



# THE DATASHEET OF HER1604PT



## 16A, 50V - 1000V High Efficient Rectifier

### FEATURES

- AEC-Q101 qualified available
- Low forward voltage, high current capability
- Low thermal resistance
- Low power loss, high efficiency
- UL Recognized File # E-326243
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

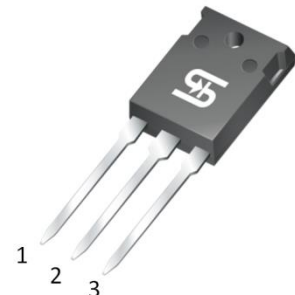
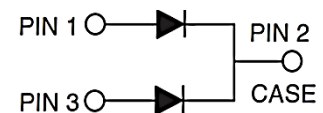
### APPLICATIONS

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

### MECHANICAL DATA

- Case: TO-247AD (TO-3P)
- 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
- Mounting torque: 1.13 N·m maximum
- Polarity: As marked
- Weight: 5.60g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	16	A
$V_{RRM}$	50 - 1000	V
$I_{FSM}$	200	A
$T_{JMAX}$	150	°C
Package	TO-247AD (TO-3P)	
Configuration	Dual dies	


**TO-247AD (TO-3P)**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	HER 1601 PT	HER 1602 PT	HER 1603 PT	HER 1604 PT	HER 1605 PT	HER 1606 PT	HER 1607 PT	HER 1608 PT	UNIT
Marking code on the device		HER 1601 PT	HER 1602 PT	HER 1603 PT	HER 1604 PT	HER 1605 PT	HER 1606 PT	HER 1607 PT	HER 1608 PT	
Repetitive peak reverse voltage	$V_{RRM}$	50	100	200	300	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	140	210	280	420	560	700	V
Forward current	$I_F$	16								A
Surge peak forward current 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	200								A
Junction temperature	$T_J$	-55 to +150								°C
Storage temperature	$T_{STG}$	-55 to +150								°C

<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 per diode <sup>(1)</sup>	HER1601PT HER1602PT HER1603PT HER1604PT	$I_F = 8\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	1.0	V			
	HER1605PT			-	1.3	V			
	HER1606PT HER1607PT HER1608PT			-	1.7	V			
	Reverse current @ rated $V_R$ per diode <sup>(2)</sup>			$T_J = 25^\circ\text{C}$	$I_R$	-	10	$\mu\text{A}$	
				$T_J = 125^\circ\text{C}$		-	500	$\mu\text{A}$	
Junction capacitance per diode	HER1601PT HER1602PT HER1603PT HER1604PT HER1605PT	1MHz, $V_R = 4.0\text{V}$	$C_J$	85	-	pF			
	HER1606PT HER1607PT HER1608PT			60	-	pF			
	Reverse recovery time			HER1601PT HER1602PT HER1603PT HER1604PT HER1605PT	$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	$t_{rr}$	-	50	ns
				HER1606PT HER1607PT HER1608PT			-	80	ns

**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> <sup>(1)(2)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
HER16xPT	TO-247AD (TO-3P)	30 / Tube
HER16xPTH	TO-247AD (TO-3P)	30 / Tube

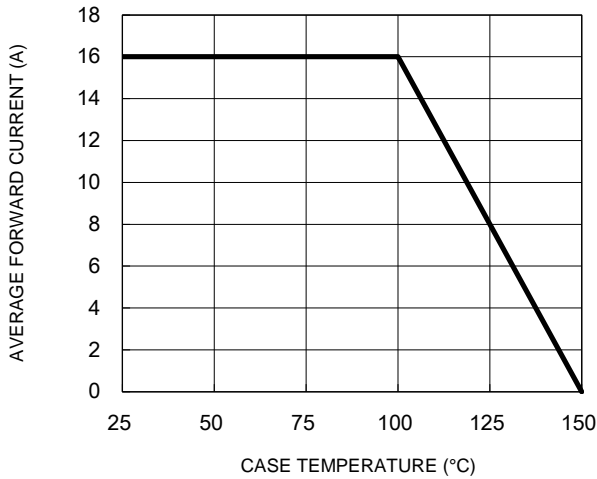
**Notes:**

1. "x" defines voltage from 50V(HER1601PT) to 1000V(HER1608PT)
2. "H" means AEC-Q101 qualified

