



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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$V_R$	1200V
$I_F$	20A/40A*
$Q_C$	66nC(Per leg)

(\*Per leg/ Both legs)

### ●Features

- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

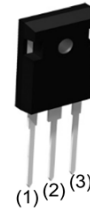
### ●Construction

Silicon carbide epitaxial planar type

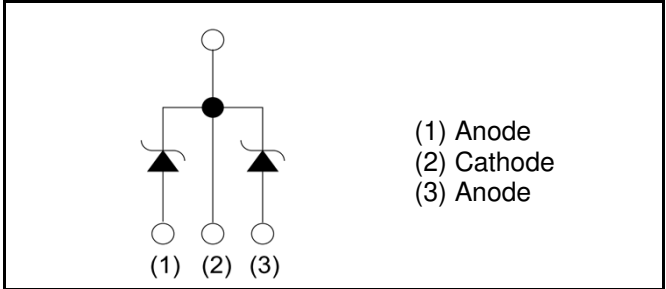
### ●AEC-Q101 Qualified

### ●Outline

TO-247



### ●Inner circuit



### ●Packaging specifications

Type	Packaging	Tube
	Reel size (mm)	-
	Tape width (mm)	-
	Basic ordering unit (pcs)	30
	Packing code	C
	Marking	SCS240KE2A

### ●Absolute maximum ratings ( $T_j = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Reverse voltage (repetitive peak)	$V_{RM}$	1200	V
Reverse voltage (DC)	$V_R$	1200	V
Continuous forward current * <sup>3</sup> ( $T_c = 134^\circ\text{C}$ )	$I_F$	20/40	A
Surge non-repetitive forward current * <sup>3</sup>	PW=10ms sinusoidal, $T_j=25^\circ\text{C}$	78/150	A
	PW=10ms sinusoidal, $T_j=150^\circ\text{C}$	59/110	A
	PW=10μs square, $T_j=25^\circ\text{C}$	310/620	A
Repetitive peak forward current * <sup>3</sup>	$I_{FRM}$	83/160 * <sup>1</sup>	A
$i^2t$ value * <sup>3</sup>	PW=10ms, $T_j=25^\circ\text{C}$	31/120	$\text{A}^2\text{s}$
	PW=10ms, $T_j=150^\circ\text{C}$	17/69	$\text{A}^2\text{s}$
Total power dissipation * <sup>3</sup>	$P_D$	210/420 * <sup>2</sup>	W
Junction temperature	$T_j$	175	$^\circ\text{C}$
Range of storage temperature	$T_{stg}$	-55 to +175	$^\circ\text{C}$

\*<sup>1</sup>  $T_c=100^\circ\text{C}$ ,  $T_j=150^\circ\text{C}$ , Duty cycle=10% \*<sup>2</sup>  $T_c=25^\circ\text{C}$  \*<sup>3</sup> Per leg/ Both legs

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

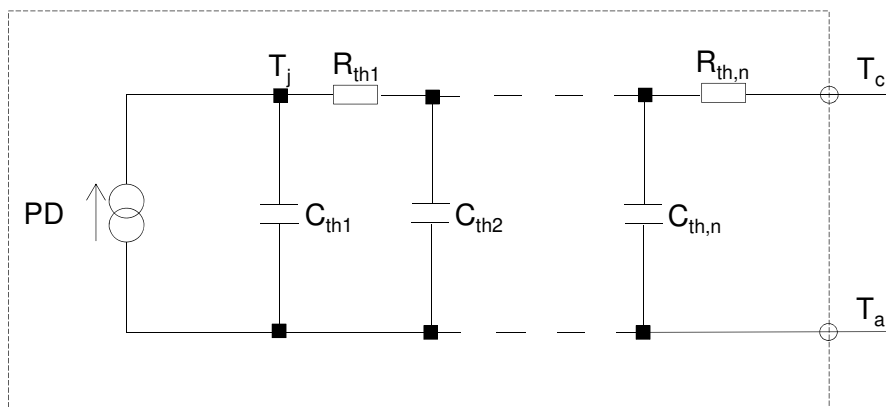
Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	$V_{DC}$	$I_R=0.4\text{mA}$	1200	-	-	V
Forward voltage	$V_F$	$I_F=20\text{A}, T_j=25^\circ\text{C}$	-	1.4	1.6	V
		$I_F=20\text{A}, T_j=150^\circ\text{C}$	-	1.8	-	V
		$I_F=20\text{A}, T_j=175^\circ\text{C}$	-	1.9	-	V
Reverse current	$I_R$	$V_R=1200\text{V}, T_j=25^\circ\text{C}$	-	20	400	$\mu\text{A}$
		$V_R=1200\text{V}, T_j=150^\circ\text{C}$	-	160	-	$\mu\text{A}$
		$V_R=1200\text{V}, T_j=175^\circ\text{C}$	-	260	-	$\mu\text{A}$
Total capacitance	C	$V_R=1\text{V}, f=1\text{MHz}$	-	1050	-	pF
		$V_R=600\text{V}, f=1\text{MHz}$	-	85	-	pF
Total capacitive charge	$Q_C$	$V_R=800\text{V}, di/dt=500\text{A}/\mu\text{s}$	-	66	-	nC
Switching time	$t_C$	$V_R=800\text{V}, di/dt=500\text{A}/\mu\text{s}$	-	18	-	ns

