

SiC SCHOTTKY DIODE TYPE 40A

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
- Optimized for high power application
- V_{DC} 1200 V
- I_F (Per Leg/Device) 20A/40A ($T_C=151^\circ\text{C}$)

Benefits

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

Applications

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

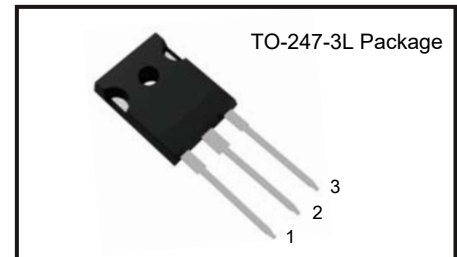
Maximum Ratings

Operating Junction Temperature : -55°C to $+175^\circ\text{C}$

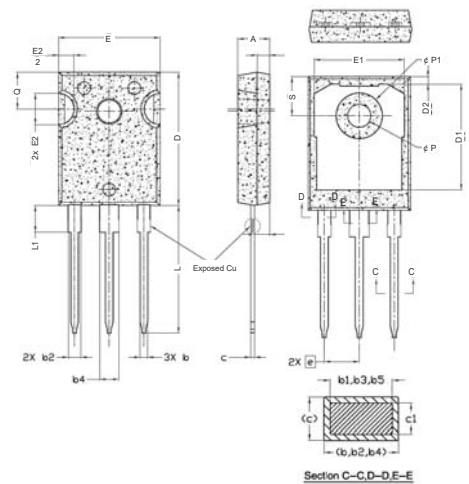
Storage Temperature : -55°C to $+175^\circ\text{C}$

Part Number	Maximum Recurrent Peak Reverse Voltage	Maximum DC Blocking Voltage
CSR040-120P2	1200V	1200V

Maximum Rating Per Leg	Symbol	Conditions	Value	Unit
Continuous forward current (Per Leg/Whole Device)	I_F	$T_C=25^\circ\text{C}$	55/110	A
		$T_C=135^\circ\text{C}$	25/50	
		$T_C=151^\circ\text{C}$	20/40	
Non-repetitive forward sure current	I_{FSM}	$T_C=25^\circ\text{C}$, $t_p=10$ ms Half sine wave	200	A
		$T_C=125^\circ\text{C}$, $t_p=10$ ms Half sine wave	160	
Repetitive peak forward sure current	I_{FRM}	$T_C=25^\circ\text{C}$, $t_p=10$ ms Half sine wave, $D=0.1$	160	A
Repetitive peak reverse voltage	V_{RRM}	$T_C=25^\circ\text{C}$	1200	V
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	272	W



Package Dimensions



SYMBOL	DIMENSIONS			Note
	Min.	Typ.	Max.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
b4	2.87	3.00	3.22	6, 8
b5	2.87	3.00	3.18	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44 BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ϕP	3.56	3.61	3.65	7
$\phi P1$	7.19 REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	



NOTE :

1. These Dimension Do Not Include Mold protrusion

Electrical Characteristics, at $T_C=25^\circ\text{C}$, unless otherwise specified. (Per Leg)

