

## 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

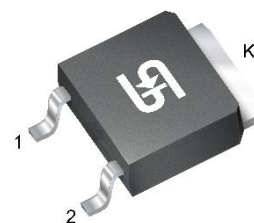
### APPLICATIONS

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

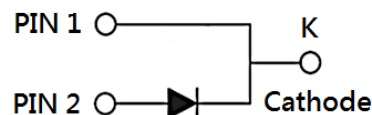
### MECHANICAL DATA

- Case: TO-252-2L (D-PAK-2L)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: As circuit diagram
- Weight: 0.31g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	8	A
$V_{RRM}$	1200	V
$I_{FSM}$	81	A
$T_{J\ MAX}$	175	°C
Package	TO-252-2L (D-PAK-2L)	
Configuration	Single die	



TO-252-2L (D-PAK-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	$I_{FSM}$	$T_C = 25^\circ\text{C}$	81	A
		$T_C = 150^\circ\text{C}$	76	A
Non-repetitive peak forward surge current	$t_p = 10\mu\text{s}$	$I_{F, MAX}$	677	A
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	$R_{\theta JC}$	1.20	1.44	°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:**

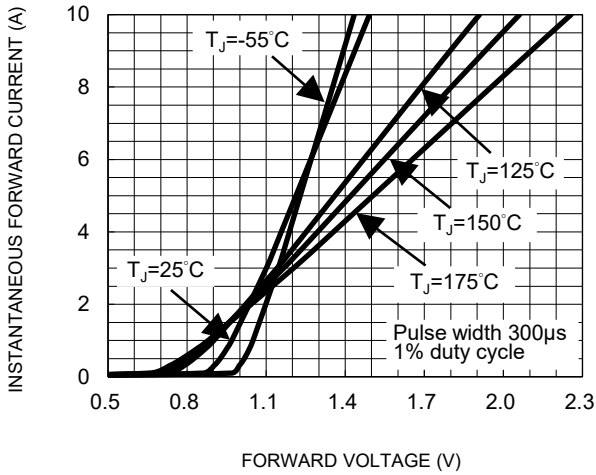
1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
TSCDM08120G2H	TO-252-2L (D-PAK-2L)	2,500 / 13" Tape & Reel

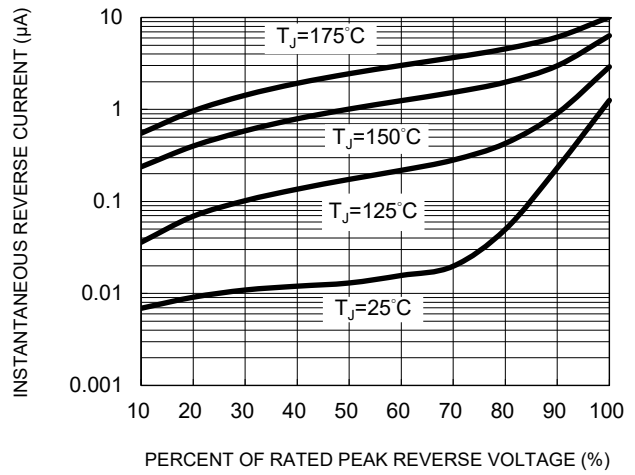
**CHARACTERISTICS CURVES**

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

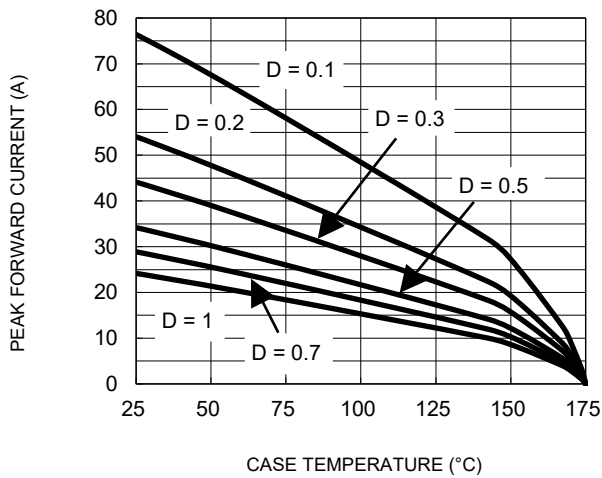
**Fig.1 Typical Forward Characteristics**