**●Thermal characteristics**

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Per Leg	-	0.56	0.70	$^\circ\text{C}/\text{W}$
		Both Legs	-	0.28	0.35	$^\circ\text{C}/\text{W}$

**●Typical Transient Thermal Characteristics** (Per Leg)

Symbol	Value	Unit	Symbol	Value	Unit
$R_{th1}$	1.57E-01	K/W	$C_{th1}$	5.03E-03	Ws/K
$R_{th2}$	2.46E-01		$C_{th2}$	6.74E-03	
$R_{th3}$	1.57E-01		$C_{th,n}$	6.11E-02	



●Electrical characteristic curves

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

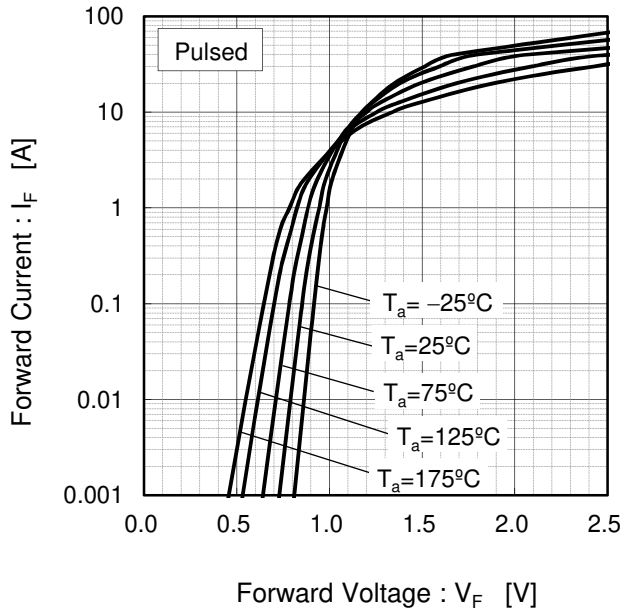


Fig.2  $V_F - I_F$  Characteristics (Per Leg)

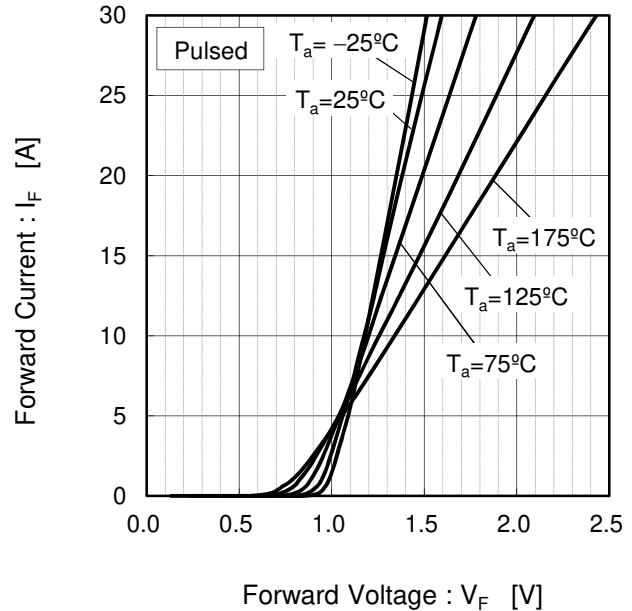


Fig.3  $V_R - I_R$  Characteristics (Per Leg)

