

AUG 06 1990

INTERNATIONAL RECTIFIER



100HF(R)/130HF(R)... SERIES

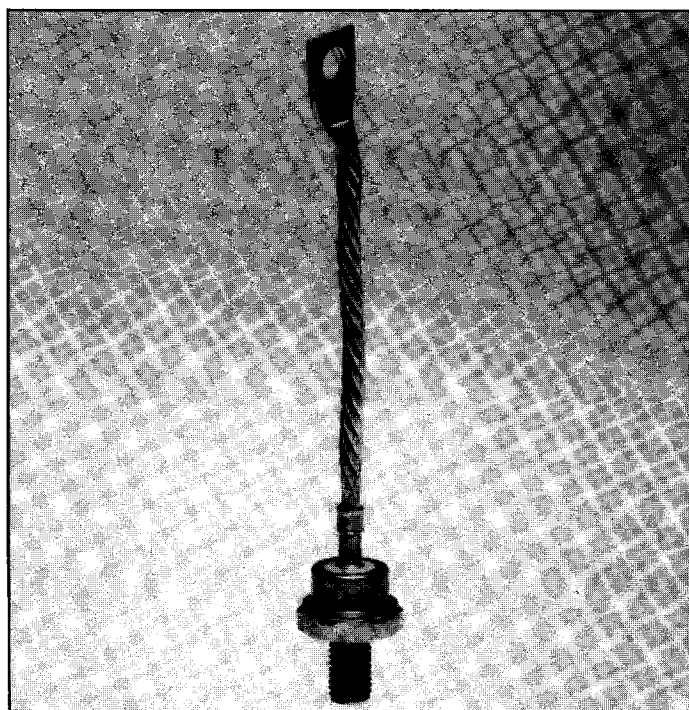
100/130 Amp Average Medium Power Silicon Rectifier Diodes

Features

- Wide current range
- High surge current capabilities
- Types up to 1600V V_{RRM}
- Stud cathode and stud anode version
- Standard JEDEC types
- Diffused junction

Description

This range of medium power general purpose rectifier diodes is designed for battery chargers, converters, power supplies, machine tool controls.



Major ratings and characteristics

Parameter	100HF...	130HF...	Units
$I_{F(AV)}$	100	130	A
@ T_c	125	125	°C
I_{FSM} @ 50Hz	1500	1680	A
@ 60Hz	1570	1760	A
I^2t @ 50Hz	11250	14100	A ² s
@ 60Hz	10270	12900	A ² s
V_{RRM}	200 to 1600		V
T_J	-40 to 180		°C

ELECTRICAL SPECIFICATIONS**Voltage ratings**

Type number	Voltage code	V_{RRM} : maximum repetitive peak reverse voltage $T_J = T_J \text{ Max.}$	V_{RSM} : maximum non-repetitive peak reverse voltage $T_J = T_J \text{ Max.}$	I_{RRM} Max @ rated V_{RRM} $T_J = T_J \text{ Max.}$
		(V)	(V)	(mA)
100HF(R)20/130HF(R)20	20	200	300	15
100HF(R)40/130HF(R)40	40	400	500	15
100HF(R)60/130HF(R)60	60	600	700	15
100HF(R)80/130HF(R)80	80	800	900	15
100HF(R)100/130HF(R)100	100	1000	1100	15
100HF(R)120/130HF(R)120	120	1200	1300	15
100HF(R)140/130HF(R)140	140	1400	1500	15
100HF(R)160/130HF(R)160	160	1600	1700	15

