



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	20A/40A*
Q_C	31nC(Per leg)

(*Per leg/ Both legs)

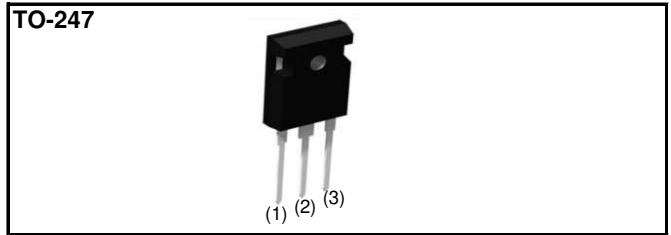
●Features

- 1) AEC-Q101 qualified
- 2) Low forward voltage
- 3) Negligible recovery time/current
- 4) Temperature independent switching behavior

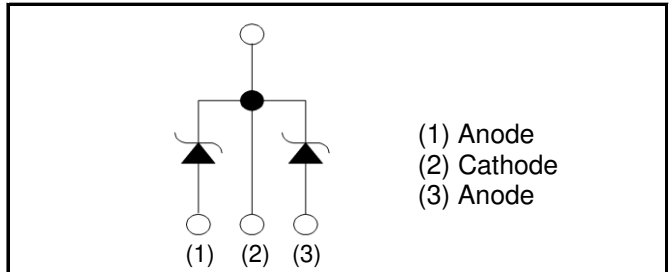
●Applications

- On Board Charger
- DC/DC Converter
- Wireless Charger
- EV Charger

●Outline



●Inner circuit



●Packaging specifications

Type	Packaging	Tube
	Reel size (mm)	-
	Tape width (mm)	-
	Basic ordering unit (pcs)	30
	Packing code	C
	Marking	SCS240AE2

●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 ^{*3} ($T_c = 129^\circ\text{C}$)	I_F	20/40	A
Surge non-repetitive forward current ^{*3}	I_{FSM}	PW=10ms sinusoidal, $T_j=25^\circ\text{C}$	67/130 A
		PW=10ms sinusoidal, $T_j=150^\circ\text{C}$	53/100 A
		PW=10μs square, $T_j=25^\circ\text{C}$	260/520 A
Repetitive peak forward current ^{*3}	I_{FRM}	81/160 ^{*1}	A
i^2t value ^{*3}	$\int i^2 dt$	PW=10ms, $T_j=25^\circ\text{C}$	22/91 A^2s
		PW=10ms, $T_j=150^\circ\text{C}$	14/56 A^2s
Total power dissipation ^{*3}	P_D	130/270 ^{*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 $T_c=25^\circ\text{C}$ *3 Per leg/ Both legs

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

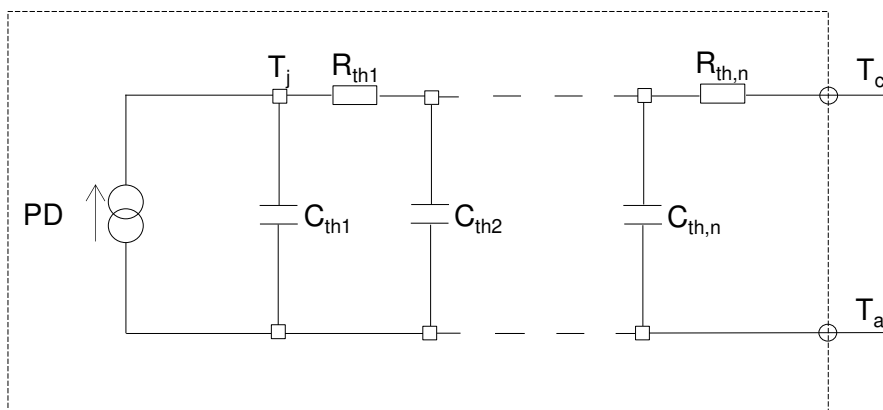
Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V_{DC}	$I_R=4.0\text{mA}$	650	-	-	V
Forward voltage	V_F	$I_F=20\text{A}, T_j=25^\circ\text{C}$	-	1.35	1.55	V
		$I_F=20\text{A}, T_j=150^\circ\text{C}$	-	1.55	-	V
		$I_F=20\text{A}, T_j=175^\circ\text{C}$	-	1.63	-	V
Reverse current	I_R	$V_R=600\text{V}, T_j=25^\circ\text{C}$	-	4	400	μA
		$V_R=600\text{V}, T_j=150^\circ\text{C}$	-	60	-	μA
		$V_R=600\text{V}, T_j=175^\circ\text{C}$	-	140	-	μA
Total capacitance	C	$V_R=1\text{V}, f=1\text{MHz}$	-	730	-	pF
		$V_R=600\text{V}, f=1\text{MHz}$	-	74	-	pF
Total capacitive charge	Q_C	$V_R=400\text{V}, di/dt=350\text{A}/\mu\text{s}$	-	31	-	nC
Switching time	t_C	$V_R=400\text{V}, di/dt=350\text{A}/\mu\text{s}$	-	19	-	ns

●Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Per Leg	-	0.92	1.1	$^\circ\text{C}/\text{W}$
		Both Legs	-	0.46	0.54	$^\circ\text{C}/\text{W}$

●Typical Transient Thermal Characteristics (Per Leg)

Symbol	Value	Unit	Symbol	Value	Unit
R_{th1}	1.94E-01	K/W	C_{th1}	3.08E-03	Ws/K
R_{th2}	7.23E-01		C_{th2}	8.36E-03	
R_{th3}	5.52E-03		C_{th3}	1.03E+00	



●Electrical characteristic curves

Fig.1 $V_F - I_F$ Characteristics (Per Leg)

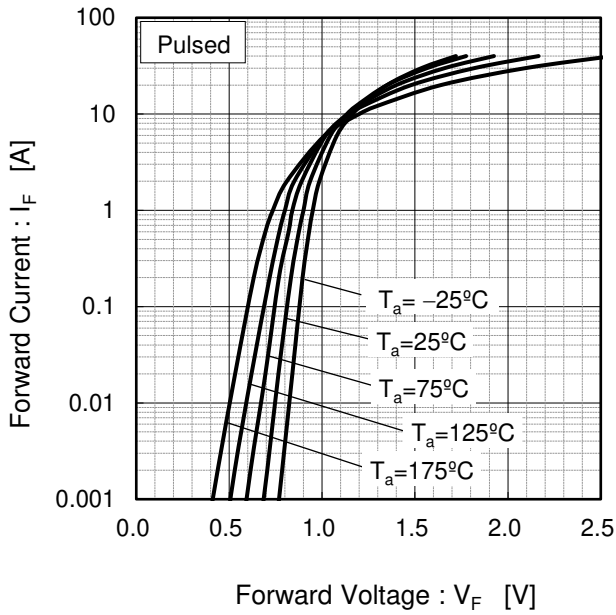


Fig.2 $V_F - I_F$ Characteristics (Per Leg)

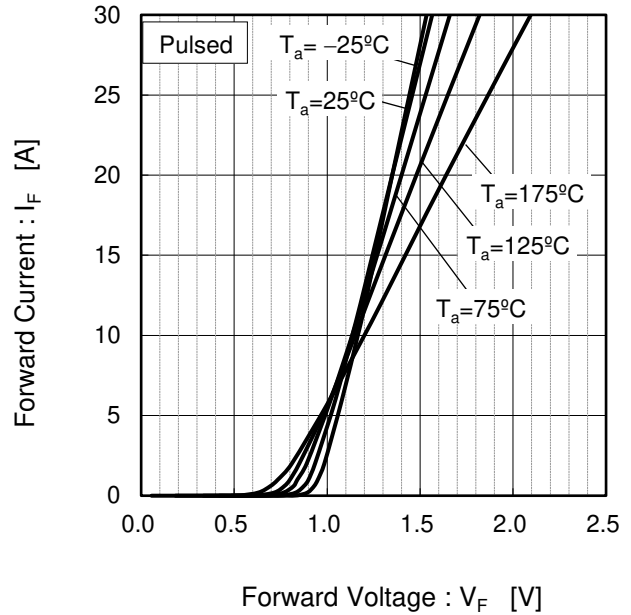


Fig.3 $V_R - I_R$ Characteristics (Per Leg)