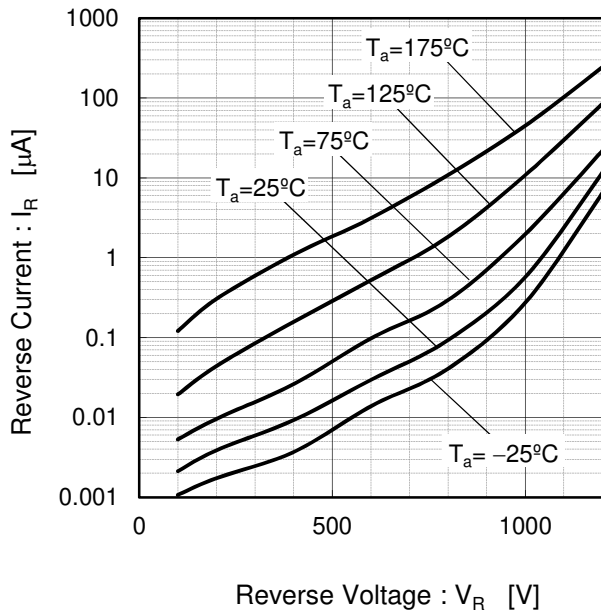
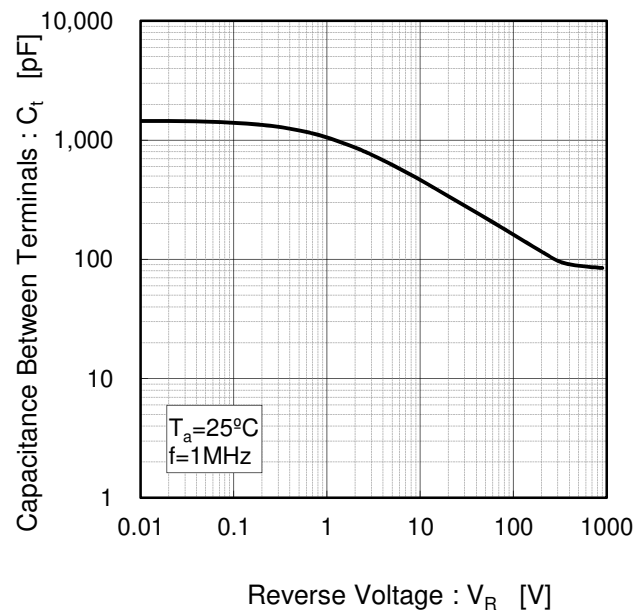


Fig.4  $V_R - C_t$  Characteristics (Per Leg)



●Electrical characteristic curves

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

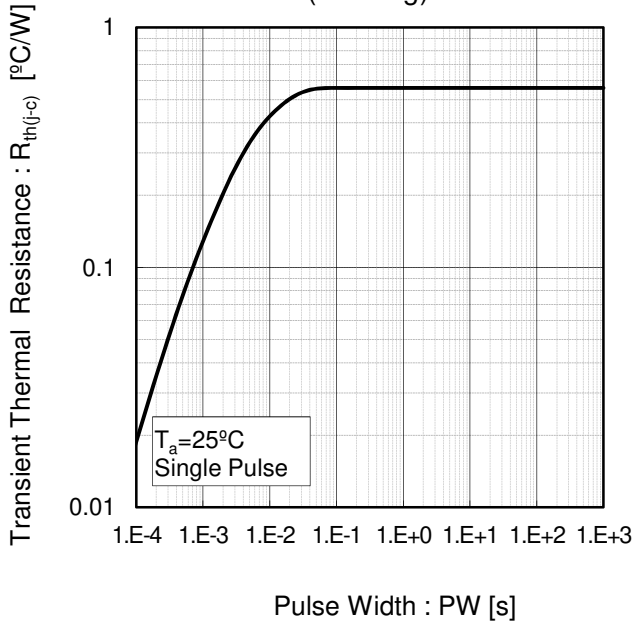


Fig.6 Power Dissipation (Per Leg)