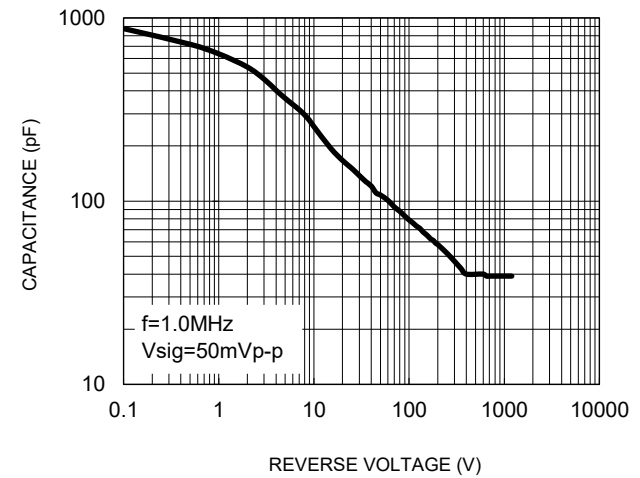
**Fig.2 Typical Reverse Characteristics**



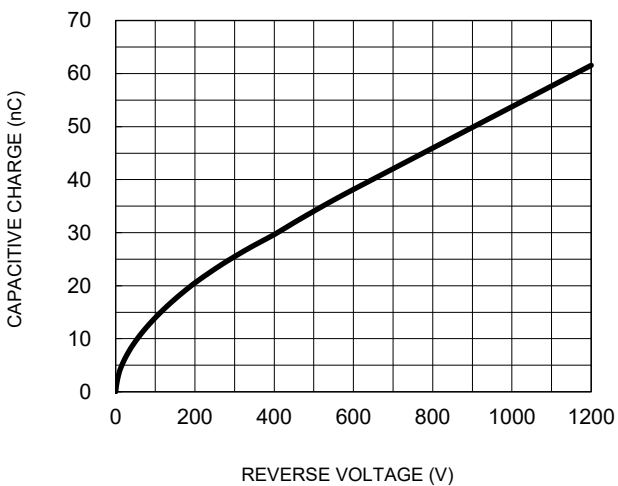
**Fig.3 Peak forward current versus case temperature**



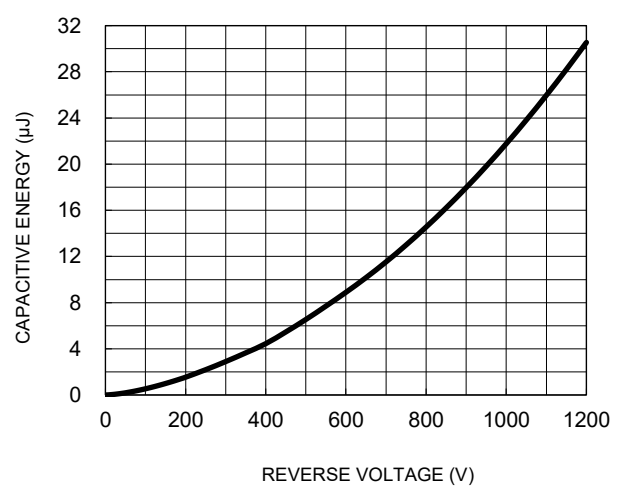
**Fig.4 Typical Junction Capacitance**



**Fig.5 Typical Capacitive Charge**



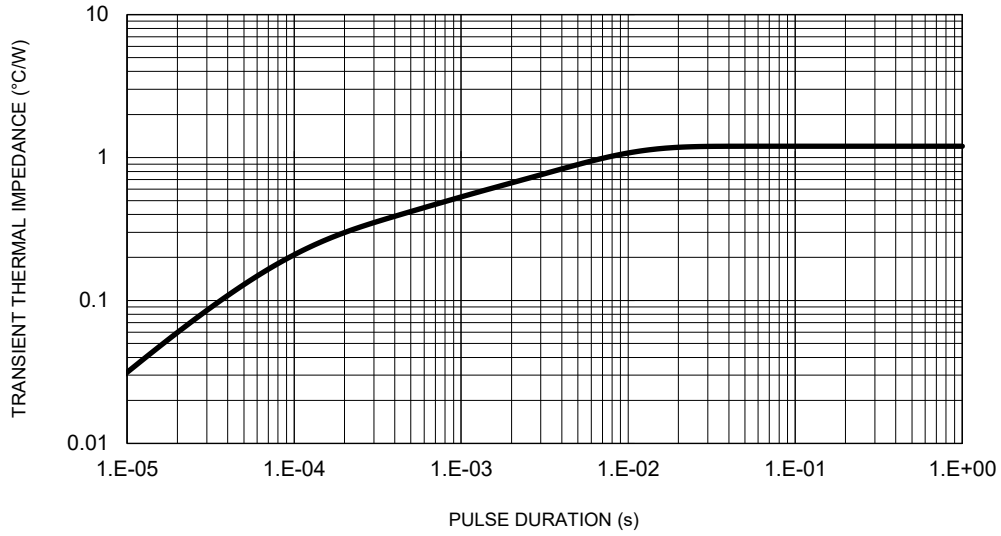
**FIG.6 Typical Capacitance Stored Energy**



