_{FRM}	36 *1	A
i^2t value	$1 \leq PW \leq 10\text{ms}$, $T_j=25^\circ\text{C}$	$\int i^2 dt$	22	A^2s
	$1 \leq PW \leq 10\text{ms}$, $T_j=150^\circ\text{C}$		16	A^2s
Total power dissipation		P_D	57 *2	W
Junction temperature		T_j	175	$^\circ\text{C}$
Range of storage temperature		T_{stg}	-55 to +175	$^\circ\text{C}$

*1 $T_c=100^\circ\text{C}$, $T_j=150^\circ\text{C}$, Duty cycle=10% *2 $T_c=25^\circ\text{C}$

●Electrical characteristics ($T_j = 25^\circ\text{C}$)

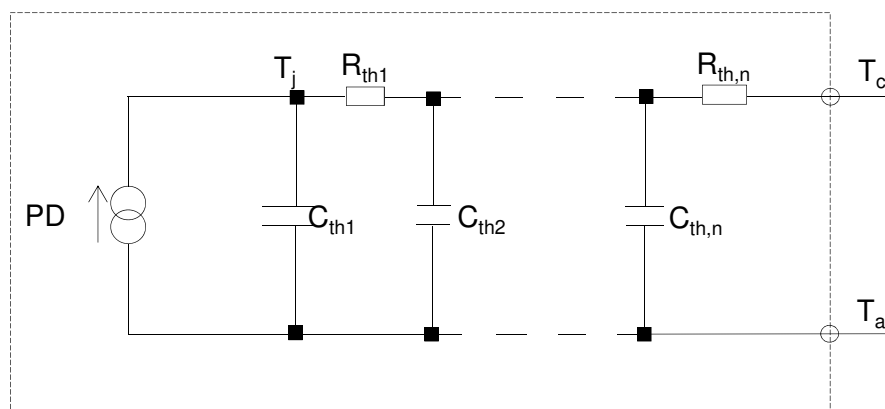
Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R = 40\mu\text{A}$	650	-	-	V
Forward voltage	V_F	$I_F = 8\text{A}, T_j = 25^\circ\text{C}$	-	1.35	1.50	V
		$I_F = 8\text{A}, T_j = 150^\circ\text{C}$	-	1.44	1.71	V
		$I_F = 8\text{A}, T_j = 175^\circ\text{C}$	-	1.50	-	V
Reverse current	I_R	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$	-	0.024	40	μA
		$V_R = 650\text{V}, T_j = 150^\circ\text{C}$	-	1.6	160	μA
		$V_R = 650\text{V}, T_j = 175^\circ\text{C}$	-	4.8	-	μA
Total capacitance	C	$V_R = 1\text{V}, f = 1\text{MHz}$	-	400	-	pF
		$V_R = 650\text{V}, f = 1\text{MHz}$	-	36	-	pF
Total capacitive charge	Q_C	$V_R = 400\text{V}, di/dt = 350\text{A}/\mu\text{s}$	-	21	-	nC
Switching time	t_C	$V_R = 400\text{V}, di/dt = 350\text{A}/\mu\text{s}$	-	15	-	ns
Non-repetitive Avaranche Energy	E_{ava}	$L = 1\text{mH}$	-	110	-	mJ

●Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	-	-	1.8	2.6	$^\circ\text{C}/\text{W}$

●Typical Transient Thermal Characteristics

Symbol	Value	Unit	Symbol	Value	Unit
R_{th1}	1.89E-02	K/W	C_{th1}	1.95E-04	Ws/K
R_{th2}	1.81E-01		C_{th2}	8.01E-04	
R_{th3}	1.55E+00		C_{th3}	1.82E-03	