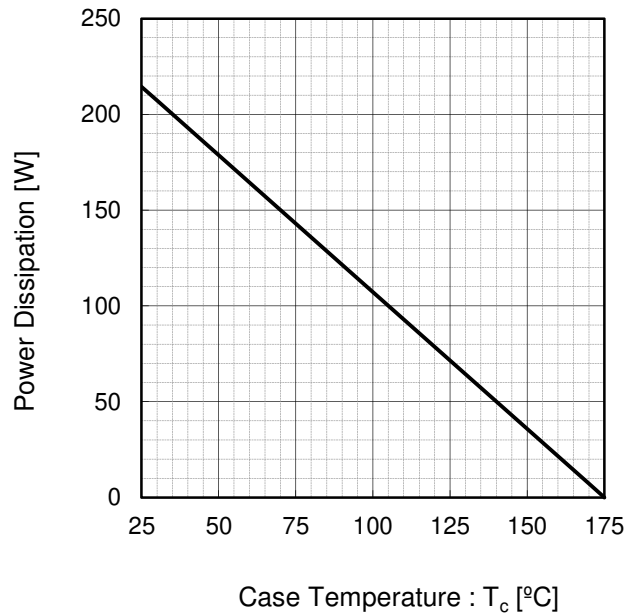
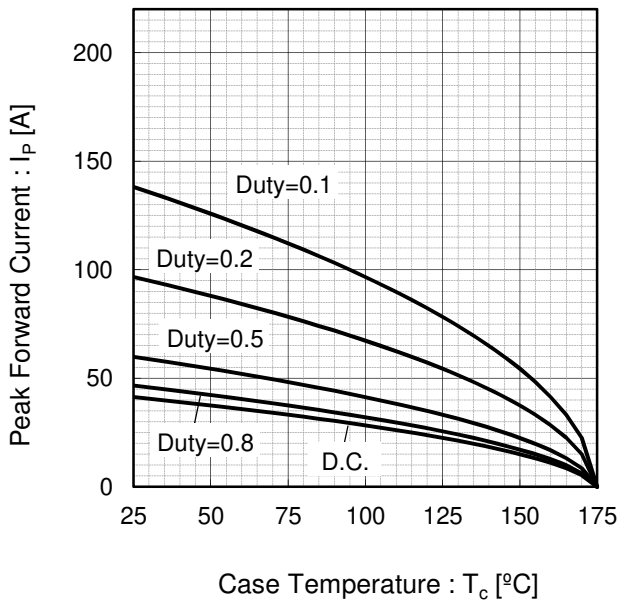
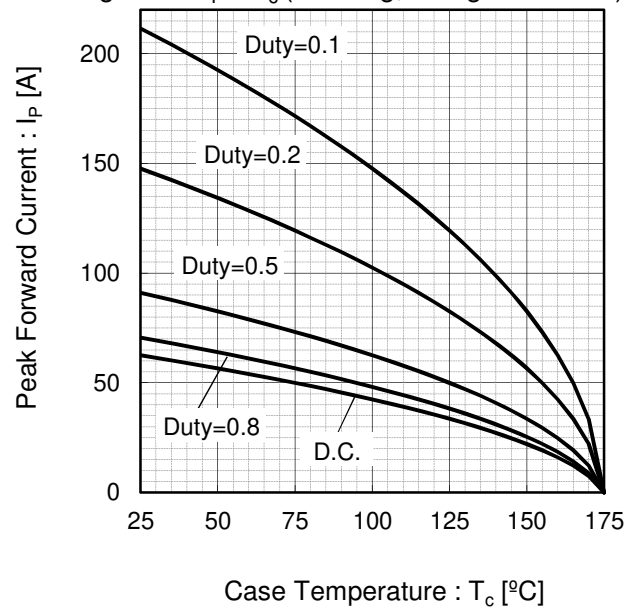


Fig.7\*3 Maximum peak forward current derating curve  $I_P - T_c$  (Per Leg)



\*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  $I_P - T_c$  (Per Leg, 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

