

## 8A, 1200V SiC Merged PIN Schottky Diode

### FEATURES

- AEC-Q101 qualified
- Max junction temperature 175°C
- High-speed switching possible
- High forward surge capability
- High-frequency operation
- Positive temperature coefficient on  $V_f$
- RoHS compliant
- Halogen-free

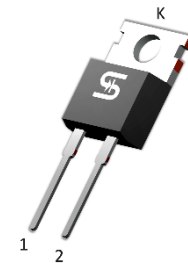
### APPLICATIONS

- General purpose
- Switch mode power supplies
- Power factor correction

### MECHANICAL DATA

- Case: TO-220AC-2L
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: As circuit diagram
- Weight: 2.0g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	8	A
$V_{RRM}$	1200	V
$I_{FSM}$	104	A
$T_{J\ MAX}$	175	°C
Package	TO-220AC-2L	
Configuration	Single die	



TO-220AC-2L



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Repetitive peak reverse voltage	$V_{RRM}$	1200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	840	V
Forward current	$I_F$	8	A
Surge peak forward current 10ms single half sine-wave superimposed on rated load	$T_C = 25^\circ\text{C}$	104	A
	$T_C = 150^\circ\text{C}$	94	A
Non-repetitive peak forward surge current	$t_p = 10\mu\text{s}$	$I_{F, max}$	677
Junction temperature	$T_J$	-55 to +175	°C
Storage temperature	$T_{STG}$	-55 to +175	°C

<b>THERMAL PERFORMANCE</b>				
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Junction-to-case thermal resistance	$R_{\theta JC}$	1.30	1.56	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
<b>PARAMETER</b>	<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage <sup>(1)</sup>	$I_F = 4\text{A}, T_J = 25^\circ\text{C}$	$V_F$	1.16	-	V
	$I_F = 8\text{A}, T_J = 25^\circ\text{C}$		1.38	1.50	V
	$I_F = 4\text{A}, T_J = 150^\circ\text{C}$		1.30	-	V
	$I_F = 8\text{A}, T_J = 150^\circ\text{C}$		1.80	2.10	V
	$I_F = 4\text{A}, T_J = 175^\circ\text{C}$		1.36	-	V
	$I_F = 8\text{A}, T_J = 175^\circ\text{C}$		1.95	-	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	30	$\mu\text{A}$
	$T_J = 175^\circ\text{C}$		-	100	$\mu\text{A}$
Junction capacitance	$f = 1\text{MHz}, V_R = 1\text{V}$	$C_J$	637	-	pF
	$f = 1\text{MHz}, V_R = 800\text{V}$		39	-	pF
Capacitive Charge	$V_R = 800\text{V}$	$Q_C$	46	-	nC

**Notes:**

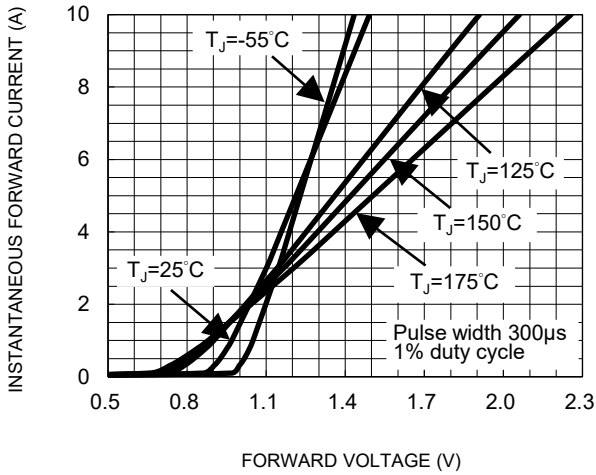
1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSCDT08120G2H	TO-220AC-2L	50 / Tube