●Electrical characteristic curves

Fig.1 $V_F - I_F$ Characteristics

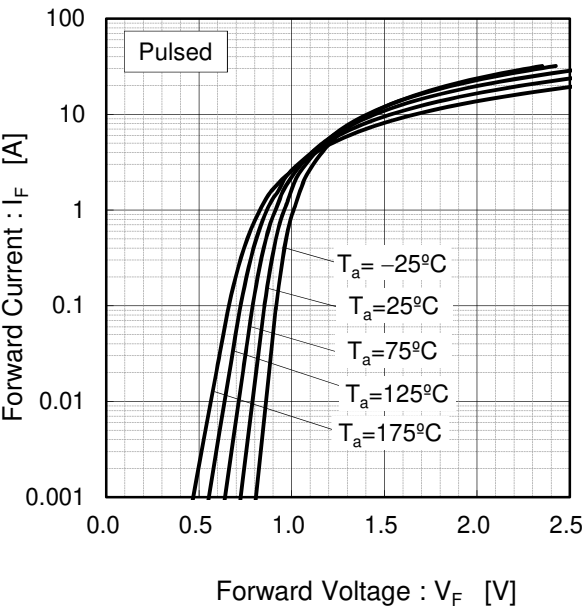


Fig.2 $V_F - I_F$ Characteristics

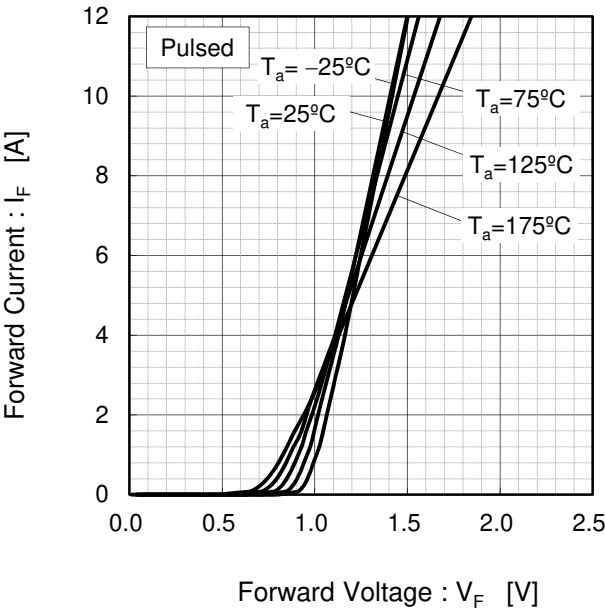


Fig.3 $V_R - I_R$ Characteristics

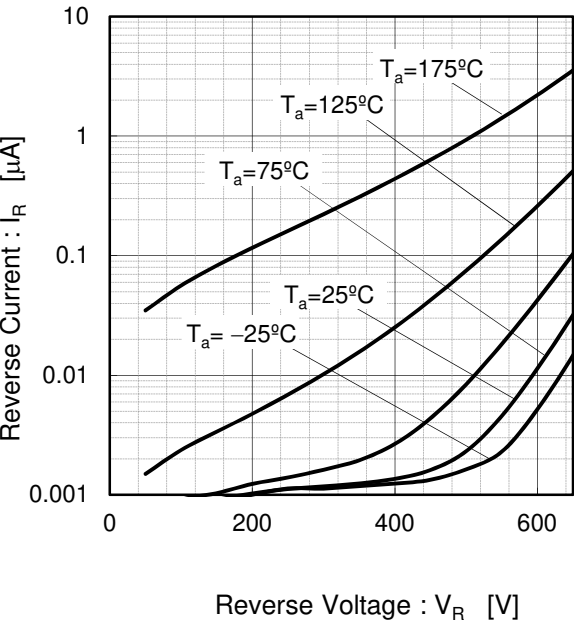
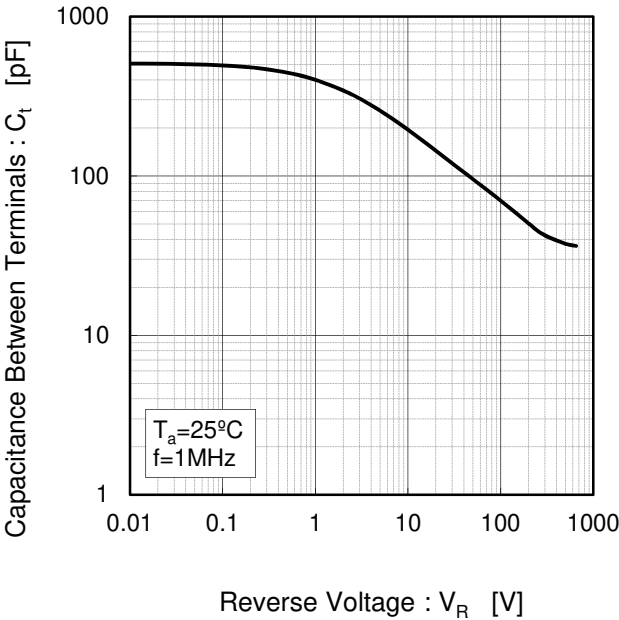