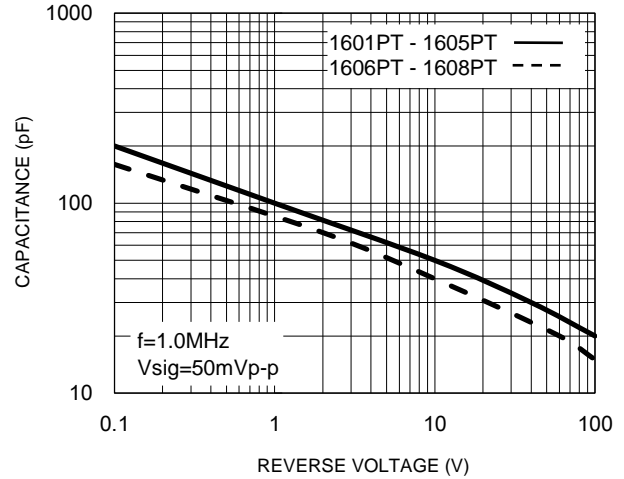
**CHARACTERISTICS CURVES**

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

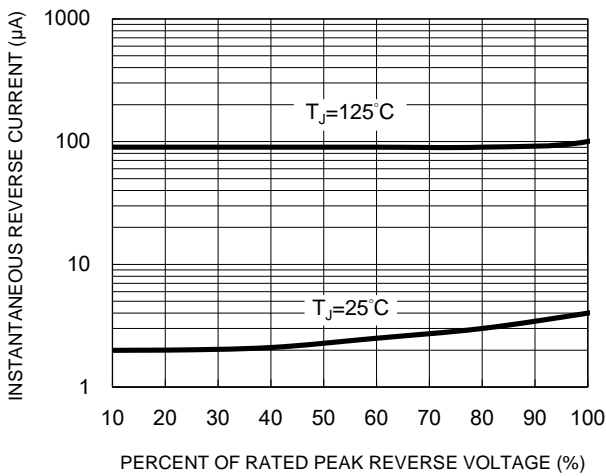
**Fig.1 Forward Current Derating Curve**



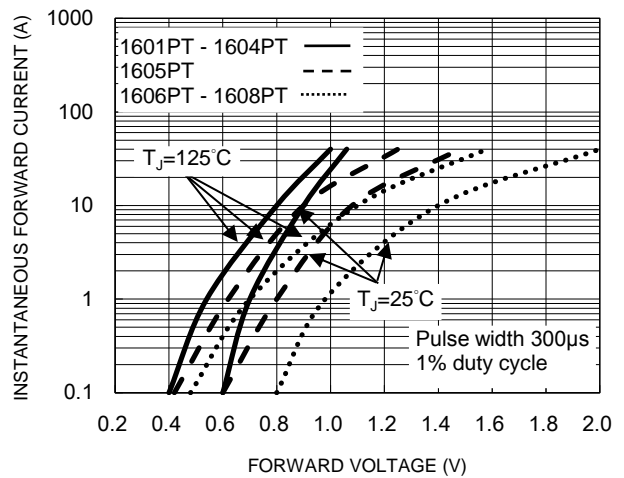
**Fig.2 Typical Junction Capacitance**



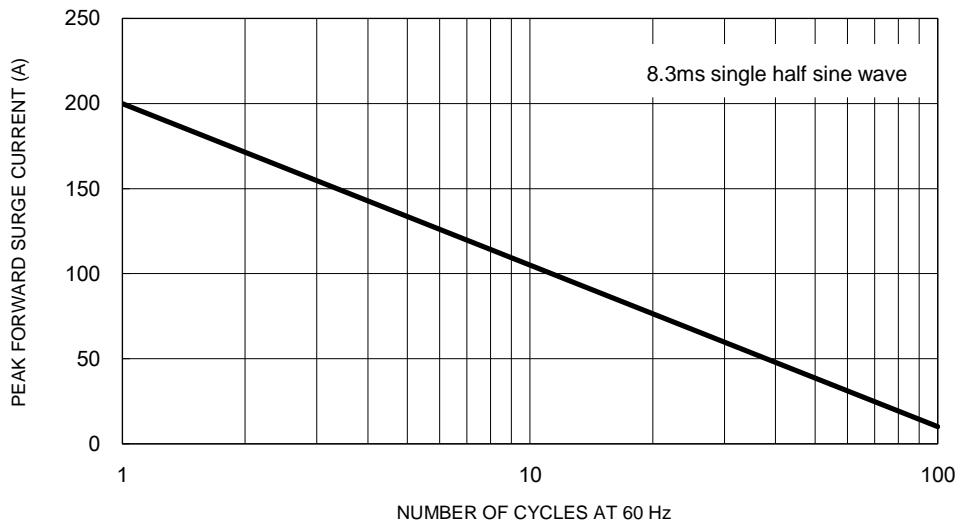
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



