

1A, 1200V SiC Merged PIN Schottky Diode

FEATURES

- AEC-Q101 qualified
- Max junction temperature 175°C
- Minimum creepage distance 2.6 mm guaranteed by design
- High-speed switching possible
- High forward surge capability
- High-frequency operation
- Positive temperature coefficient on V_F
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS compliant
- Halogen-free

APPLICATIONS

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

MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.09g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	1	A
V_{RRM}	1200	V
I_{FSM}	16	A
$T_{J\ MAX}$	175	°C
Package	DO-214AA (SMB)	
Configuration	Single die	



DO-214AA (SMB)



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	1	A
Surge non-repetitive forward current, sine halfwave	$T_C=25^\circ\text{C}, t_p=10\mu\text{s}$	256	A
	$T_C=25^\circ\text{C}, t_p=10\text{ms}$	16	A
	$T_C=150^\circ\text{C}, t_p=10\text{ms}$	15	A
Junction temperature	T_J	-55 to +175	°C
Storage temperature	T_{STG}	-55 to +175	°C

THERMAL PERFORMANCE				
PARAMETER	SYMBOL	TYP	MAX	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	10.3	12.4	°C/W

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$	V_F	1.15	-	V
	$I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$		1.36	1.50	V
	$I_F = 0.5\text{A}, T_J = 150^\circ\text{C}$		1.29	-	V
	$I_F = 1.0\text{A}, T_J = 150^\circ\text{C}$		1.79	2.10	V
	$I_F = 0.5\text{A}, T_J = 175^\circ\text{C}$		1.35	-	V
	$I_F = 1.0\text{A}, T_J = 175^\circ\text{C}$		1.94	-	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	3	μA
	$T_J = 175^\circ\text{C}$		-	6	μA
Junction capacitance	$f = 1\text{MHz}, V_R = 1\text{V}$	C_J	85	-	pF
	$f = 1\text{MHz}, V_R = 400\text{V}$		3.5	-	pF
	$f = 1\text{MHz}, V_R = 800\text{V}$		2.0	-	pF
Capacitive Charge	$V_R = 800\text{V}$	Q_C	4.3	-	nC

Notes:

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
TSCDB01120G2H	DO-214AA (SMB)	3,000 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Typical Forward Characteristics