Fig.4 $V_R - C_t$ Characteristics



●Electrical characteristic curves

Fig.5 Typical Transient Thermal Resistance vs. Pulse Width

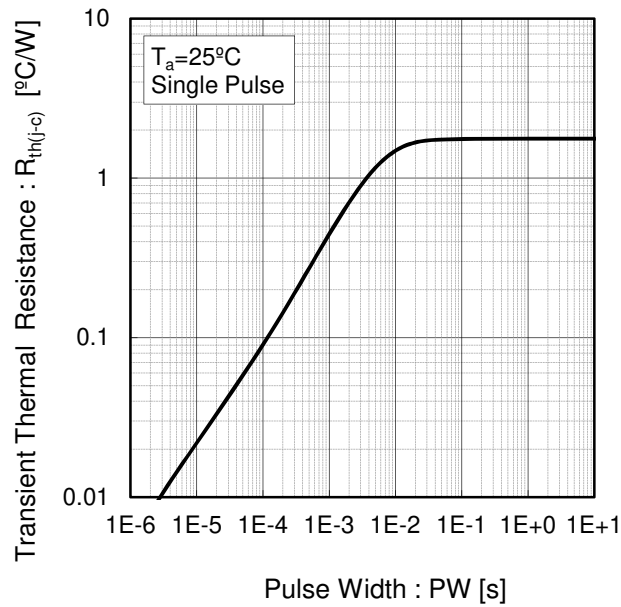


Fig.6 Power Dissipation

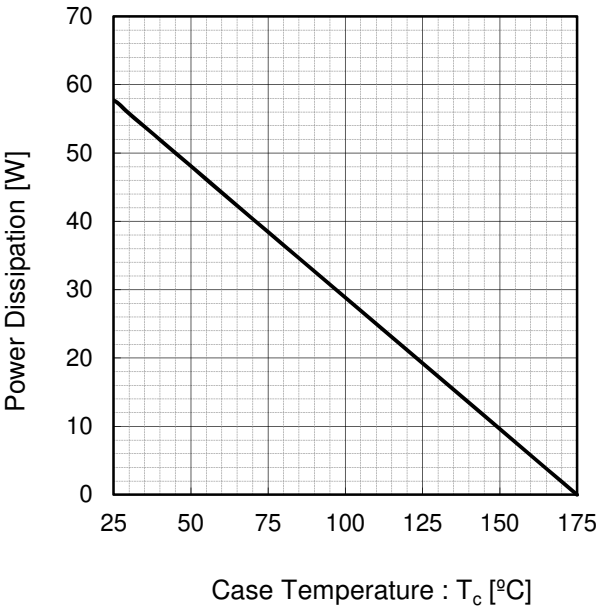
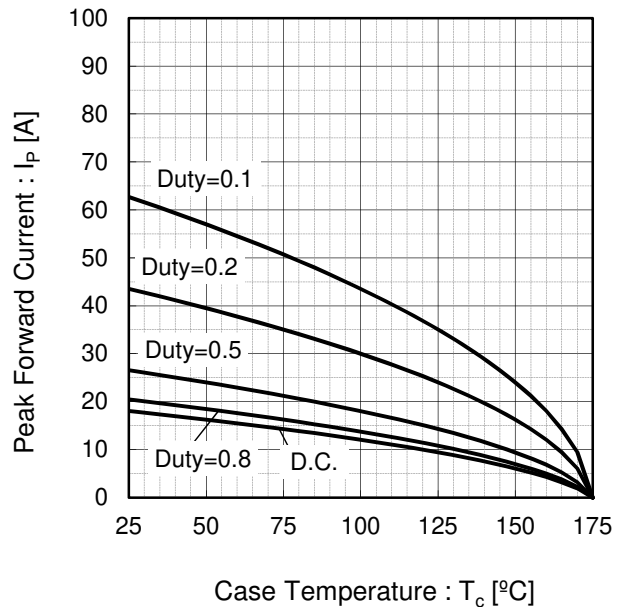
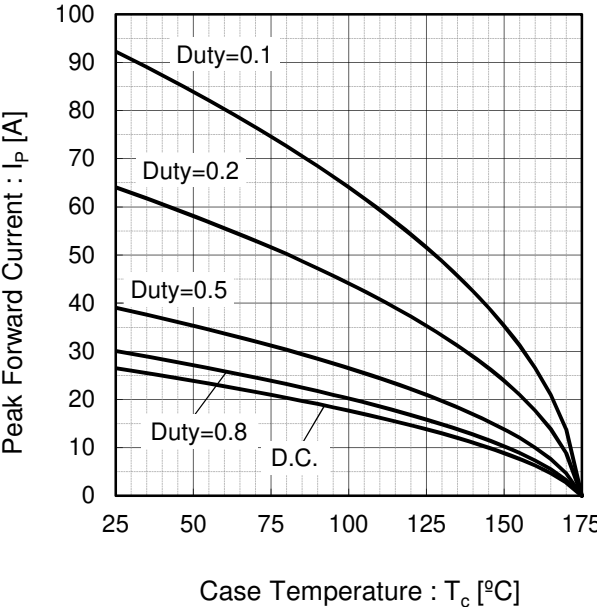