**CHARACTERISTICS CURVES**

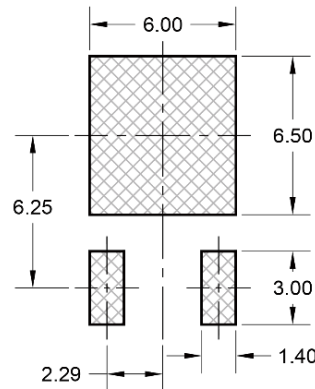
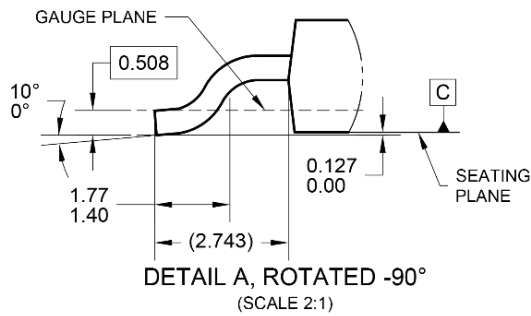
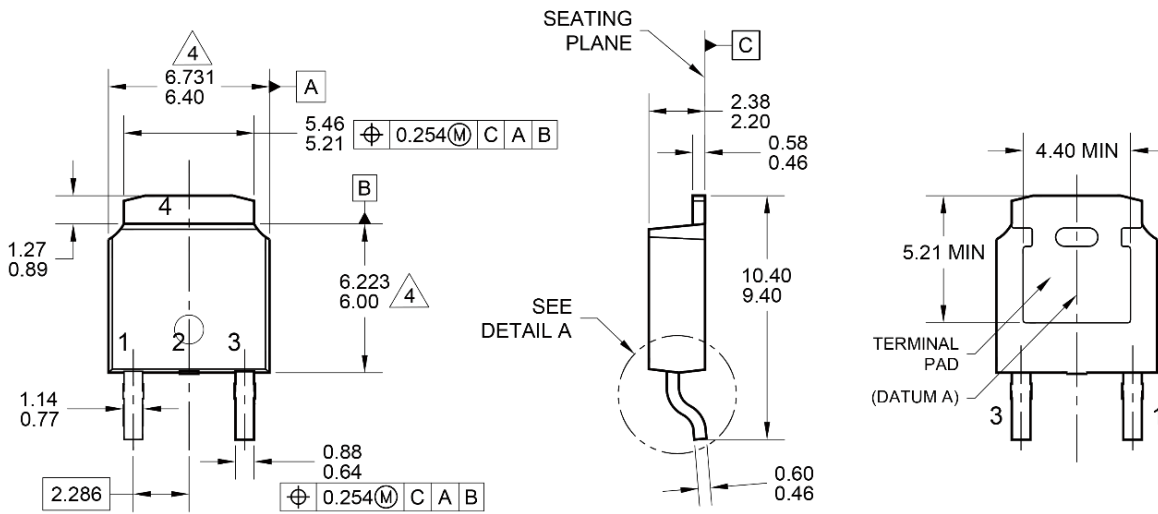
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.7 Typical Transient Thermal Characteristics**

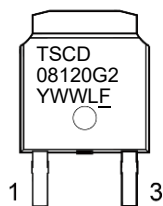


**PACKAGE OUTLINE DIMENSIONS**

**TO-252-2L (D-PAK-2L)**



**SUGGESTED PAD LAYOUT**



**MARKING DIAGRAM**

P/N = Device marking  
 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-252, VARIATION AA, ISSUE F.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSION, OR GATE BURRS.
5. DWG NO. REF: HQ2SD07-TO252AA\_2L-136 REV A.

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