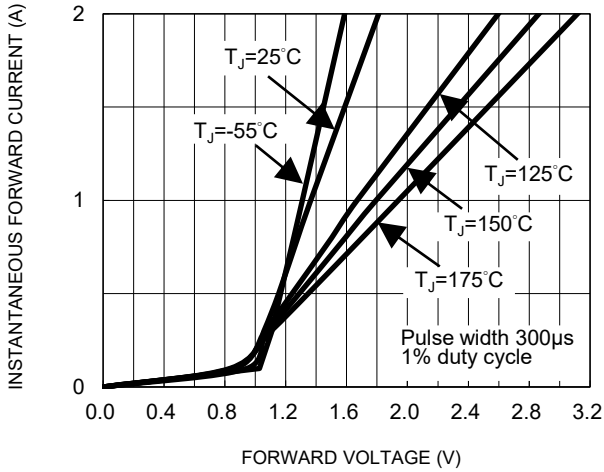


Fig.2 Typical Reverse Characteristics

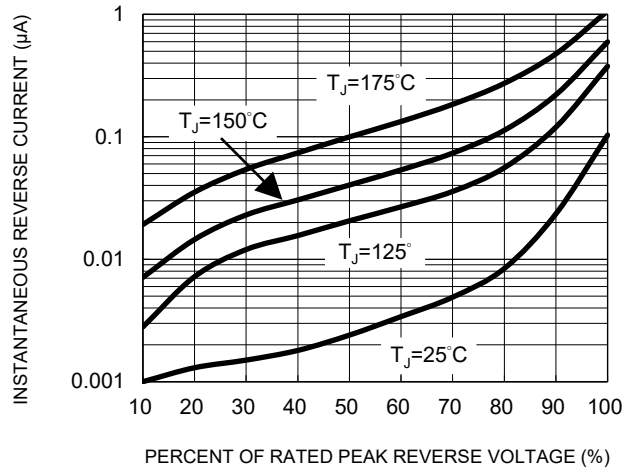


Fig.3 Peak forward current versus case temperature

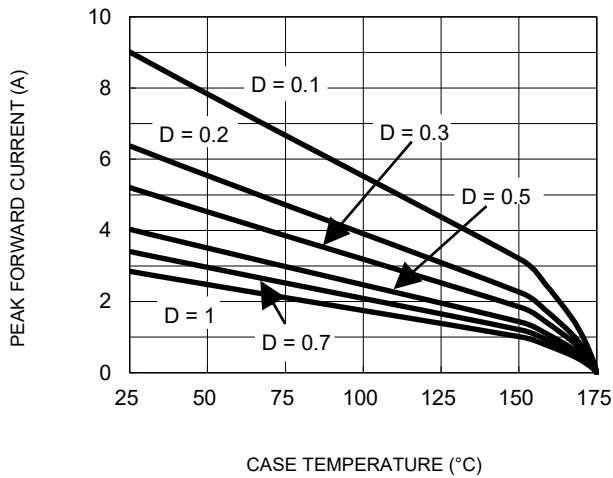


Fig.4 Typical Junction Capacitance

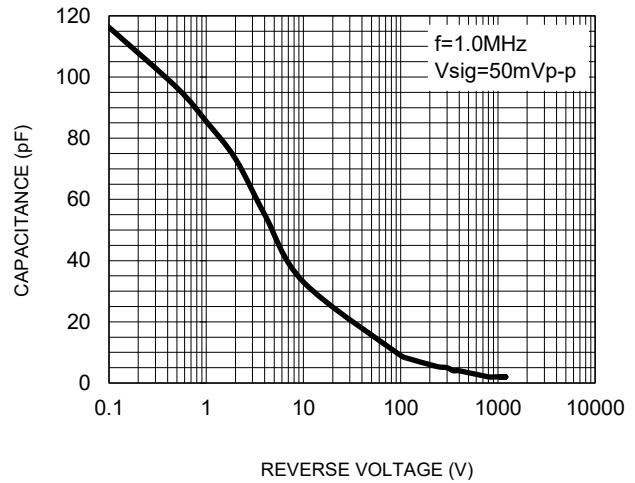


Fig.5 Typical Capacitive Charge

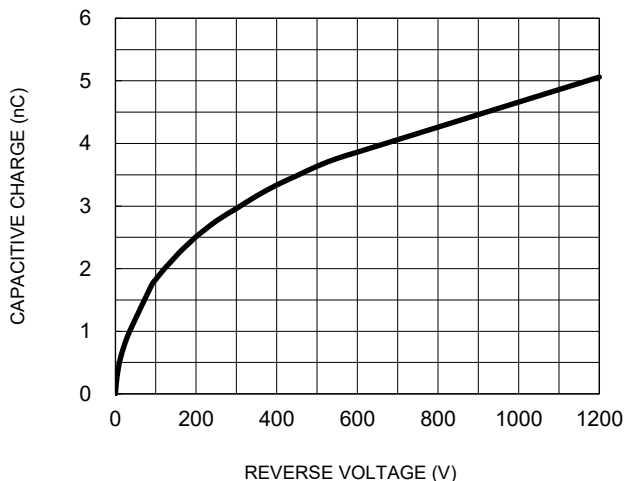
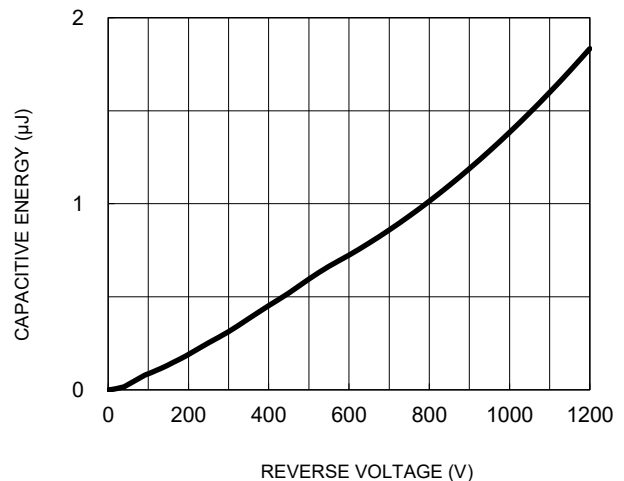


