

20A, 45V Schottky Barrier 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

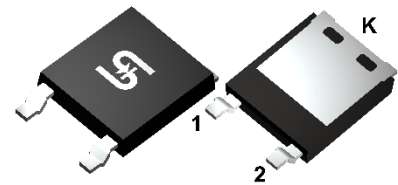
APPLICATIONS

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

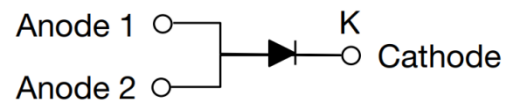
MECHANICAL DATA

- 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: Indicated by cathode band
- Weight: 0.196g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	20	A
V_{RRM}	45	V
I_{FSM}	330	A
$T_{J\ MAX}$	150	°C
Package	ThinDPAK	
Configuration	Single die	



ThinDPAK



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

PARAMETER	SYMBOL	MBRAD2045H	UNIT
Marking code on the device		2045	
Repetitive peak reverse voltage	V_{RRM}	45	V
Reverse voltage, total rms value	$V_{R(RMS)}$	31	V
Forward current	I_F	20	A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	330	A
	$t = 1.0\text{ms}$	680	A
Junction temperature	T_J	-55 to +150	°C
Storage temperature	T_{STG}	-55 to +150	°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance ⁽¹⁾	$R_{\theta JL}$	2.0	°C/W
Junction-to-ambient thermal resistance ⁽²⁾	$R_{\theta JA}$	11.5	°C/W
Junction-to-case thermal resistance ⁽²⁾	$R_{\theta JC}$	2.5	°C/W

Notes:

1. With ideal heat sink
2. Units mounted on 2" x 3" x 0.25" Al-plate

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$	V_F	0.54	-	V
	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		0.63	0.73	V
	$I_F = 10\text{A}, T_J = 125^\circ\text{C}$		0.46	-	V
	$I_F = 20\text{A}, T_J = 125^\circ\text{C}$		0.58	0.67	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	100	μA
	$T_J = 125^\circ\text{C}$		-	30	mA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	927	-	pF

Notes:

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
MBRAD2045H	ThinDPAK	4,500 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

