

20A, 45V 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

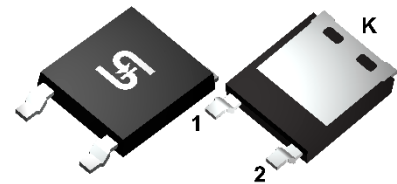
APPLICATIONS

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

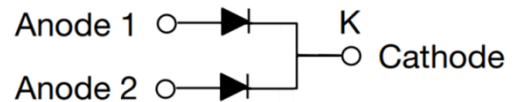
MECHANICAL DATA

- 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}	45	V
I_{FSM}	260	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}	45	V
Reverse voltage, total rms value	$V_{R(RMS)}$	31	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}	260	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 ⁽¹⁾	R _{θJL}	1.5	°C/W
Junction-to-ambient thermal resistance per leg ⁽²⁾	R _{θJA}	7.3	°C/W
Junction-to-case thermal resistance per leg ⁽²⁾	R _{θJC}	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_A = 25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per leg ⁽¹⁾	I _F = 5A, T _J = 25°C	V _F	0.50	-	V
	I _F = 10A, T _J = 25°C		0.56	0.63	V
	I _F = 5A, T _J = 125°C		0.41	-	V
	I _F = 10A, T _J = 125°C		0.49	0.55	V
Reverse current @ rated V _R per leg ⁽²⁾	T _J = 25°C	I _R	-	30	μA
	T _J = 125°C		-	10	mA
Junction capacitance per leg	1MHz, V _R = 4.0V	C _J	1110	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
TSAD20M45CH	ThinDPAK	4,500 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