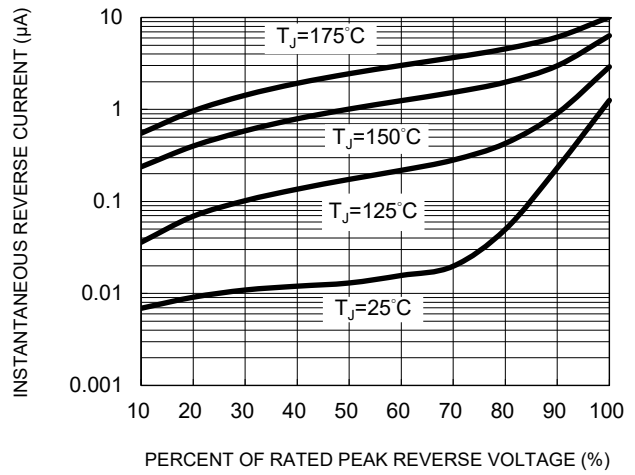
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

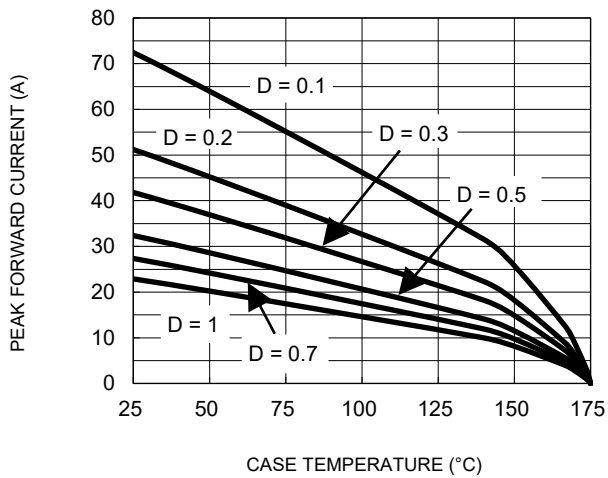
**Fig.1 Typical Forward Characteristics**



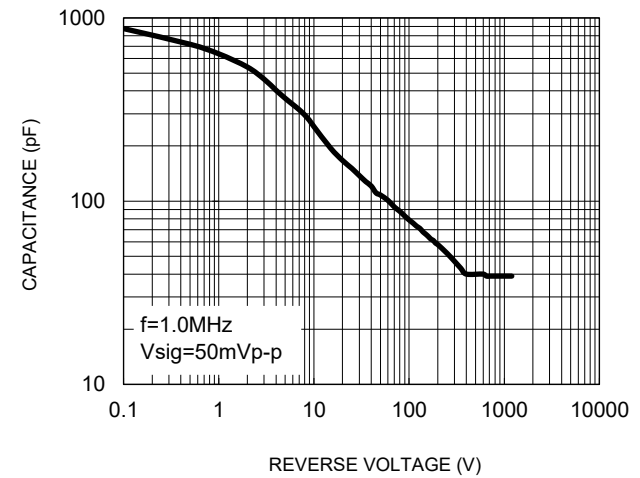
**Fig.2 Typical Reverse Characteristics**



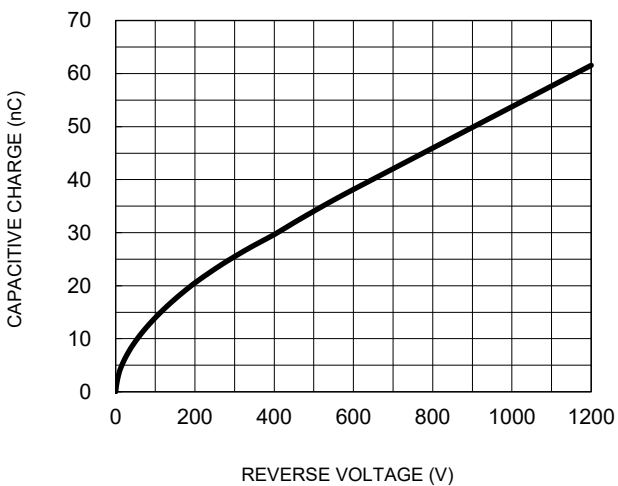
**Fig.3 Peak forward current versus case temperature**



