

6A, 600V High Efficient Surface Mount Rectifier

FEATURES

- Planar technology
- Low power loss, high efficiency
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

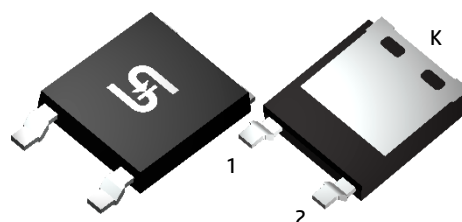
APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Lighting application
- Snubber
- Freewheeling application

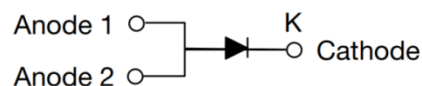
MECHANICAL DATA

- 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: 0.192g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	6	A
V_{RRM}	600	V
I_{FSM}	100	A
$T_J \text{ MAX}$	175	°C
Package	ThinDPAK	
Configuration	Single die	



ThinDPAK



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

PARAMETER		SYMBOL	VALUE	UNIT
Repetitive peak reverse voltage		V_{RRM}	600	V
Reverse voltage, total rms value		$V_{R(RMS)}$	420	V
Forward current		I_F	6	A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	I_{FSM}	100	A
	$t = 1.0\text{ms}$		190	
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	$R_{\theta JL}$	4	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	13	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	2	°C/W

Thermal Performance Note: Units mounted on heatsink 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⁾	$I_F = 3\text{A}, T_J = 25^\circ\text{C}$	V_F	1.00	-	V
	$I_F = 6\text{A}, T_J = 25^\circ\text{C}$		1.10	1.30	V
	$I_F = 3\text{A}, T_J = 125^\circ\text{C}$		0.85	-	V
	$I_F = 6\text{A}, T_J = 125^\circ\text{C}$		0.96	-	V
Reverse current @ rated V_R ⁽²⁾	$T_J = 25^\circ\text{C}$	I_R	-	5	μA
	$T_J = 125^\circ\text{C}$		2	-	μA
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	C_J	30	-	pF
Reverse recovery time	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	t_{rr}	-	60	ns
	$I_F = 1.0\text{A}, di/dt = 50\text{A}/\mu\text{s}, V_R = 30\text{V}$		59	-	
Reverse recovery current	$I_F = 6\text{A}, di/dt = 200\text{A}/\mu\text{s}, V_R = 400\text{V}$	I_{RM}	6	-	A
Reverse recovery charge		Q_{rr}	438	-	nC
Reverse recovery time		t_{rr}	104	-	ns

Notes:

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

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
PHAD6J	ThinDPAK	4,500 / Tape & Reel

