

## 20A, 120V Trench Schottky Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

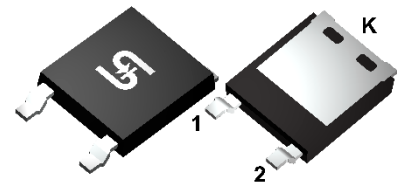
### APPLICATIONS

- Low voltage, high frequency
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting

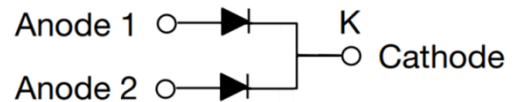
### MECHANICAL DATA

- Case: ThinDPAK
- 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: As marked
- Weight: 0.21g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	20	A
$V_{RRM}$	120	V
$I_{FSM}$	240	A
$T_{J\ MAX}$	175	°C
Package	ThinDPAK	
Configuration	Common cathode	



ThinDPAK



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Repetitive peak reverse voltage	$V_{RRM}$	120	V
Reverse voltage, total rms value	$V_{R(RMS)}$	84	V
Forward current, per leg / per device	$I_F$	10 / 20	A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	240	A
Junction temperature	$T_J$	- 55 to +175	°C
Storage temperature	$T_{STG}$	- 55 to +175	°C

**THERMAL PERFORMANCE**

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance per leg <sup>(1)</sup>	R <sub>θJL</sub>	1.5	°C/W
Junction-to-ambient thermal resistance per leg <sup>(2)</sup>	R <sub>θJA</sub>	7.3	°C/W
Junction-to-case thermal resistance per leg <sup>(2)</sup>	R <sub>θJC</sub>	2.4	°C/W

**Thermal Performance Note:**

1. With ideal heat sink
2. Mounted on Heat sink with 4" x 6" x 0.25" Al-Plate

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

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per leg <sup>(1)</sup>	I <sub>F</sub> = 5A, T <sub>J</sub> = 25°C	V <sub>F</sub>	0.69	-	V
	I <sub>F</sub> = 10A, T <sub>J</sub> = 25°C		0.77	0.85	V
	I <sub>F</sub> = 5A, T <sub>J</sub> = 125°C		0.56	-	V
	I <sub>F</sub> = 10A, T <sub>J</sub> = 125°C		0.64	0.71	V
Reverse current @ rated V <sub>R</sub> per leg <sup>(2)</sup>	T <sub>J</sub> = 25°C	I <sub>R</sub>	-	5	μA
	T <sub>J</sub> = 125°C		-	4	mA
Junction capacitance per leg	1MHz, V <sub>R</sub> = 4.0V	C <sub>J</sub>	425	-	pF