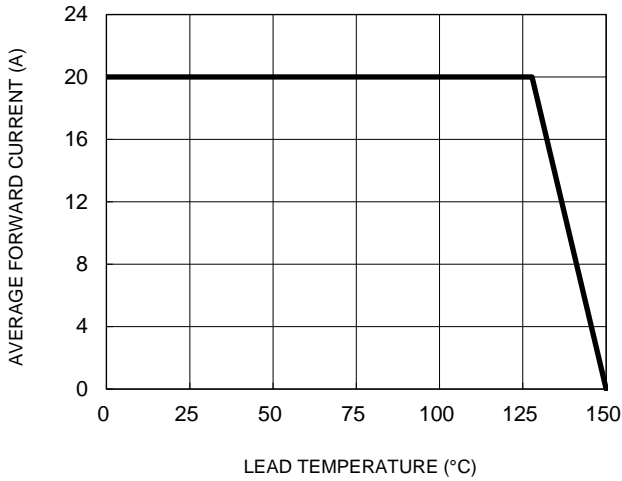


Fig.2 Typical Junction Capacitance

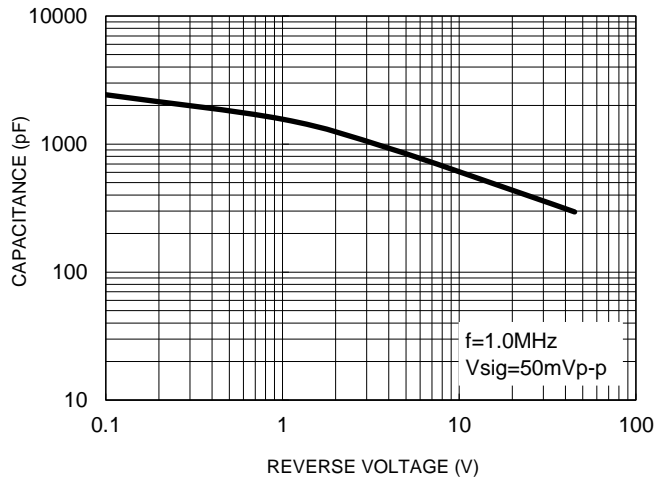


Fig.3 Typical Reverse Characteristics

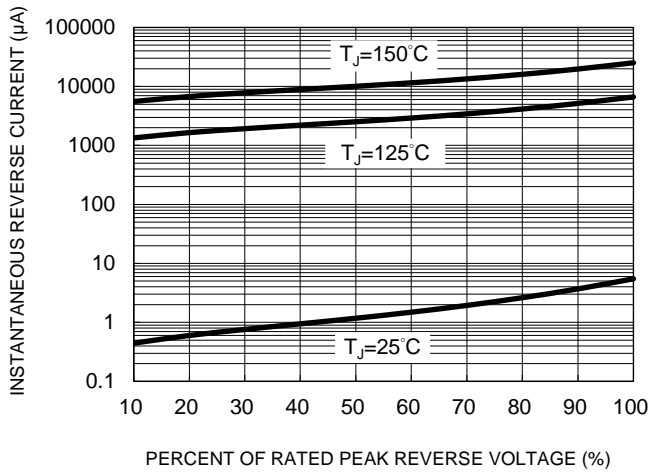


Fig.4 Typical Forward Characteristics

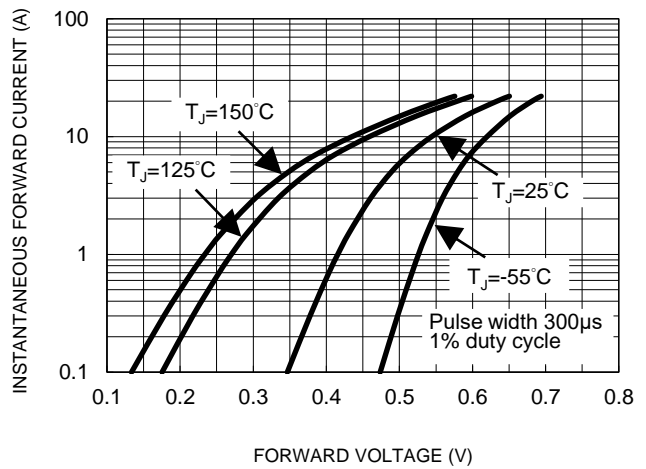
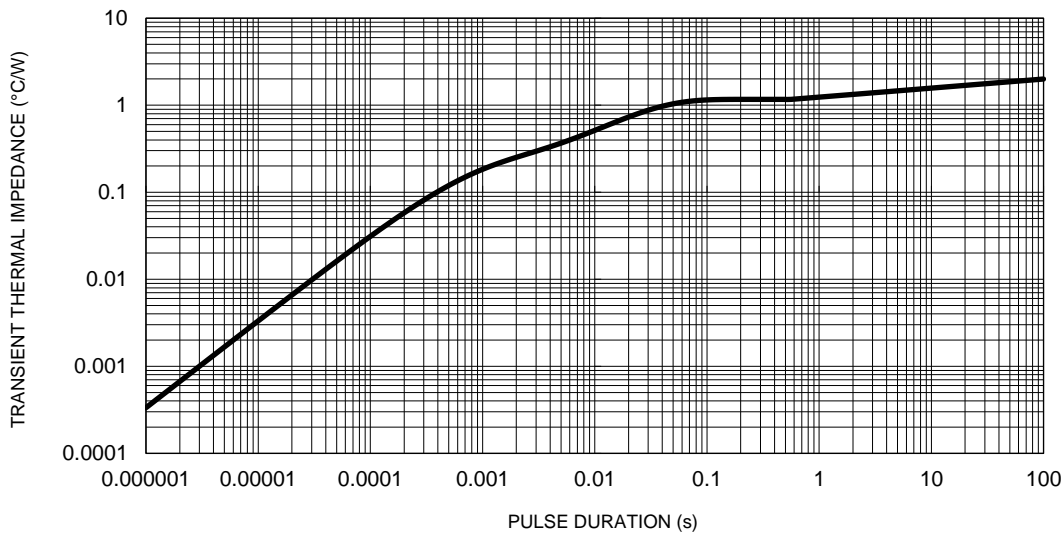
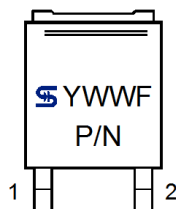
