DACO SEMICONDUCTOR

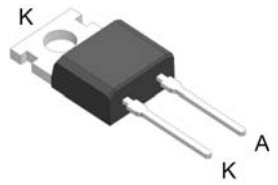
CSR012-065C1

SiC SCHOTTKY DIODE TYPE 12A

Features

- Low conduction and switching loss
- Zero reverse recovery
- High surge current capability
- Positive temperature coefficient device
- RoHS compliant and halogen free
- Temperature independent switching behavior
- Suitable for high power application
- V_{DC} 650 V
- I_F (T_c=135/155 °C) 18A/12A

TO-220-2L Package



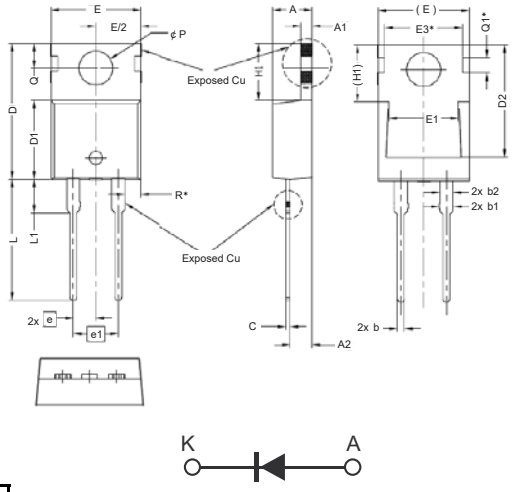
Benefits

- Increase parallel device convenience
- Enable high temperature application
- Realize compact and lightweight systems
- Allow high frequency operation
- Higher system efficiency
- High reliability

Applications

- Switching mode power supply
- PFC
- UPS
- Motor drives
- Flywheel diode in power inverters
- Solar/Wind renewable energy

Package Dimensions



Maximum Ratings

Operating Junction Temperature : -55℃ to +175℃

Storage Temperature : -55℃ to +175℃

Part Number	Maximum Recurrent Peak Reverse Voltage	Maximum DC Blocking Voltage
CSR012-065C1	650V	650V

Maximum Rating	Symbol	Conditions	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	T_C=25 °C	650	V
Continuous forward current	I_F	T_C=25 °C	41	A
		T_C=135 °C	18	
		T_C=155°C	12	
Non-repetitive forward sure current	I_{FSM}	T_C=25 °C, t_p=10 ms Half sine wave	95	
		T_C=125 °C, t_p=10ms Half sine wave	85	
Repetitive peak forward sure current	I_{FRM}	T_C=25 °C, t_p=10ms Half sine wave, D=0.1	67	
I^2t value	$\int i^2dt$	T_C=25 °C, t_p=10ms	45	A^2s
Power Dissipation	P_D	T_C=25 °C	125	W
		T_C=125 °C	41	

Symbol	mm		
	Min.	Typ.	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
D1	8.82	8.92	9.02
D2	12.63	12.73	12.83
E	9.96	10.16	10.36
E1	6.86	7.77	8.89
E3*	8.70 REF		
e	2.54 BSC		
e1	5.08 BSC		
H1	6.30	6.45	6.60
L	13.47	13.72	13.97
L1	3.60	3.80	4.00
ϕP	3.75	3.84	3.93
Q	2.60	2.80	3.00
Q1*	1.73 REF		
R*	1.82 REF		

NOTE：

1.These Dimension Do Not Include Mold protrusion

Electrical Characteristics, at T_C =25 °C, unless otherwise specified.

Static Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	I_R =100 μA, T_J =25°C	650	-	-	V
Diode forward voltage	V_F	I_F =12A, T_J =25°C	-	1.25	1.5	
		I_F =12A, T_J =175°C	-	1.4	1.7	
Reverse current	I_R	V_R =650V, T_J =25°C	-	4	60	μA
		V_R =650V, T_J =175°C	-	240	-	

AC Characteristics

Static Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Total capacitive charge	Q_C	I_F=12A, di/dt=300A/μs V_R=400V, T_J =25°C	-	33	-	nC
Total capacitance	C_j	V_R=0.1V, f=1 MHz T_J =25°C	-	847	-	pF
		V_R=200V, f=1 MHz T_J =25°C	-	76	-	
		V_R=400V, f=1 MHz T_J =25°C	-	58	-	
Capacitance stored energy	E_C	V_R=400V	-	6.4	-	μJ

Thermal Characteristics

Static Characteristics	Symbol	Values	Unit
		typ.	
Thermal resistance from junction to case	$R_{\theta JC}$	1.2	°C/W