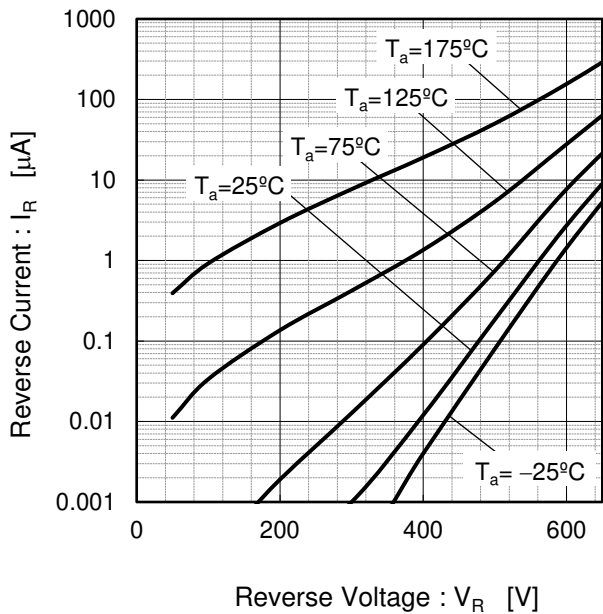
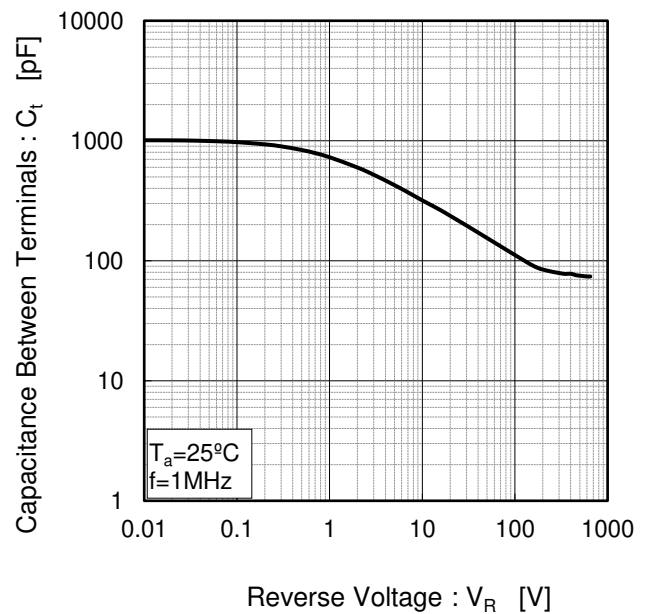


Fig.4 $V_R - C_t$ Characteristics (Per Leg)



●Electrical characteristic curves

Fig.5 Typical Transient Thermal Resistance vs. Pulse Width (Per Leg)

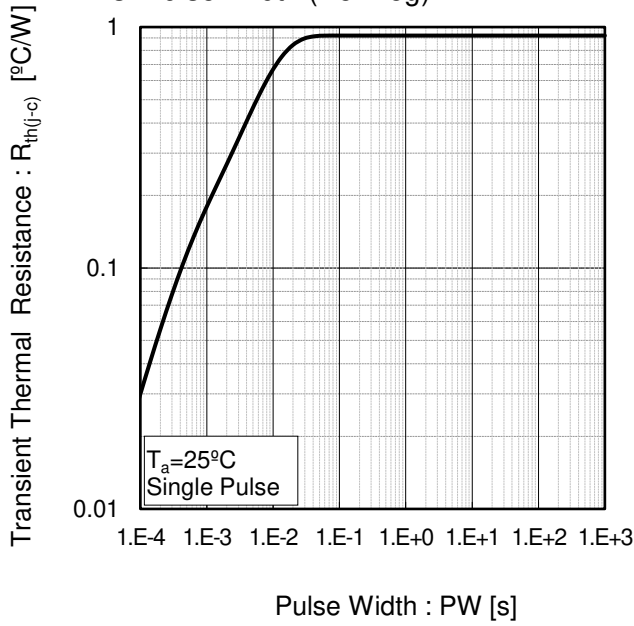


Fig.6 Power Dissipation (Per Leg)