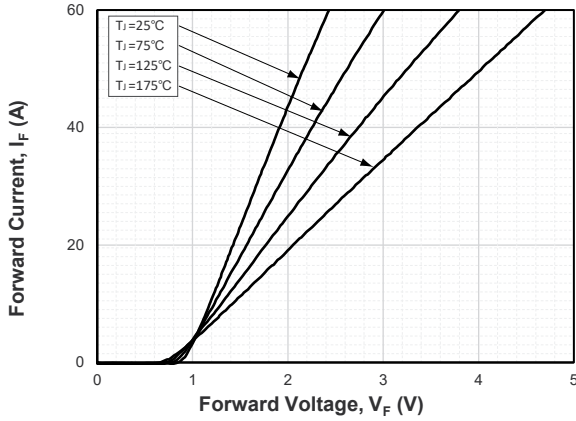
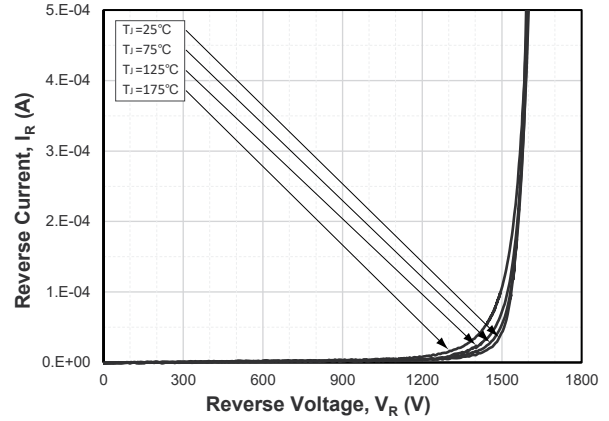
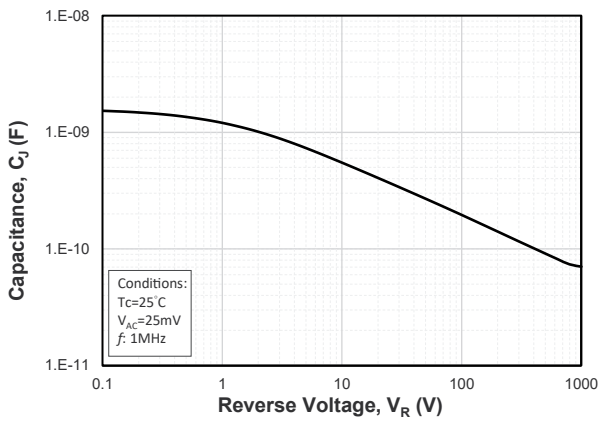
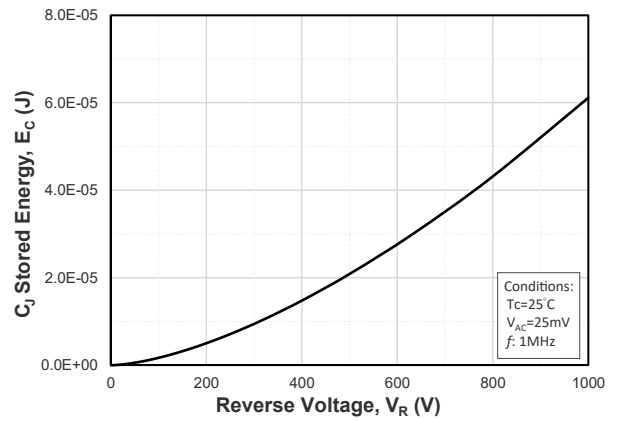
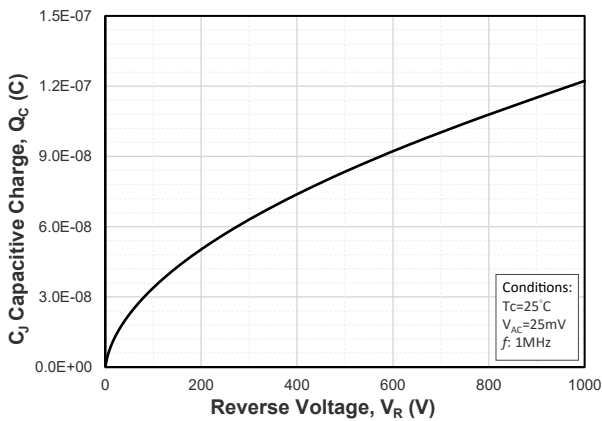
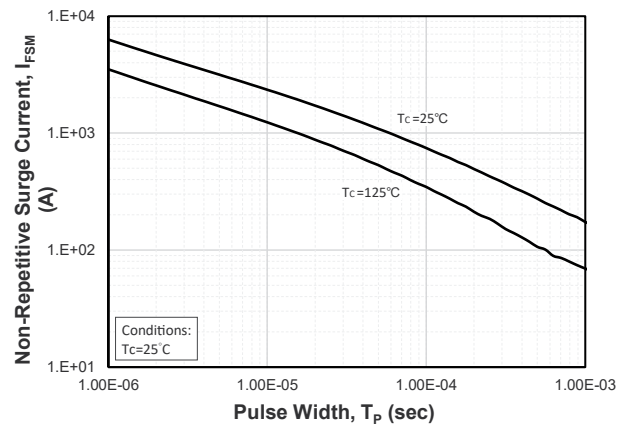
Static Characteristics Per Leg	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}	$I_R=500\ \mu\text{A}$, $T_J=25^\circ\text{C}$	1200	-	-	V
Diode forward voltage	V_F	$I_F=20\text{A}$, $T_J=25^\circ\text{C}$	-	1.4	1.7	
		$I_F=20\text{A}$, $T_J=175^\circ\text{C}$	-	2.0	2.5	
Reverse current	I_R	$V_R=1200\text{V}$, $T_J=25^\circ\text{C}$	-	1	50	μA
		$V_R=1200\text{V}$, $T_J=175^\circ\text{C}$	-	50	-	

AC Characteristics (Per Leg)