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

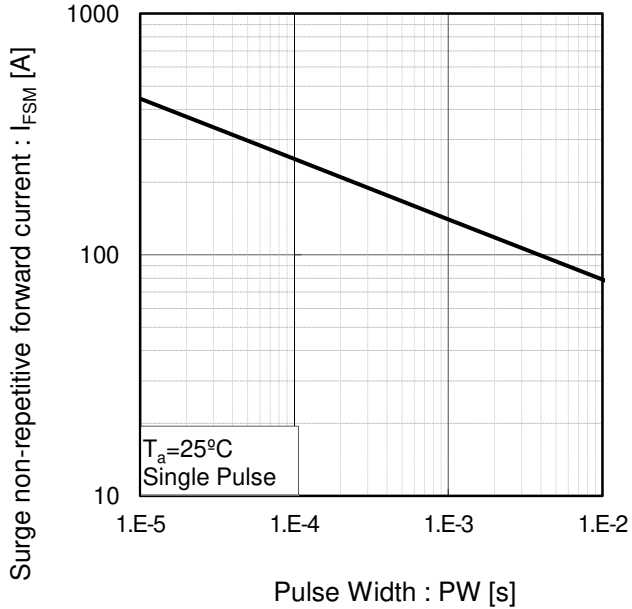
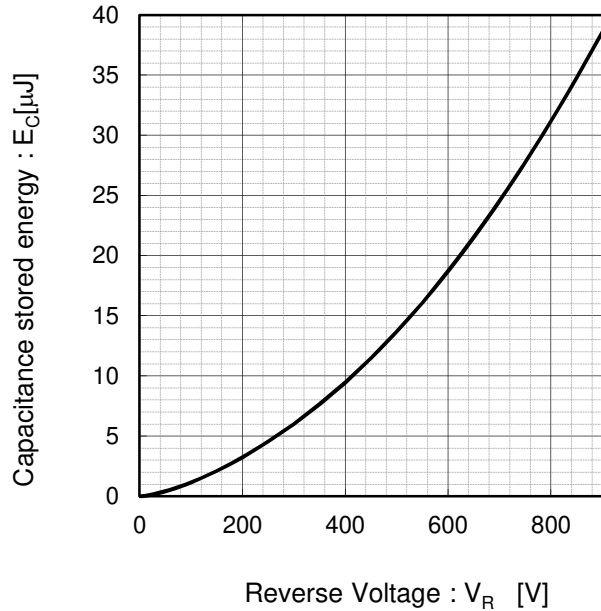
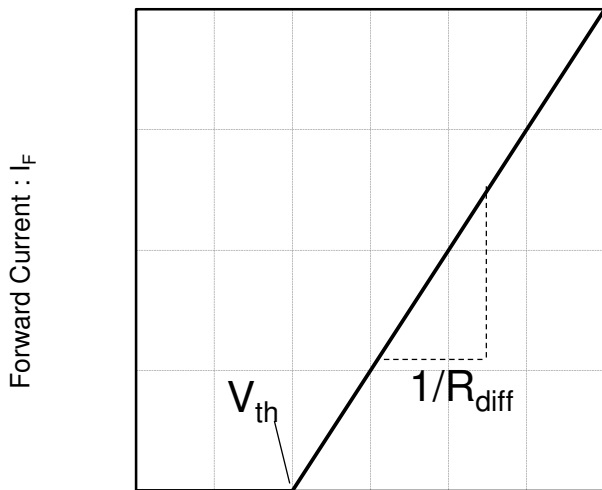


Fig.10 Typical capacitance store energy (Per Leg)



●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 <sub>0</sub>	9.93E-01	V
a <sub>1</sub>	-1.27E-03	V/°C
b <sub>0</sub>	1.83E-02	Ω
b <sub>1</sub>	1.03E-04	Ω/°C
b <sub>2</sub>	6.65E-07	Ω/°C <sup>2</sup>

T<sub>j</sub> in °C; -55 °C < T<sub>j</sub> < 175°C ; I<sub>F</sub> < 40A

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## SCS240KE2AHR - Web Page

[Distribution Inventory](#)

Part Number	SCS240KE2AHR
Package	TO-247
Unit Quantity	360
Minimum Package Quantity	30
Packing Type	Tube
Constitution Materials List	inquiry
RoHS	Yes