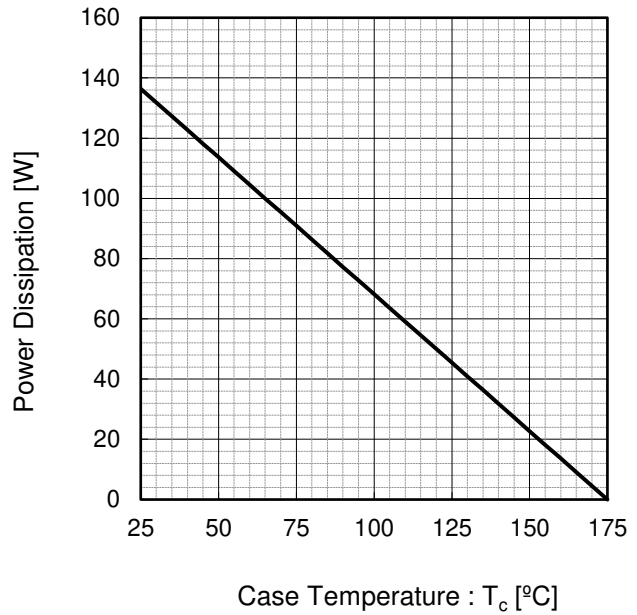
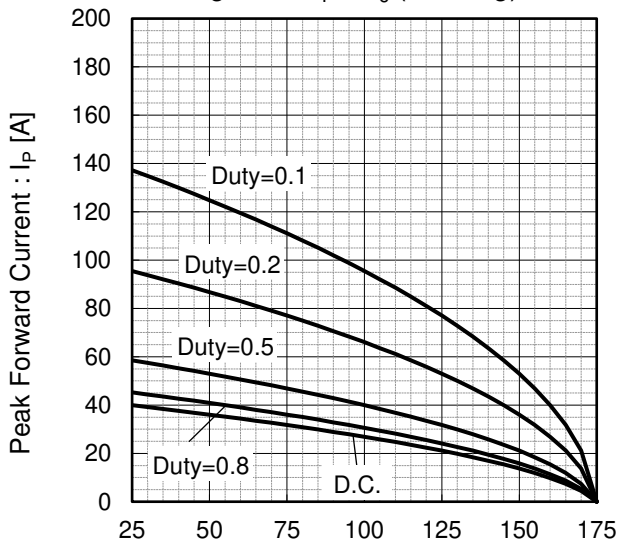
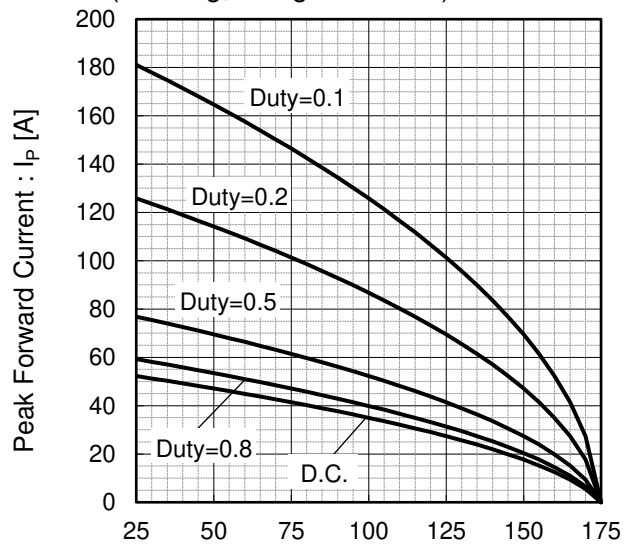


Fig.7*3 Maximum peak forward current derating curve $I_P - T_C$ (Per Leg)



Case Temperature : T_C [°C]
 *3 Based on max Vf, max $R_{th(j-c)}$
 Valid for switching of above 10kHz,
 excluding D.C. curve.

Fig.8*4 Typical peak forward current derating curve $I_P - T_C$ (Per Leg, Not guaranteed)



Case Temperature : T_C [°C]
 *4 Based on typ Vf, typ $R_{th(j-c)}$
 Typical value, not guaranteed
 Valid for switching of above 10kHz,
 excluding D.C. curve

●Electrical characteristic curves

Fig.9 Surge non-repetitive forward current vs. Pulse width (Sinusoidal waveform) (Per Leg)