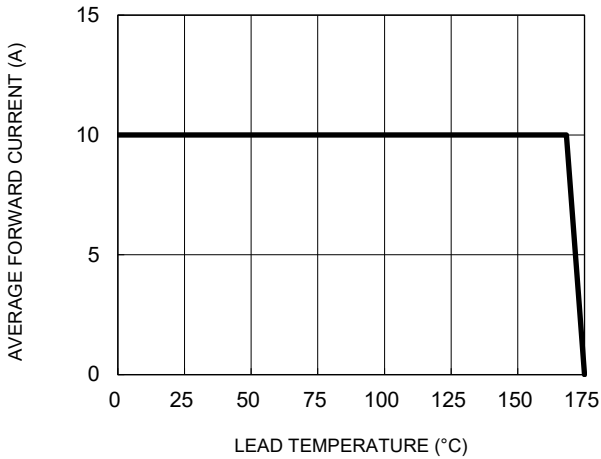


Fig.2 Typical Junction Capacitance

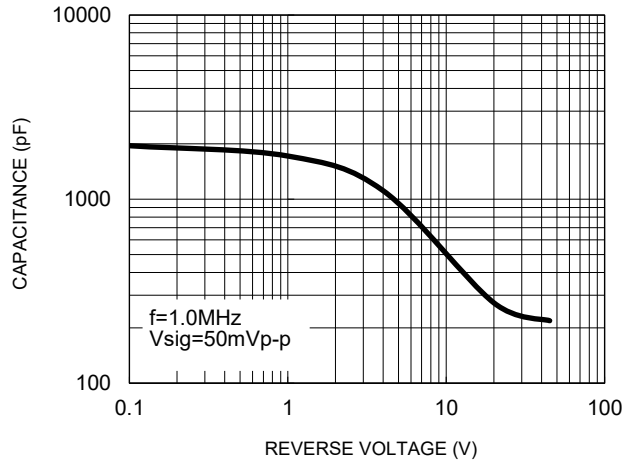


Fig.3 Typical Reverse Characteristics

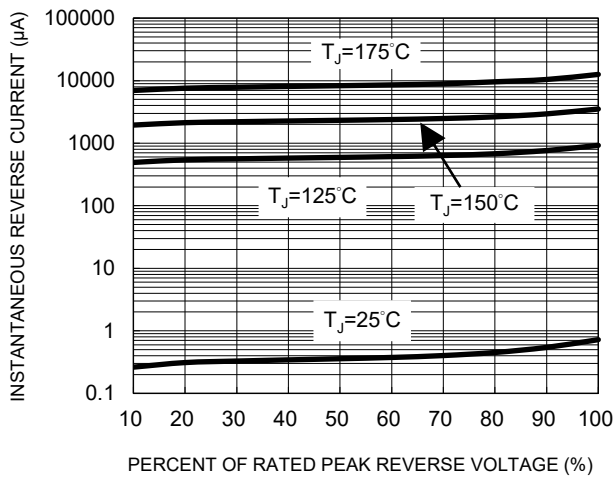


Fig.4 Typical Forward Characteristics

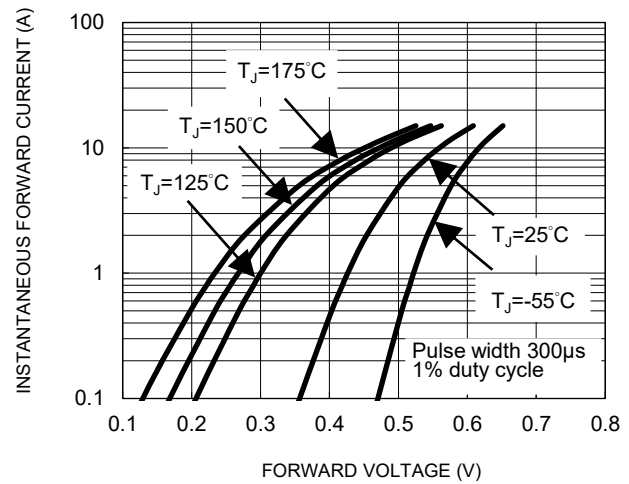
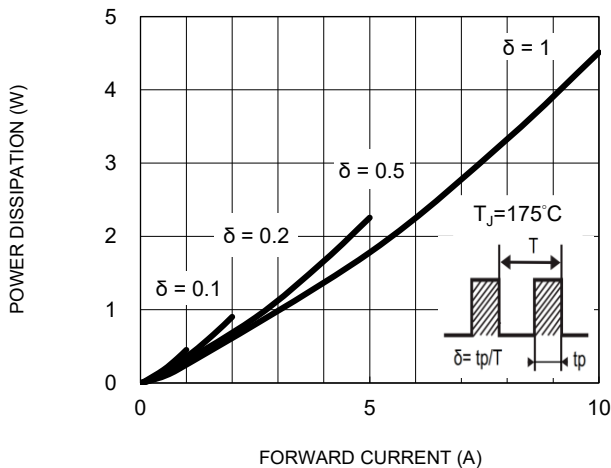


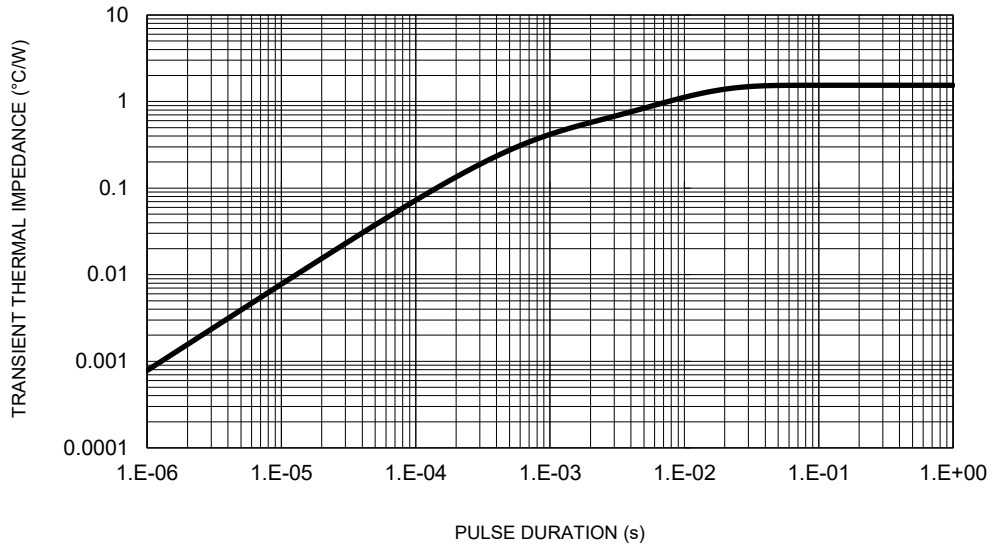
Fig.5 Typical Forward Power Dissipation vs. Forward Current