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

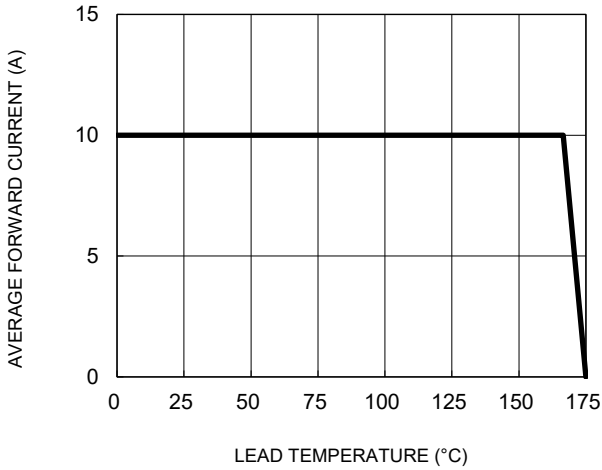
**ORDERING INFORMATION**

ORDERING CODE	PACKAGE	PACKING
TSAD20H120CH	ThinDPAK	4,500 / Tape & Reel

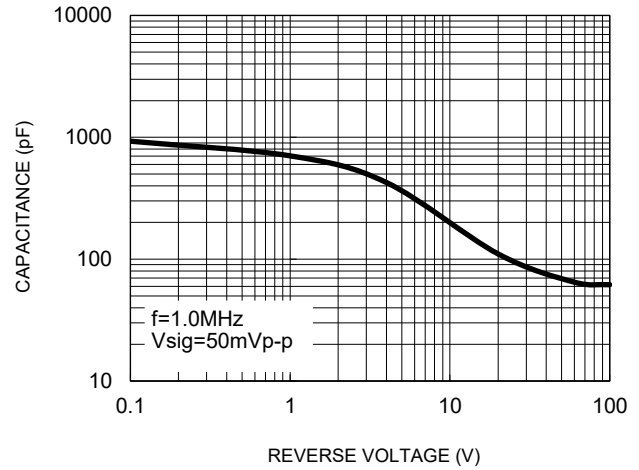
**CHARACTERISTICS CURVES**

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

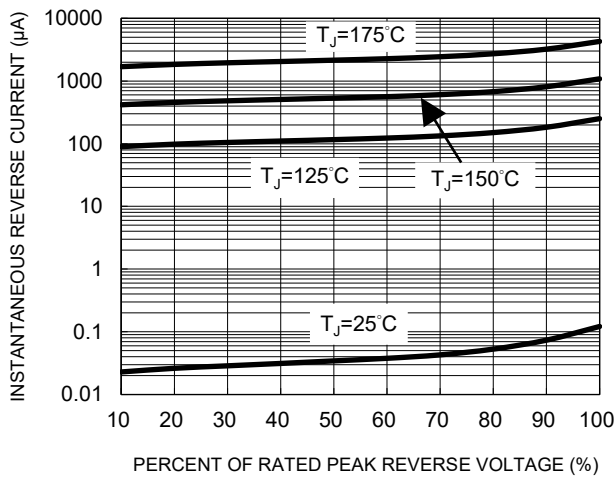
**Fig.1 Forward Current Derating Curve**



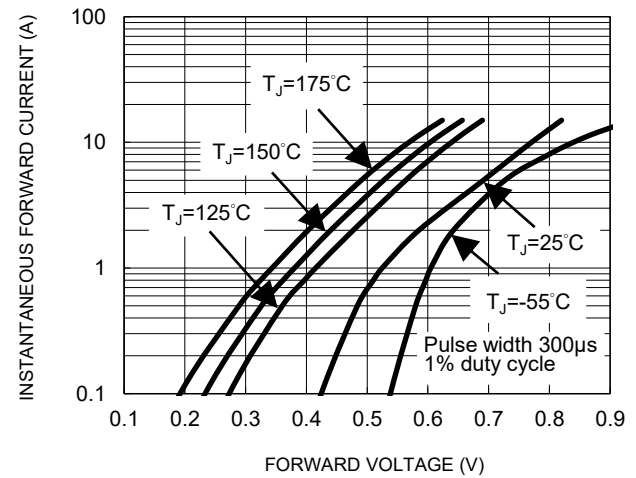
**Fig.2 Typical Junction Capacitance**



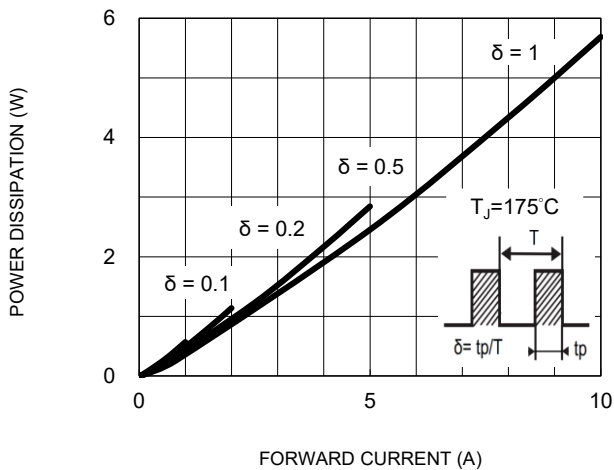
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



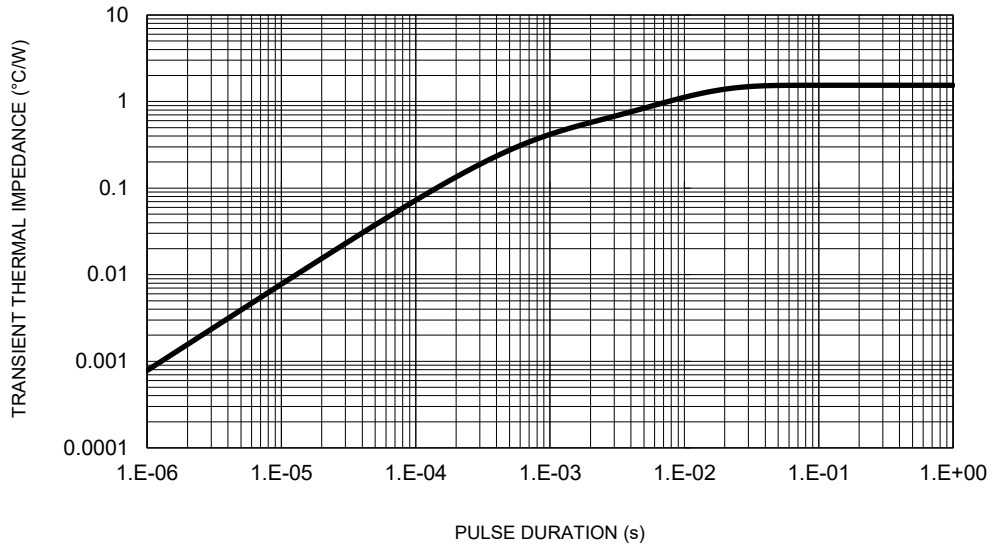
**Fig.5 Typical Forward Power Dissipation vs. Forward Current**