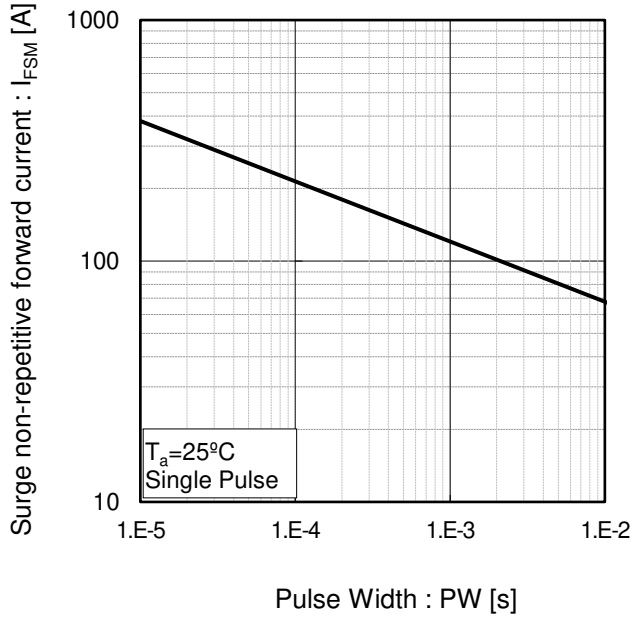
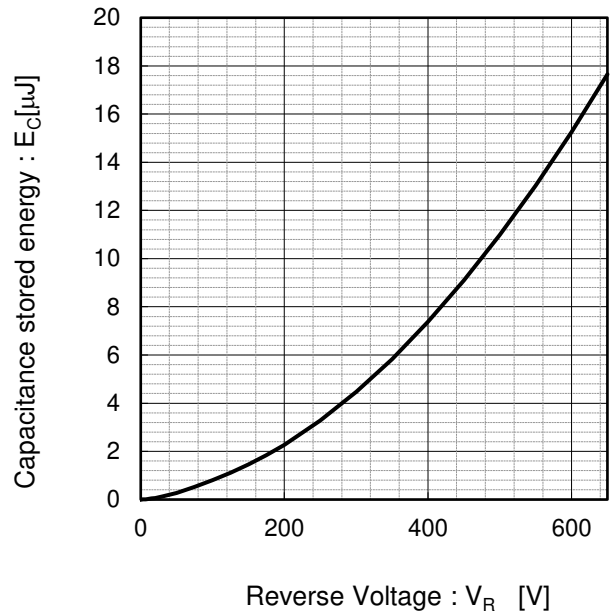
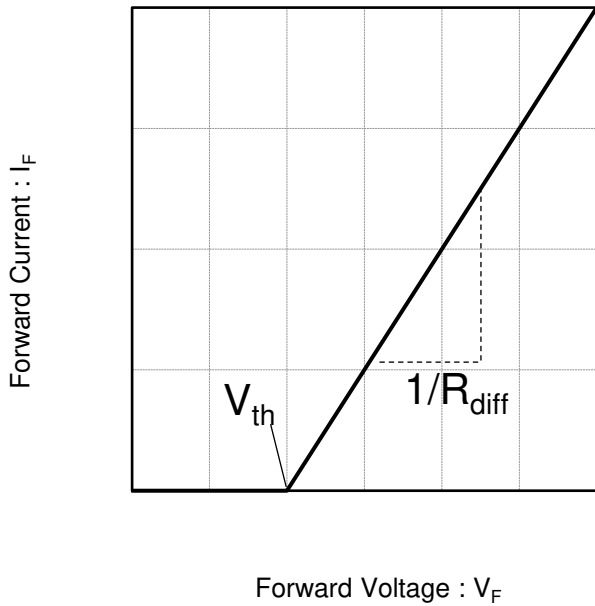


Fig.10 Typical capacitance store energy (Per Leg)



●Simplified forward characteristic model (Per Leg)

Fig.11 Equivalent forward current curve



$$V_F = V_{th} + R_{diff} I_F$$

$$V_{th} (T_j) = a_0 + a_1 T_j$$

$$R_{diff} (T_j) = b_0 + b_1 T_j + b_2 T_j^2$$

Symbol	Typical Value	Unit
a ₀	9.35E-01	V
a ₁	-1.12E-03	V/°C
b ₀	1.99E-02	Ω
b ₁	5.10E-05	Ω/°C
b ₂	5.40E-07	Ω/°C ²

T_j in °C; -55 °C < T_j < °C ; I_F < 40 A

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SCS240AE2HR - Web Page

[Distribution Inventory](#)

Part Number	SCS240AE2HR
Package	TO-247
Unit Quantity	360
Minimum Package Quantity	30
Packing Type	Tube
Constitution Materials List	inquiry
RoHS	Yes