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

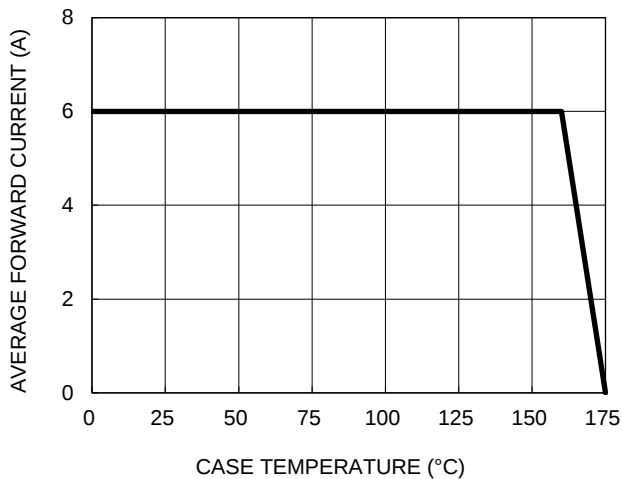


Fig.2 Typical Junction Capacitance

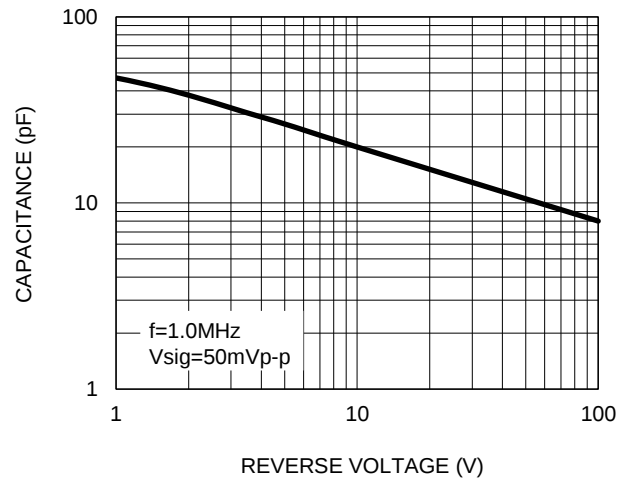


Fig.3 Typical Reverse Characteristics

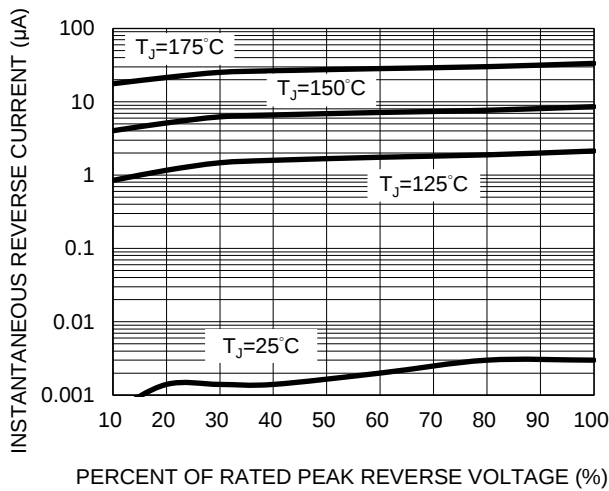


Fig.4 Typical Forward Characteristics

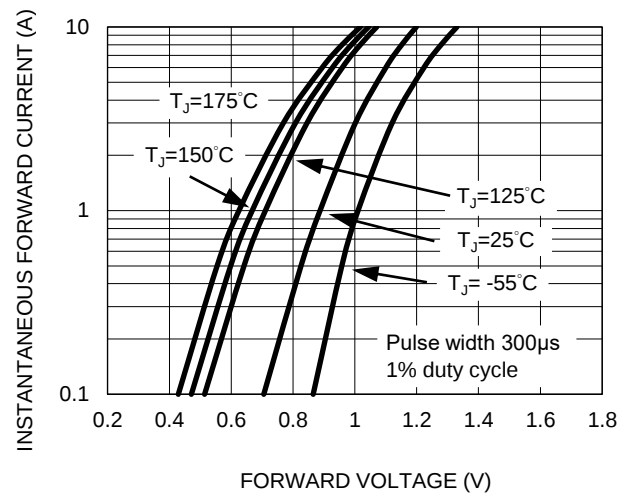
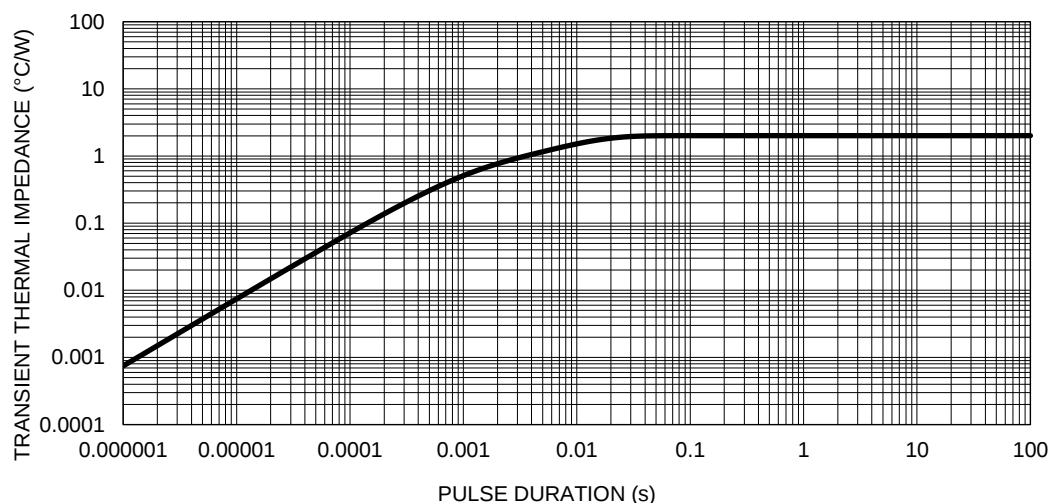
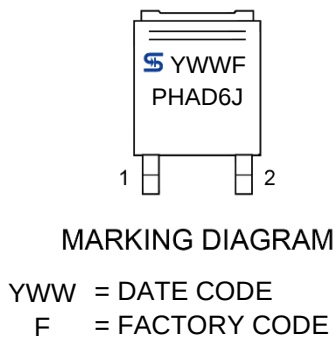
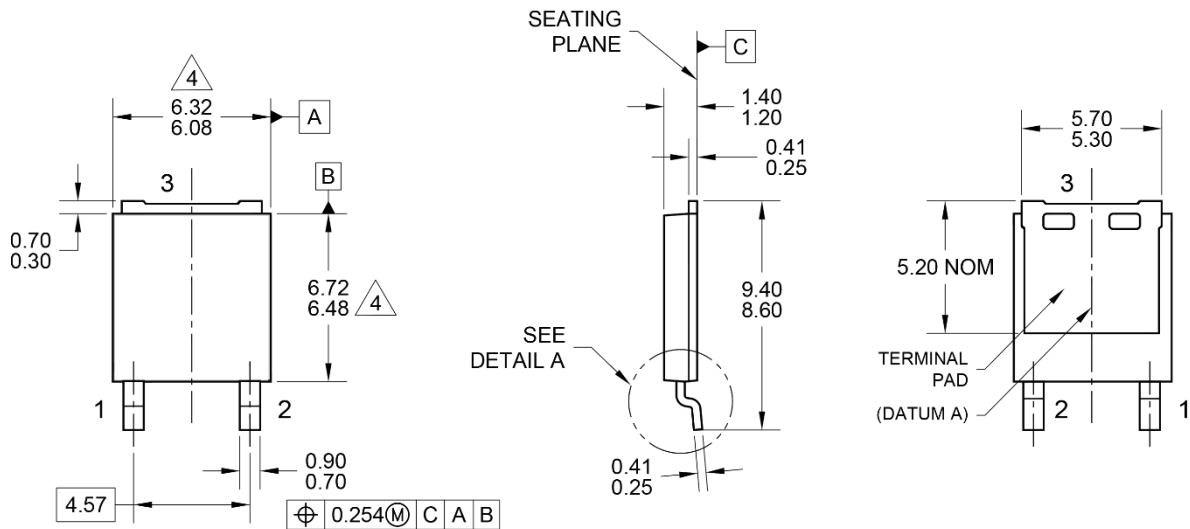


Fig.5 Typical Transient Thermal Impedance



PACKAGE OUTLINE DIMENSIONS

ThinDPAK



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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