**CHARACTERISTICS CURVES**

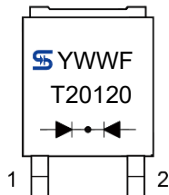
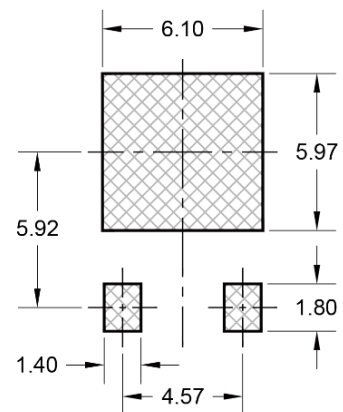
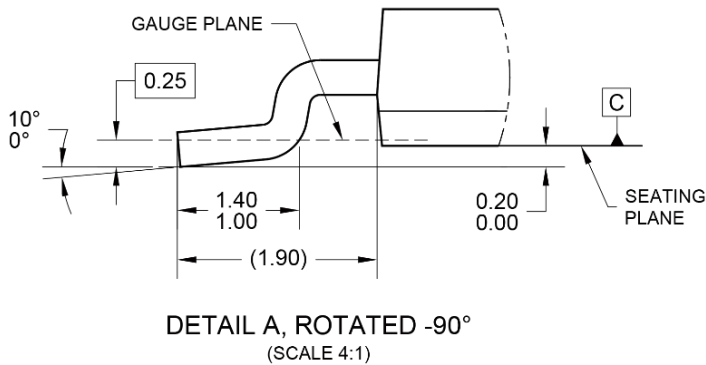
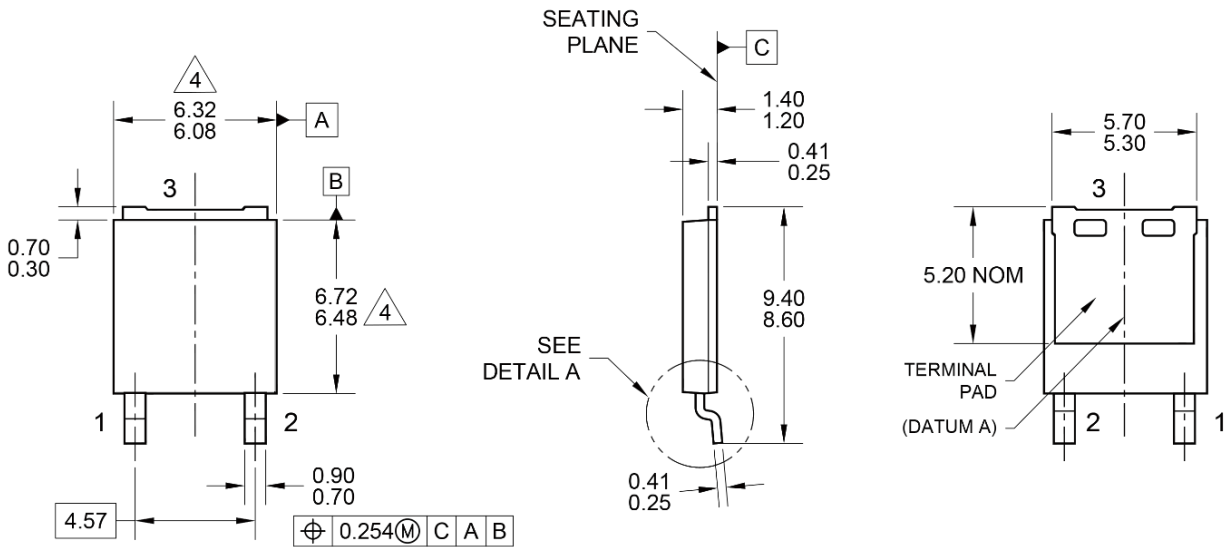
(T<sub>A</sub> = 25°C unless otherwise noted)

**Fig.6 Typical Transient Thermal Characteristics**



**PACKAGE OUTLINE DIMENSIONS**

**ThinDPAK**



**MARKING DIAGRAM**

YWW = 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 TO-252, VARIATION AE, ISSUE F.
4. MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSION, OR GATE BURRS.
5. DWG NO. REF: HQ2SD07-TDPAK-065 REV A.

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