CHARACTERISTICS CURVES

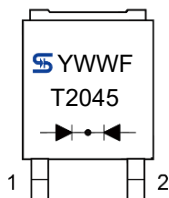
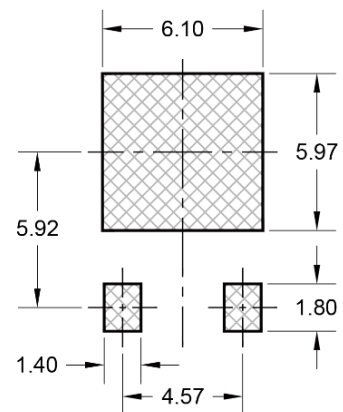
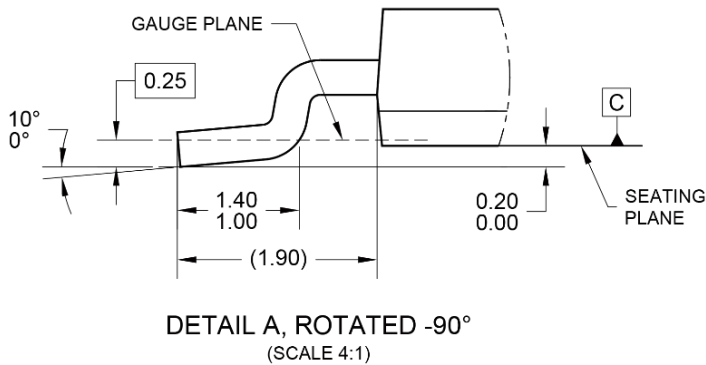
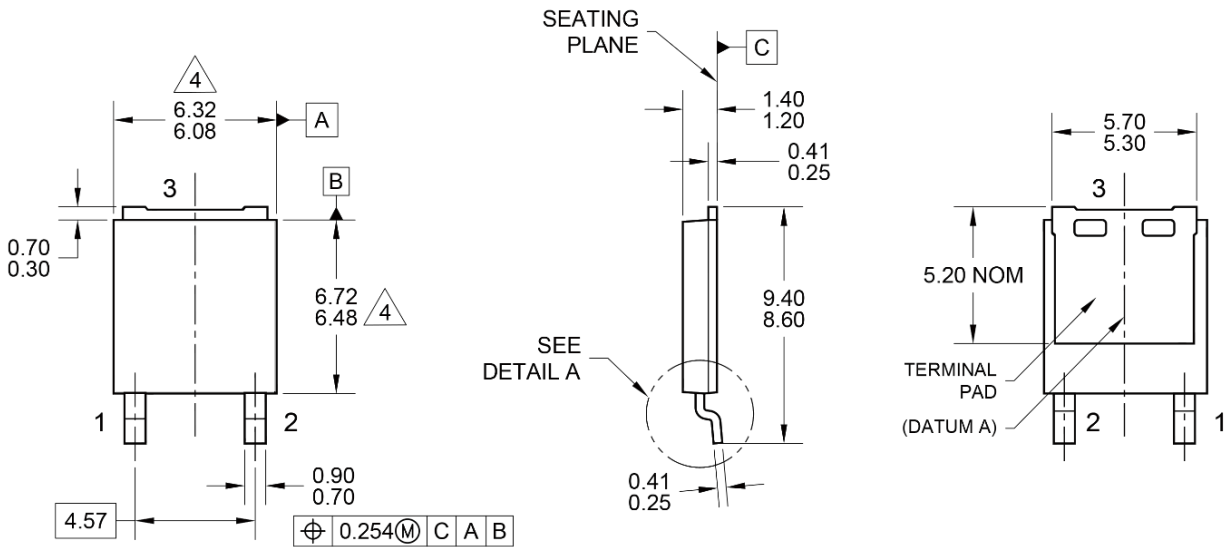
(T_A = 25°C unless otherwise noted)

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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