Fig.7*3 Maximum peak forward current derating curve $I_P - T_c$



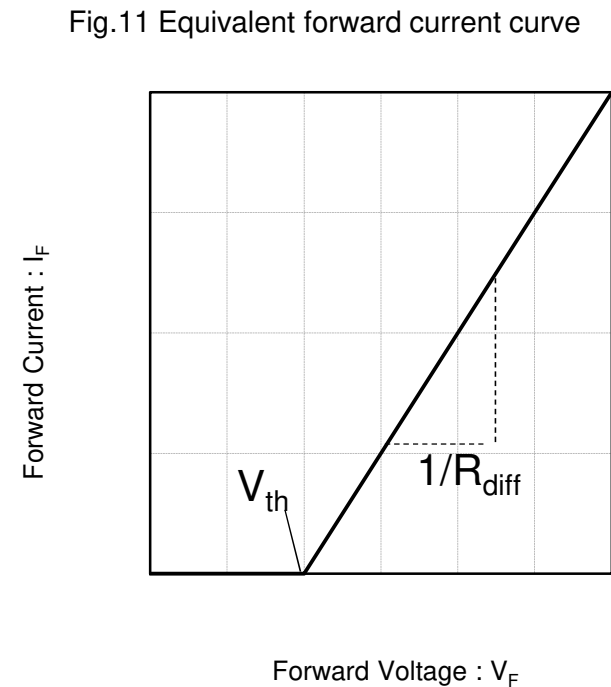
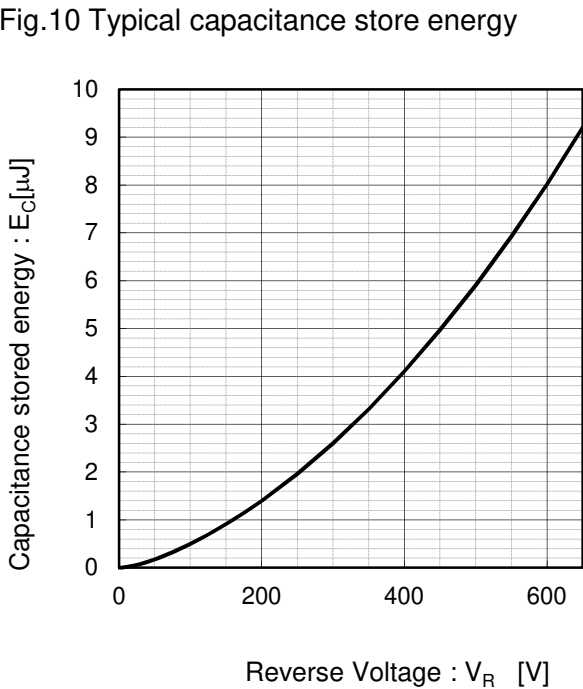
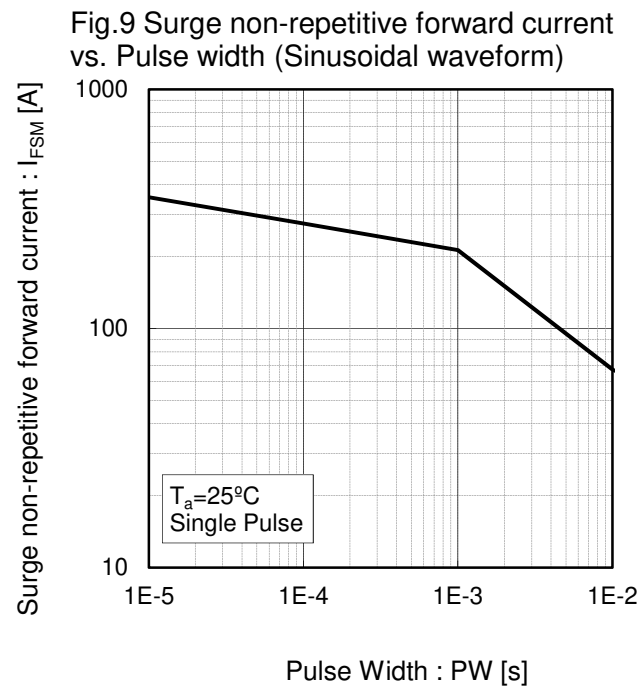
*3 Based on max V_f , max $R_{th(j-c)}$
Valid for switching of above 10kHz,
excluding D.C. curve.

Fig.8*4 Typical peak forward current derating curve $I_P - T_c$ (Not guaranteed)



*4 Based on typ V_f , typ $R_{th(j-c)}$
Typical value, not guaranteed
Valid for switching of above 10kHz,
excluding D.C. curve

●Electrical characteristic curves



$$V_F = V_{th} + R_{diff} I_F$$
$$V_{th} (T_j) = a_0 + a_1 T_j$$
$$R_{diff} (T_j) = b_0 + b_1 T_j + b_2 T_j^2$$

Symbol	Typical Value	Unit
a_0	9.66E-01	V
a_1	- 1.10E-03	V/°C
b_0	4.40E-02	Ω
b_1	9.33E-05	Ω/°C
b_2	9.60E-07	Ω/°C ²

T_j in °C; -55 °C < T_j < 175°C ; I_F < 16A

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SCS308AHG - Web Page

[Distribution Inventory](#)

Part Number	SCS308AHG
Package	TO-220ACP
Unit Quantity	1000
Minimum Package Quantity	50
Packing Type	Tube
Constitution Materials List	inquiry
RoHS	Yes