Typical Device Performance

Fig.1 Forward Characteristics

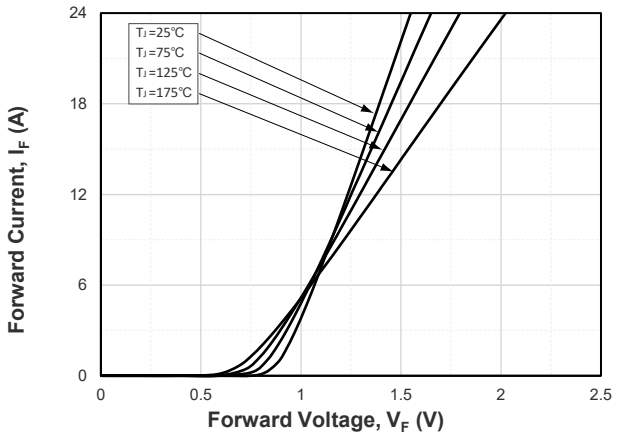


Fig.2 Reverse Characteristics

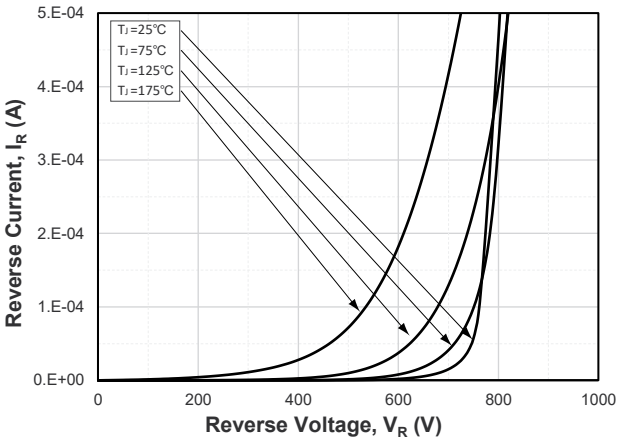


Fig.3 Junction Capacitance vs. Reverse Voltage

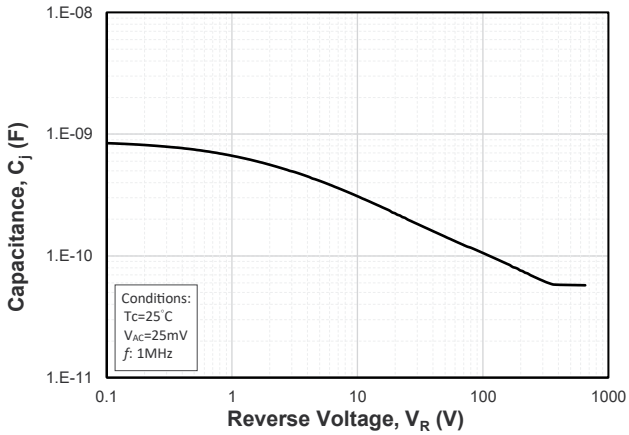


Fig.4 Capacitance Stored Energy

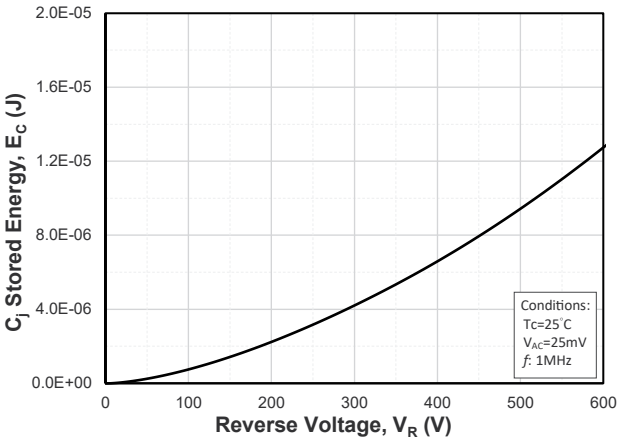


Fig.5 Recovery Charge vs. Reverse Voltage

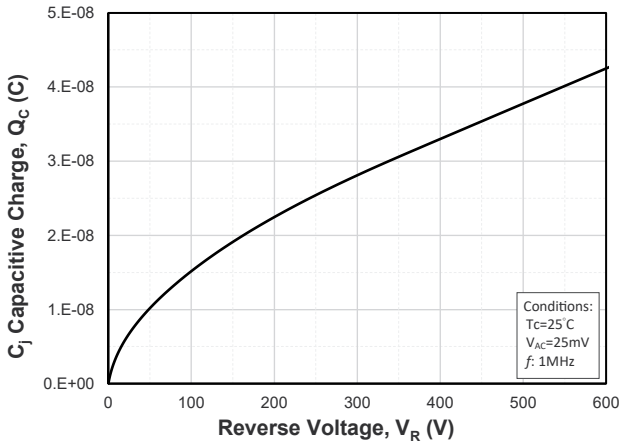
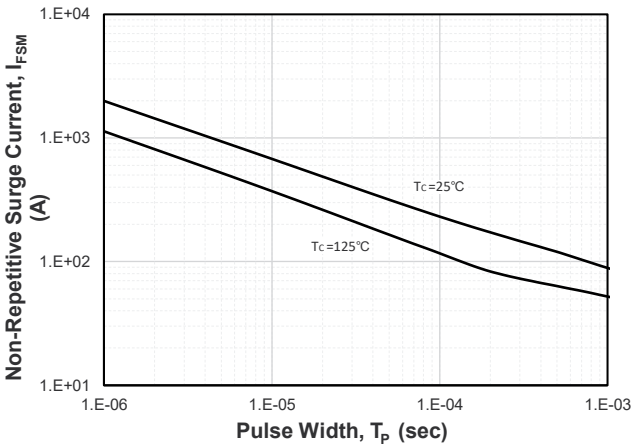