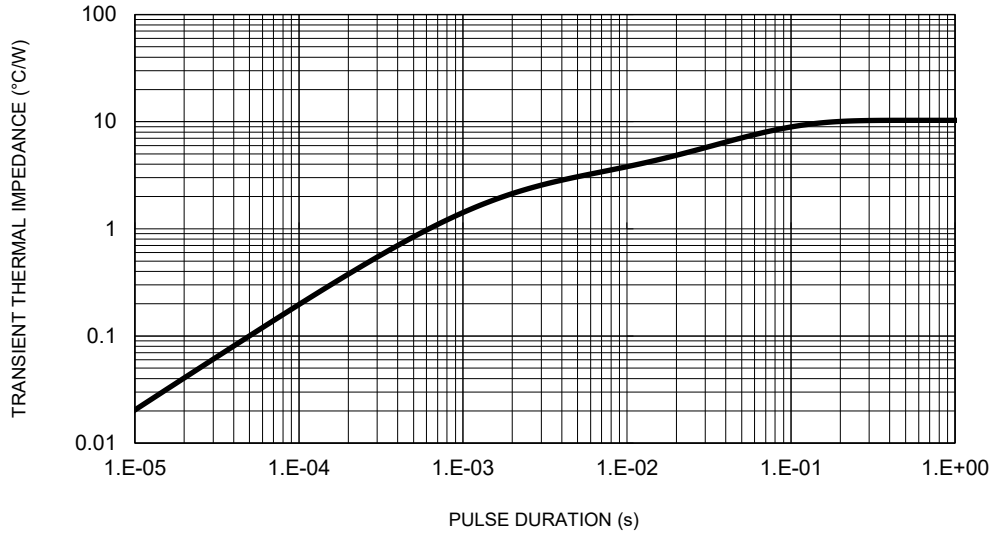
Fig.6 Typical Capacitance Stored Energy



CHARACTERISTICS CURVES

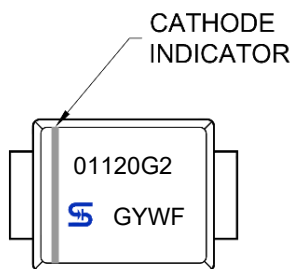
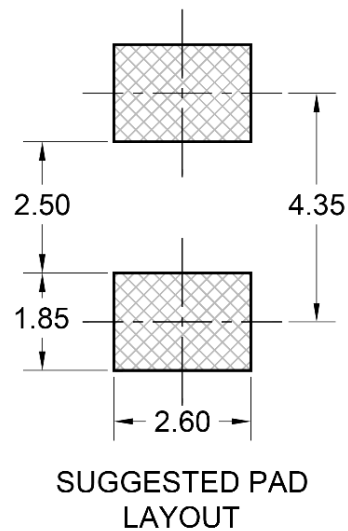
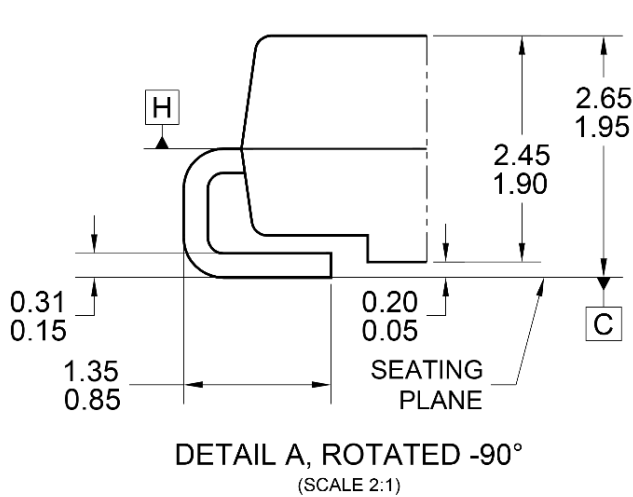
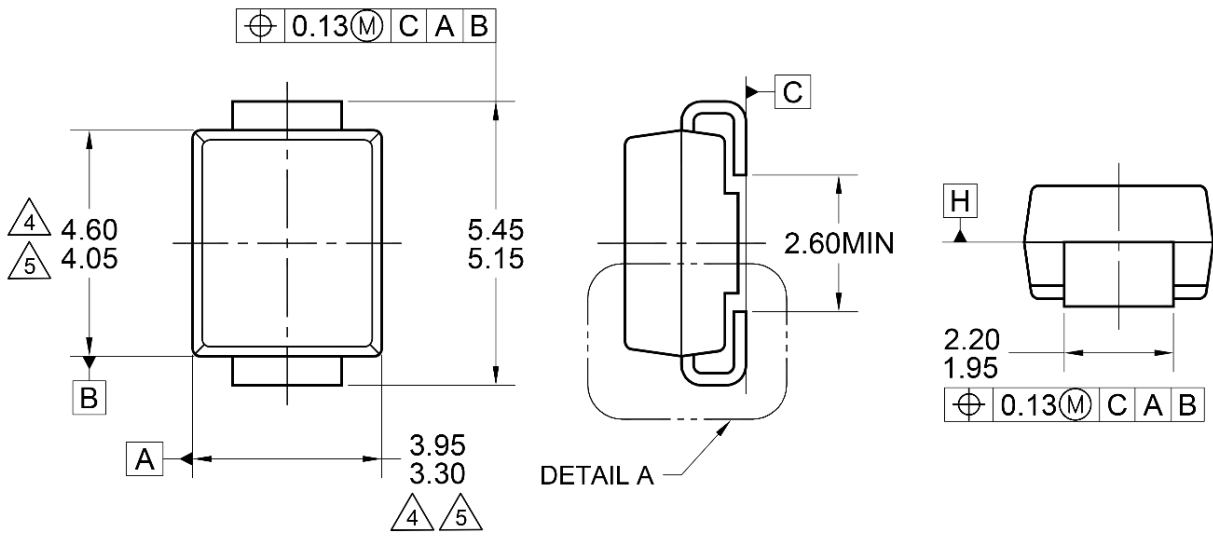
(T_A = 25°C unless otherwise noted)

Fig.7 Typical Transient Thermal Characteristics



PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



MARKING DIAGRAM

G = Green compound
YW = Date code
F = 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 DO-214, VARIATION AA, ISSUE D.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
5. MOLDED PLASTIC BODY LATERAL DIMENSIONS TO BE DETERMINED AT DATUM PLANE H.
6. DWG NO. REF: HQ2SD07-DO214SMBHV-128 REV C.

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