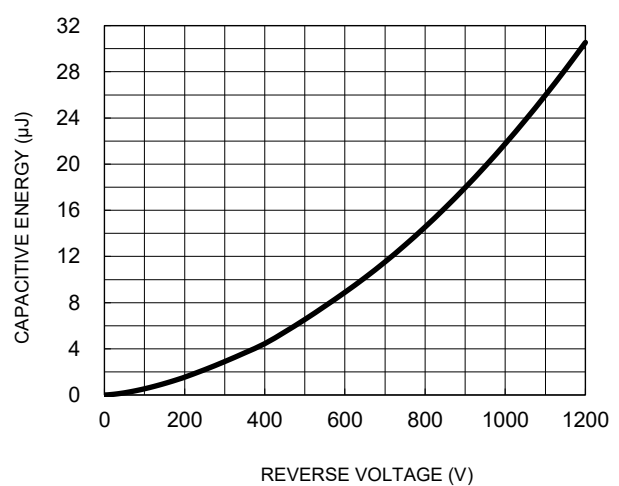
**Fig.4 Typical Junction Capacitance**



**Fig.5 Typical Capacitive Charge**



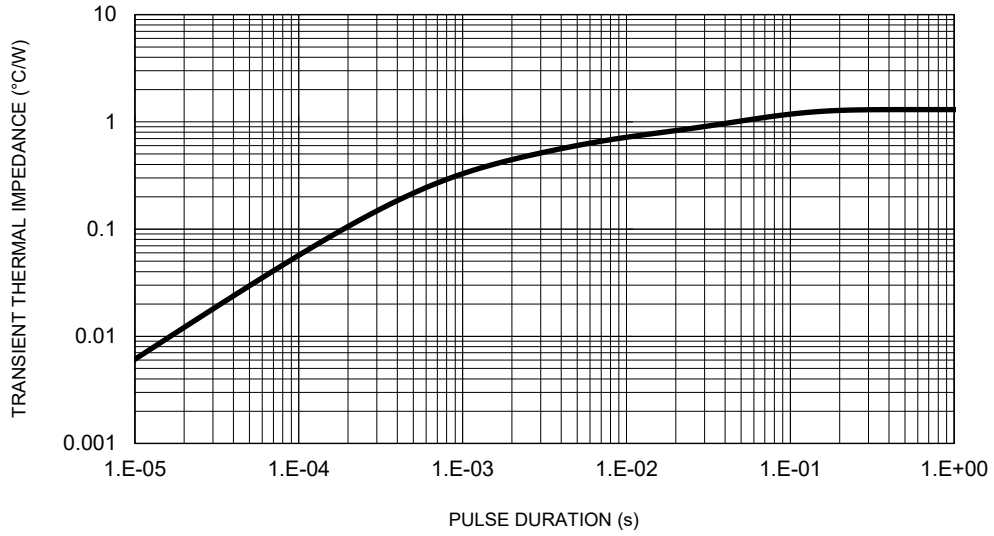
**FIG.6 Typical Capacitance Stored Energy**