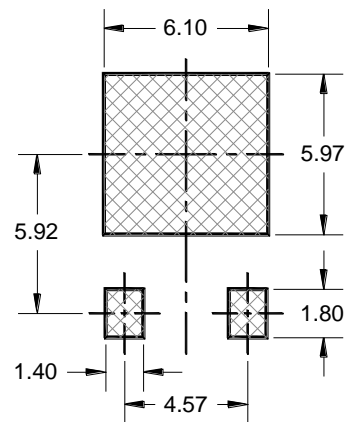
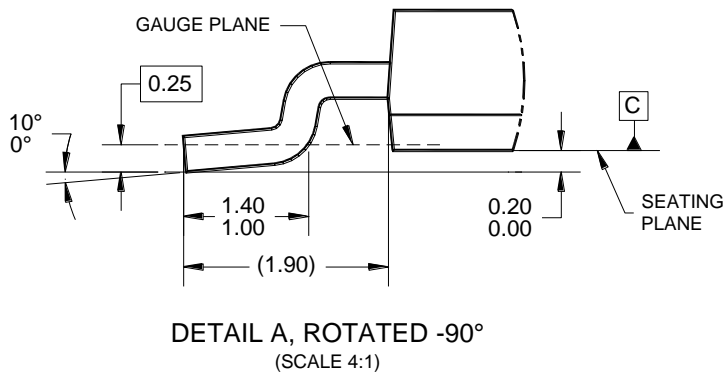
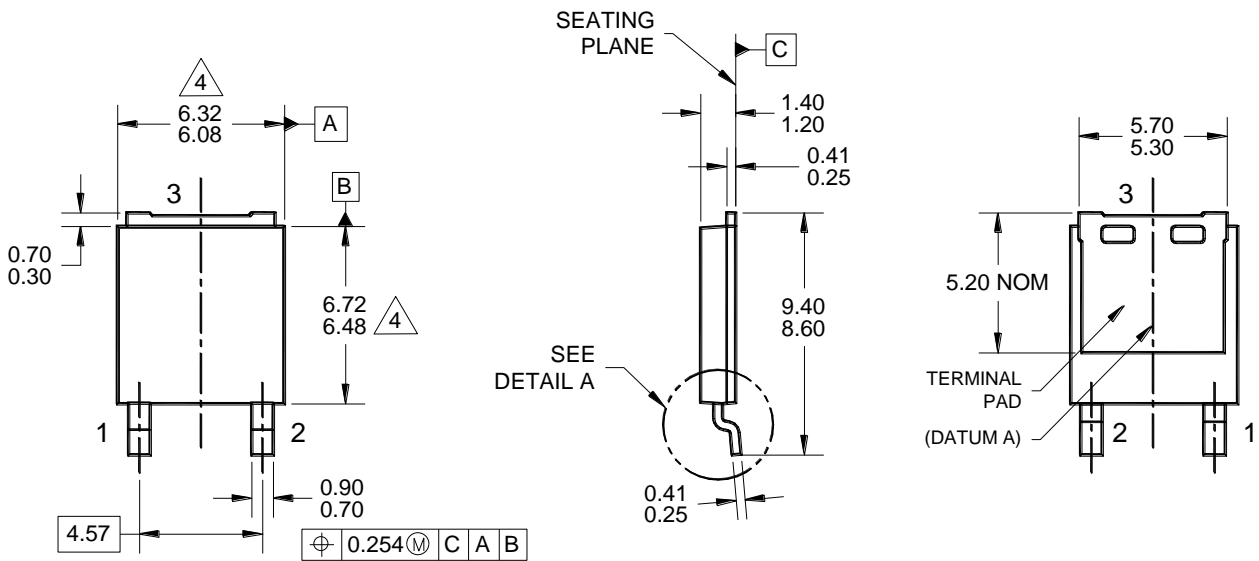


Fig.5 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

ThinDPAK



MARKING DIAGRAM

YWW = DATE CODE
F = FACTORY CODE
P/N = MARKING 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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