Static Characteristics Per Leg	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Total capacitive charge	Q_C	$V_R=800\text{V}$, $T_C=25^\circ\text{C}$	-	105	-	nC
Total capacitance	C	$V_R=0.1\text{V}$, $f=1\ \text{MHz}$ $T_J=25^\circ\text{C}$	-	1530	-	pF
		$V_R=400\text{V}$, $f=1\ \text{MHz}$ $T_J=25^\circ\text{C}$	-	103	-	
		$V_R=800\text{V}$, $f=1\ \text{MHz}$ $T_J=25^\circ\text{C}$	-	75	-	

Thermal Characteristics (Per Leg)

Static Characteristics Per Leg	Symbol	Values	Unit
		typ.	
Thermal resistance from junction to case	$R_{\theta JC}$	0.55	$^\circ\text{C/W}$

Typical Device Performance (Per Leg)
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 (Per Leg)

Fig.7 Maximum Forward Current Derating vs. Case Temperature

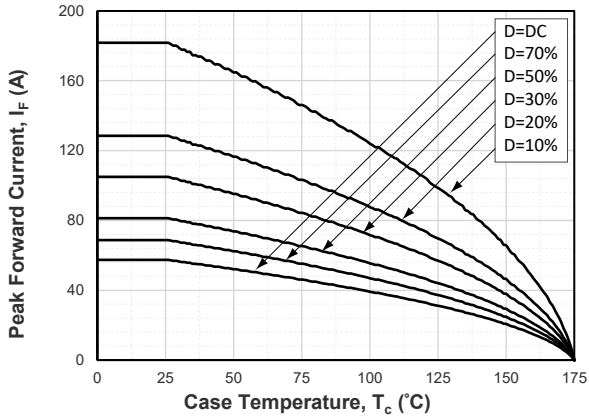


Fig.8 Maximum Power Dissipation Derating vs. Case Temperature

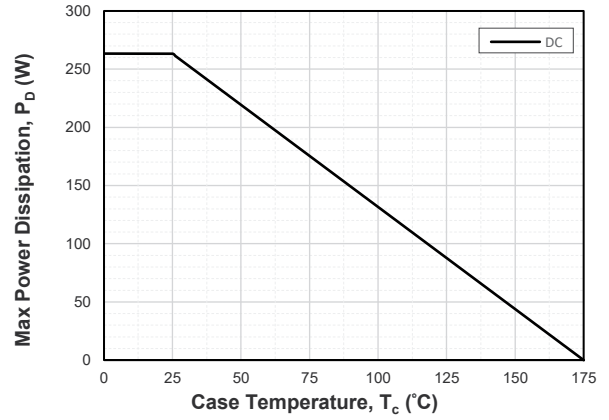
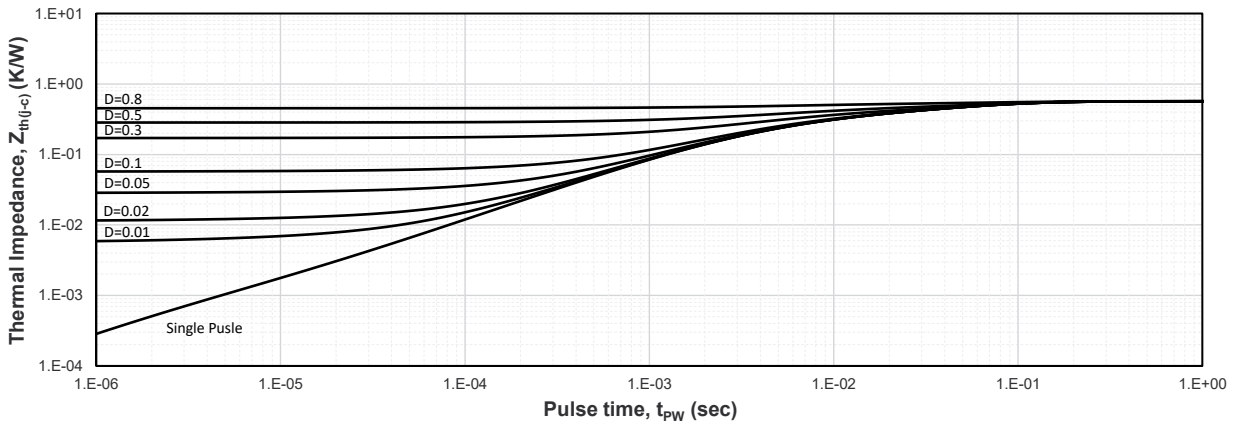


Fig.9 Transient Junction to Case Thermal Impedance



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