**CHARACTERISTICS CURVES**

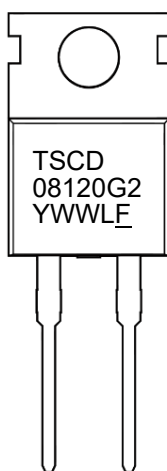
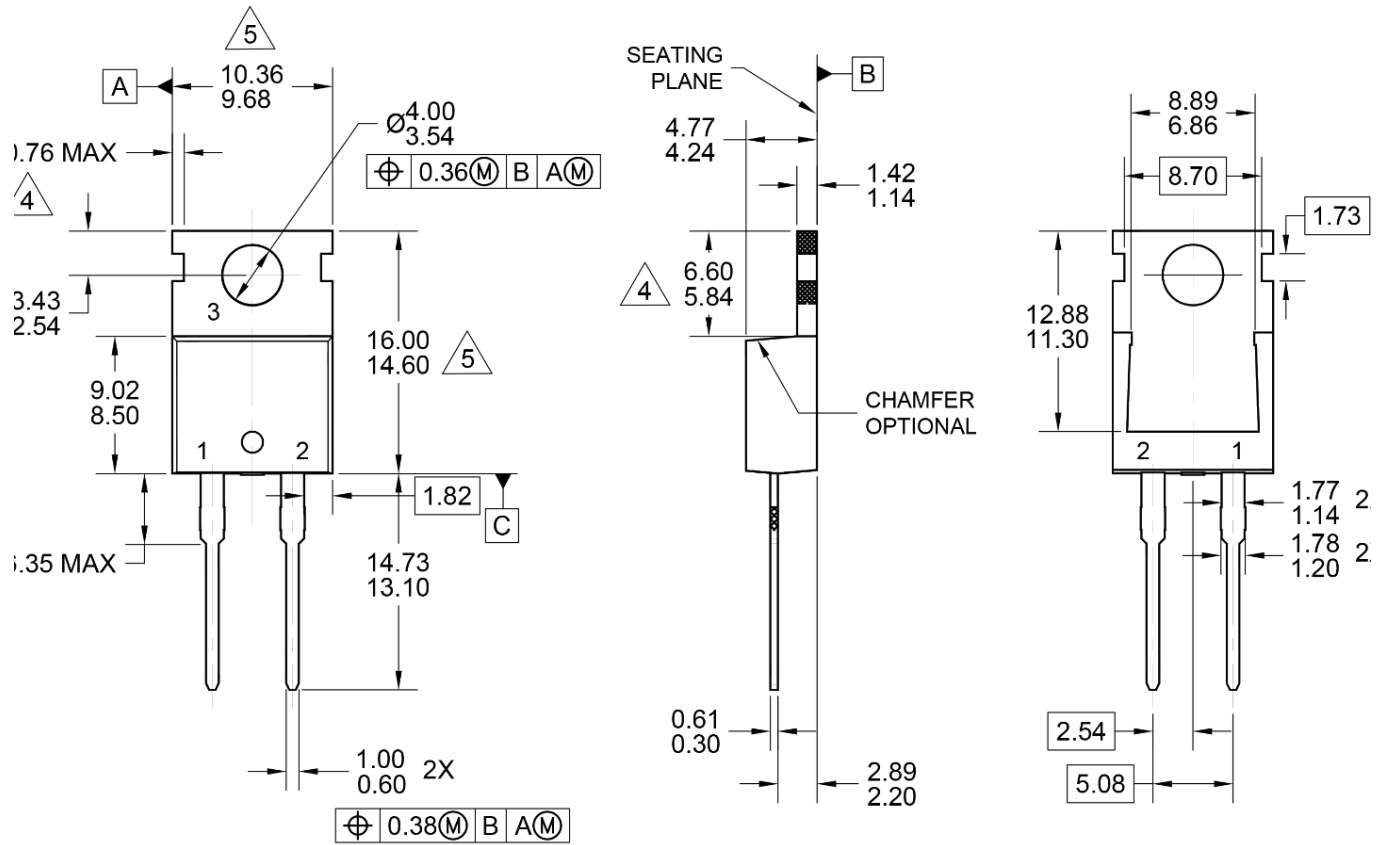
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.7 Typical Transient Thermal Characteristics**



**PACKAGE OUTLINE DIMENSIONS**

**TO-220AC-2L**



**MARKING DIAGRAM**

- Y = Year Code
- WW = Week Code (01~52)
- L = Lot Code (1~9,A~Z)
- E = Factory Code

**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN \*MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. PACKAGE OUTLINE REFERENCE: JEDEC TO-220, VARIATION AC, ISSUE K.
4. THE DEFINED ZONE WHERE STAMPING AND SINGULATION IRREGULARITIES ARE ALLOWED. SLOT AND NOTCH MAY APPEAR IN THIS ZONE.
5. THIS DO NOT INCLUDE MOLD FLASH. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF THE PLASTIC BODY.
6. DWG NO REF: HQ2SD07-TO220ACSiC-119 REV A.

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