Fig.6 Non-Repetitive Peak Forward Surge Current (Pulse Mode)



Typical Device Performance

Fig.7 Maximum Forward Current Derating vs. Case Temperature

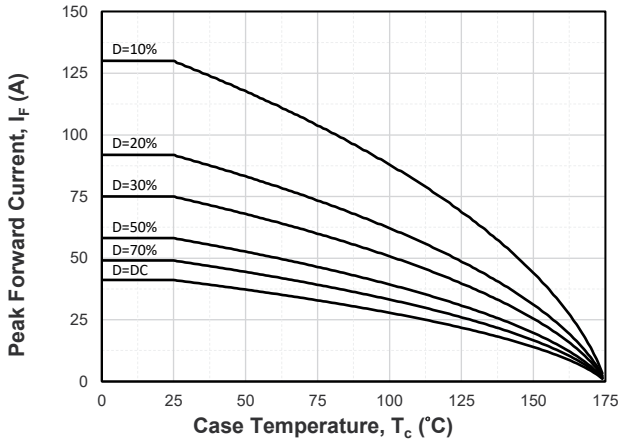


Fig.8 Maximum Power Dissipation Derating vs. Case Temperature

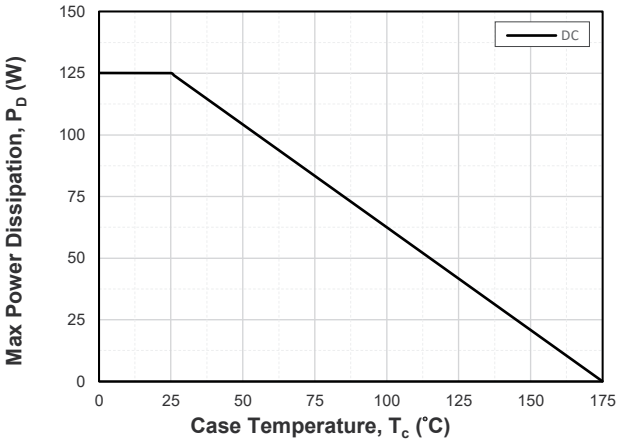
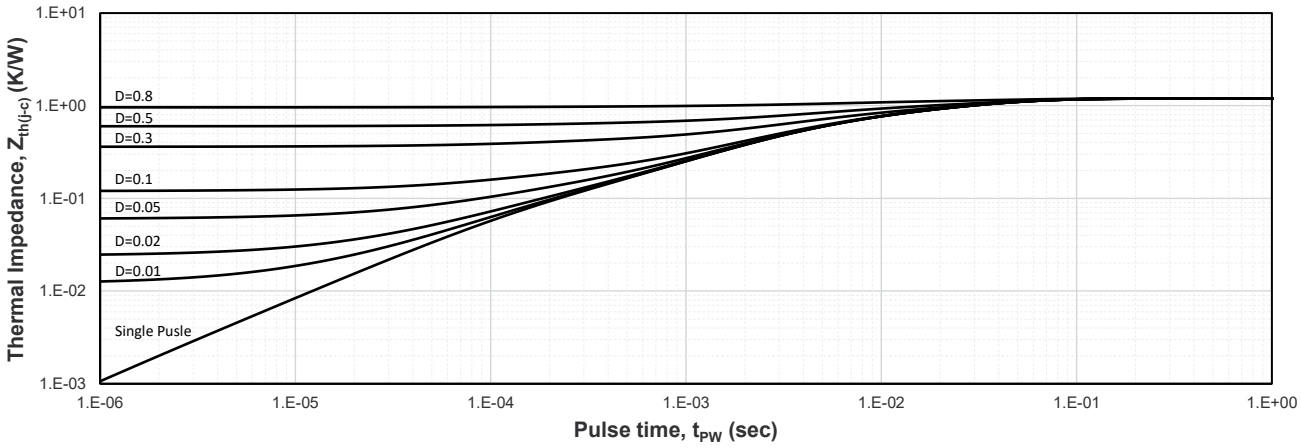


Fig.9 Transient Junction to Case Thermal Impedance



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