Forward Conduction

Parameters	100HF	130HF	Units	Conditions
$I_{F(AV)}$ @ T_C Maximum average forward current	100	130	A	180° Sine Conduction angle
	125	125	°C	
$I_{F(RMS)}$ Maximum RMS current	157	200	A	
I_{FSM} Maximum peak, one-cycle non-repetitive forward current Initial $T_J = T_J \text{ max.}$	1500	1680	A	$t = 10\text{ms}$ 100% V_{RRM} reapplied
	1570	1760	A	$t = 8.3\text{ms}$
	1780	2000	A	$t = 10\text{ms}$ No voltage reapplied
	1870	2100	A	$t = 8.3\text{ms}$
I^2t Maximum I^2t for fusing Initial $T_J = T_J \text{ max.}$	11250	14100	A ² s	$t = 10\text{ms}$ 100% V_{RRM} reapplied
	10270	12900	A ² s	$t = 8.3\text{ms}$
	16000	20000	A ² s	$t = 10\text{ms}$ No voltage reapplied
	14520	18200	A ² s	$t = 8.3\text{ms}$
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	160	200	kA ² √s	I^2t for time $t_x = I^2\sqrt{t} \times \sqrt{t_x}$; $0.1 \leq t_x \leq 10\text{ms}$
$V_{F(TO)}$ High-level of threshold voltage	0.96	0.95	V	$T_J = 180^\circ\text{C}$, $(\pi \times I_{(AV)}) < I < 20 \times \pi \times I_{(AV)}$
$V_{F(TO)2}$ Low-level of threshold voltage	0.77	0.76	V	$T_J = 180^\circ\text{C}$, $(16.7\% \times \pi \times I_{(AV)}) < I < \pi \times I_{(AV)}$
$r_{\theta 1}$ High-level of forward slope resistance	1.17	1.02	mΩ	$T_J = 180^\circ\text{C}$, $(\pi \times I_{(AV)}) < I < 20 \times \pi \times I_{(AV)}$
$r_{\theta 2}$ Low-level of forward slope resistance	1.68	1.41	mΩ	$T_J = 180^\circ\text{C}$, $(16.7\% \times \pi \times I_{(AV)}) < I < \pi \times I_{(AV)}$
V_{FM} Maximum forward voltage drop	1.7	1.5	V	$T_J = 25^\circ\text{C}$, $I_{FM} = 500\text{A}_{pk}$

Thermal and Mechanical Specifications

Parameters	100HF	130HF	Units	Conditions
T_J Junction temperature range	-40 to 180		°C	
T_{stg} Storage temperature range	-55 to 180		°C	
R_{thJC} Max. thermal resistance junction to case	0.4	0.3	K/W	DC operation
R_{thCS} Max. thermal resistance, case to heatsink	0.08	0.08	K/W	Mounting surface, smooth, flat and greased
wt Approximate weight	100		g	
T Mounting Torque ± 10%	10		Nm	
Max. constant accel.	6000 g		m/s ²	Stud outwards
Case style	DO-205AC (DO-30) / DO-205AA (DO-8)			

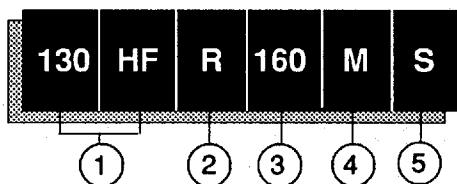
ΔR_{th} Conduction (per junction)

(The following table shows the increment of thermal resistance R_{thJ-C} when devices operate at different conduction angles than DC.)

Conduction angle	Sinusoidal conduction		Rectangular conduction		Units	Conditions
	100HF...	130HF...	100HF...	130HF...		
180°	0.065	0.052	0.052	0.042	K/W	
120°	0.080	0.064	0.087	0.070	K/W	
90°	0.104	0.083	0.114	0.090	K/W	
60°	0.150	0.117	0.155	0.120	K/W	
30°	0.239	0.177	0.241	0.180	K/W	

ORDERING INFORMATION TABLE

Device Code



- 1** - Basic Part Number
- 2** - Missing = Cathode-to-case
R = Anode-to-case
- 3** - Voltage code (See Voltage ratings Table)
- 4** - Outline (See Table)
- 5** - Leads and terminal designator:
S = Isolated lead
B = Flag terminal
None = Non isolated lead