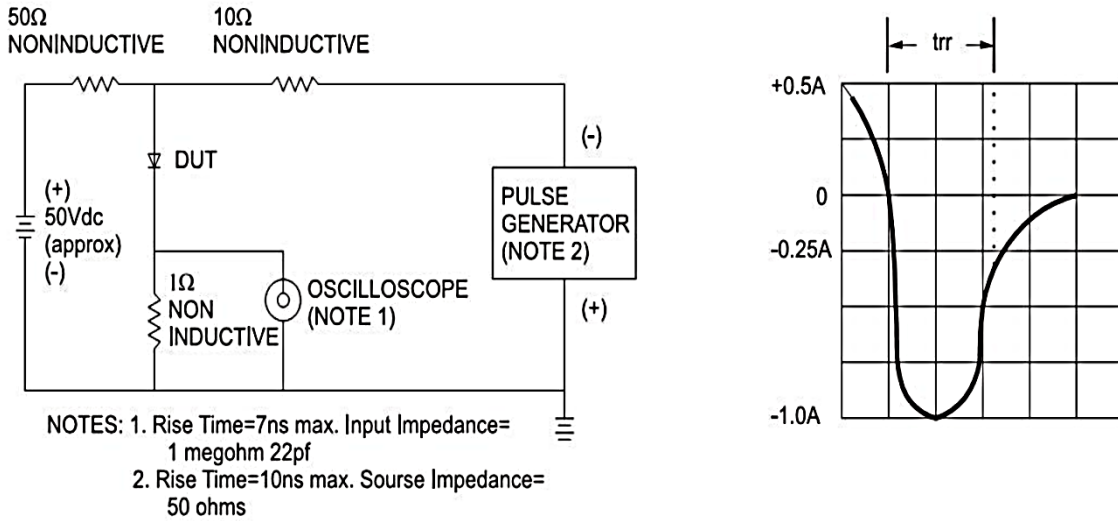
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



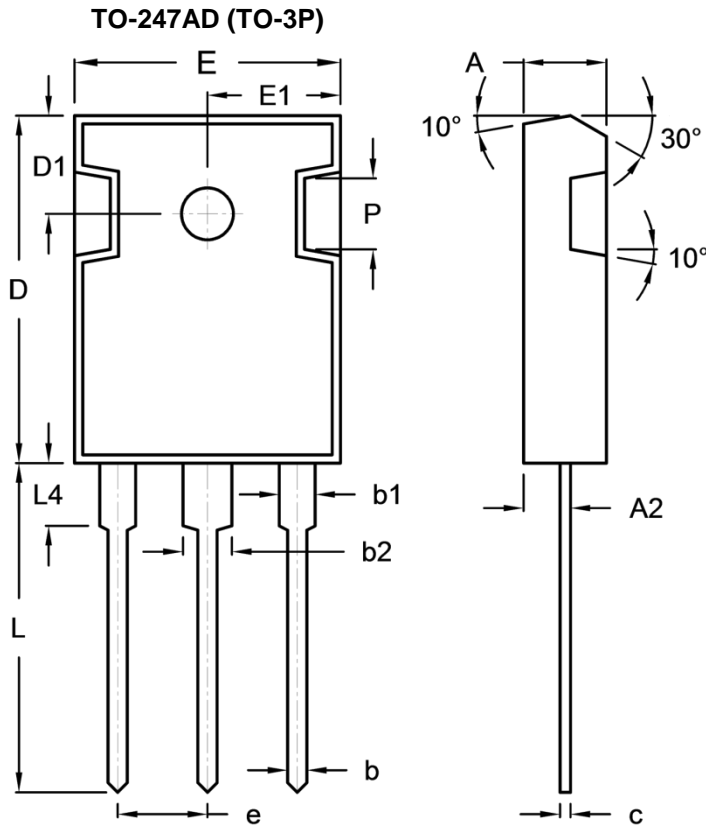
**CHARACTERISTICS CURVES**

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

**Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram**

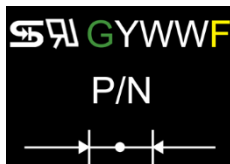


**PACKAGE OUTLINE DIMENSIONS**



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	4.90	5.16	0.193	0.203
A2	2.70	3.00	0.106	0.118
b	1.12	1.22	0.044	0.048
b1	1.93	2.18	0.076	0.086
b2	2.97	3.22	0.117	0.127
c	0.51	0.76	0.020	0.030
D	20.80	21.30	0.819	0.839
D1	5.70	6.20	0.224	0.244
E	15.90	16.40	0.626	0.646
E1	7.90	8.20	0.311	0.323
e	5.20	5.70	0.205	0.224
H	2.90	3.40	0.114	0.134
L	19.70	20.20	0.776	0.795
L4	3.50	4.10	0.138	0.161
P	-	4.30	-	0.169

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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