OUTLINE

None = Stud base UNF threads
DO-30 (DO-205AC) 1/2" 20 UNF-2A

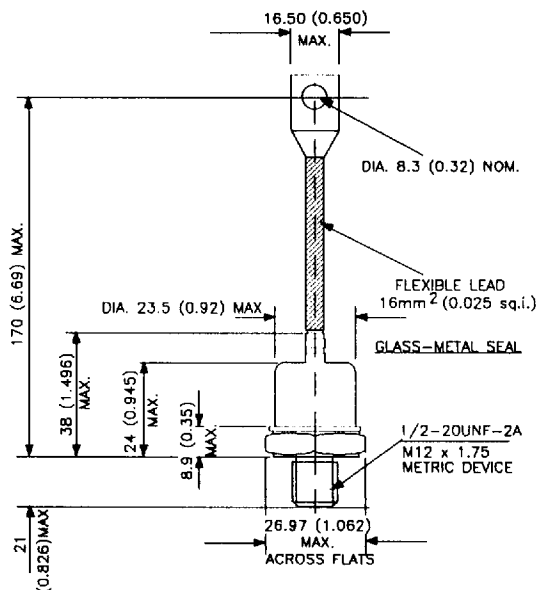
M = Stud base metric threads
DO-30 (DO-205AC) M12 x 1.75

W = Stud base UNF threads
DO-8 (DO-205AA) 3/8" 24 UNF-2A
(Contact Factory)

F = Flat base (Contact Factory)

K = Flat square base (Contact Factory)

OUTLINE TABLE



Conforms to JEDEC DO-205AC (DO-30)

All dimensions in millimetres (inches)



Fig. 1 - CURRENT RATINGS CHARACTERISTICS

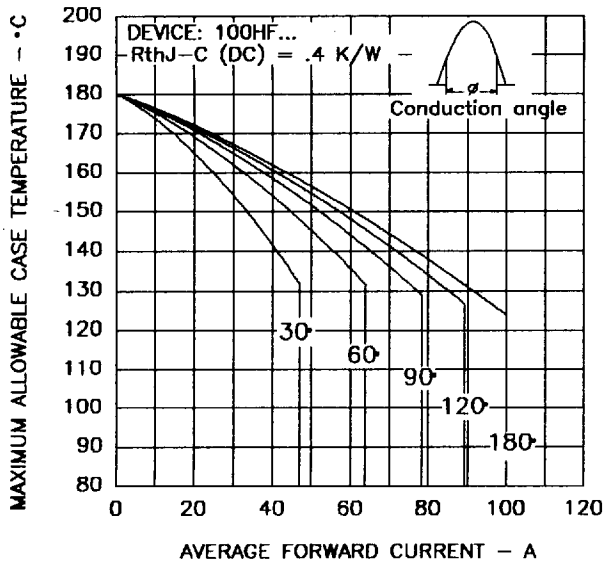


Fig. 2 - CURRENT RATINGS CHARACTERISTICS

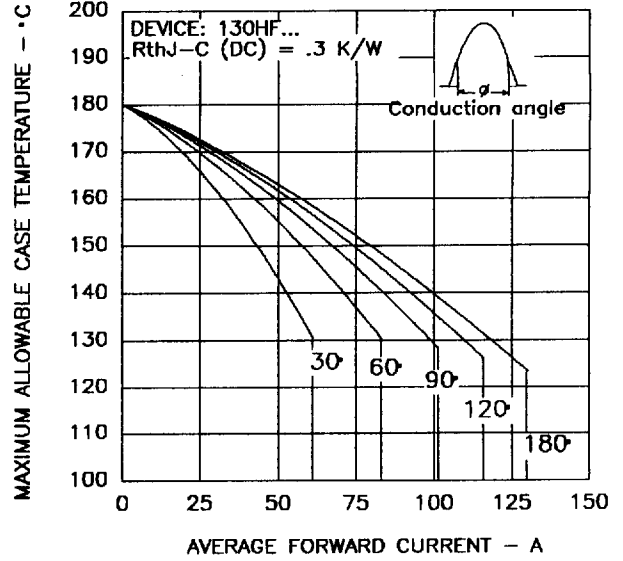


Fig. 3 - CURRENT RATINGS CHARACTERISTICS

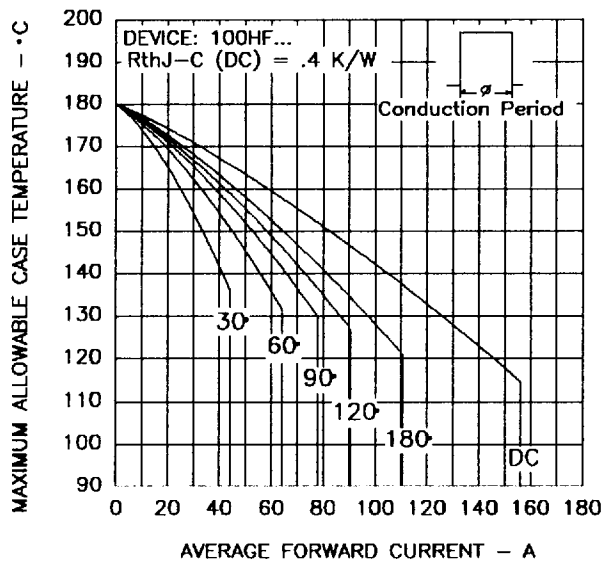


Fig. 4 - CURRENT RATINGS CHARACTERISTICS

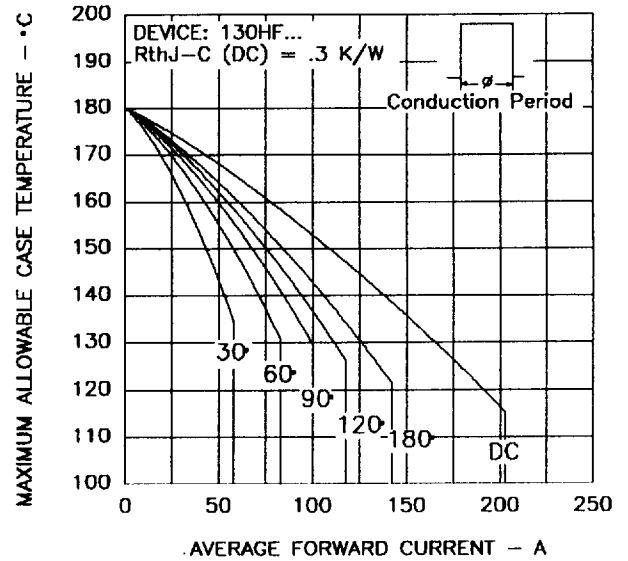


Fig. 5 - FORWARD POWER LOSS CHARACTERISTICS

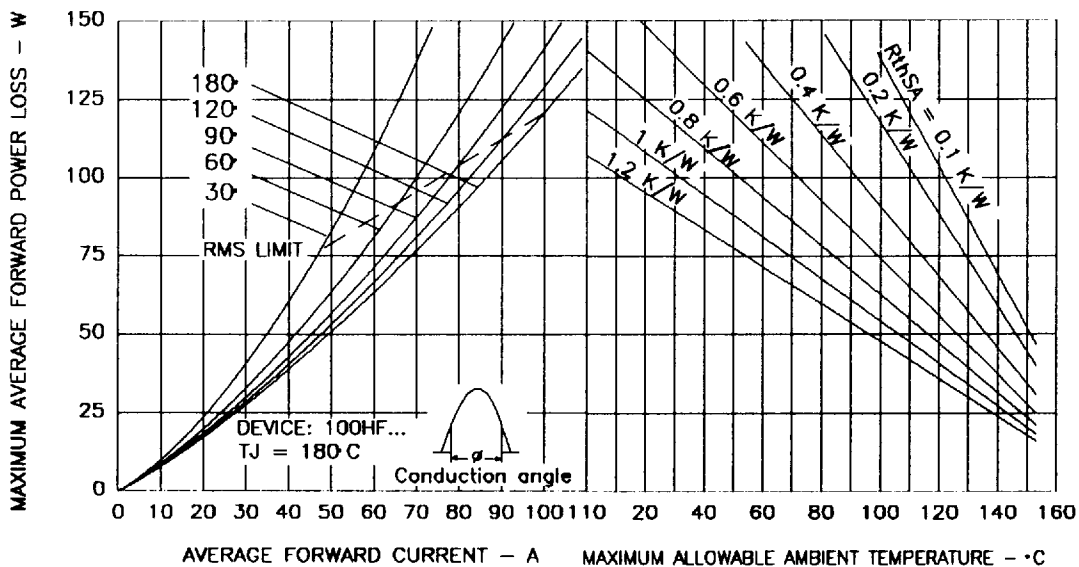


Fig. 6 - FORWARD POWER LOSS CHARACTERISTICS

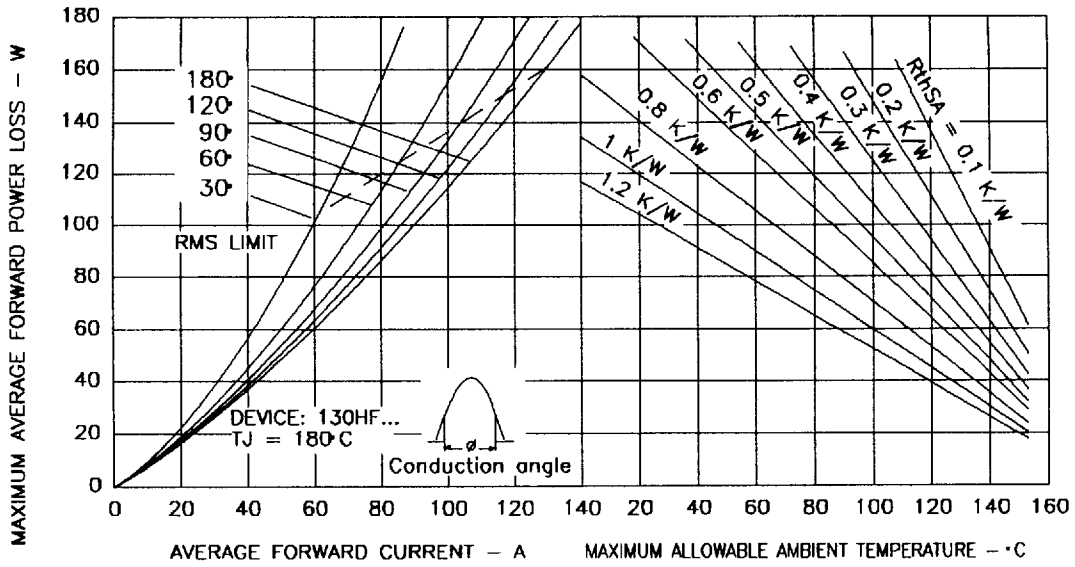


Fig. 7 - FORWARD POWER LOSS CHARACTERISTICS

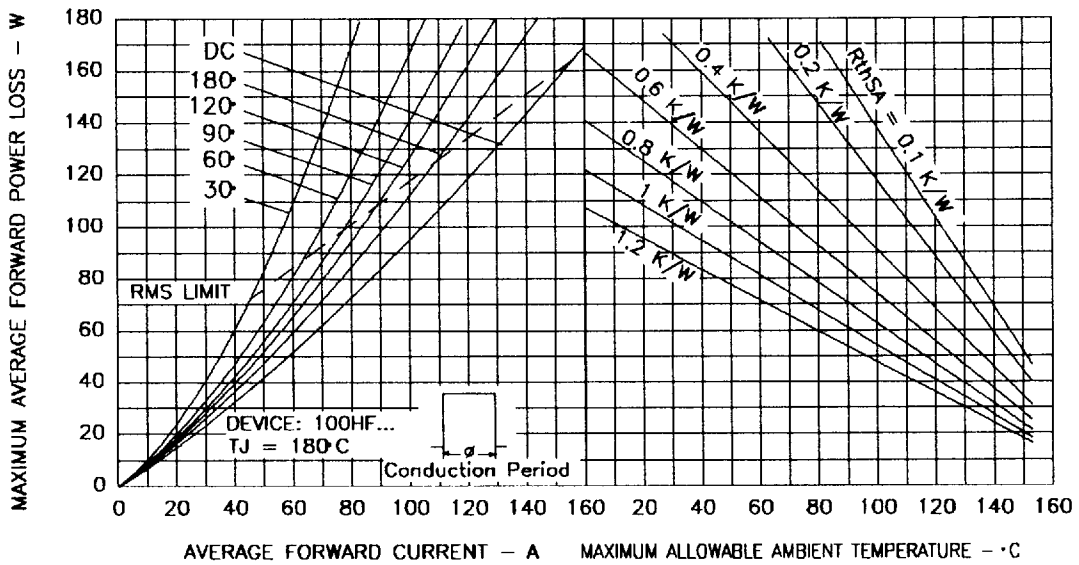


Fig. 8 - FORWARD POWER LOSS CHARACTERISTICS

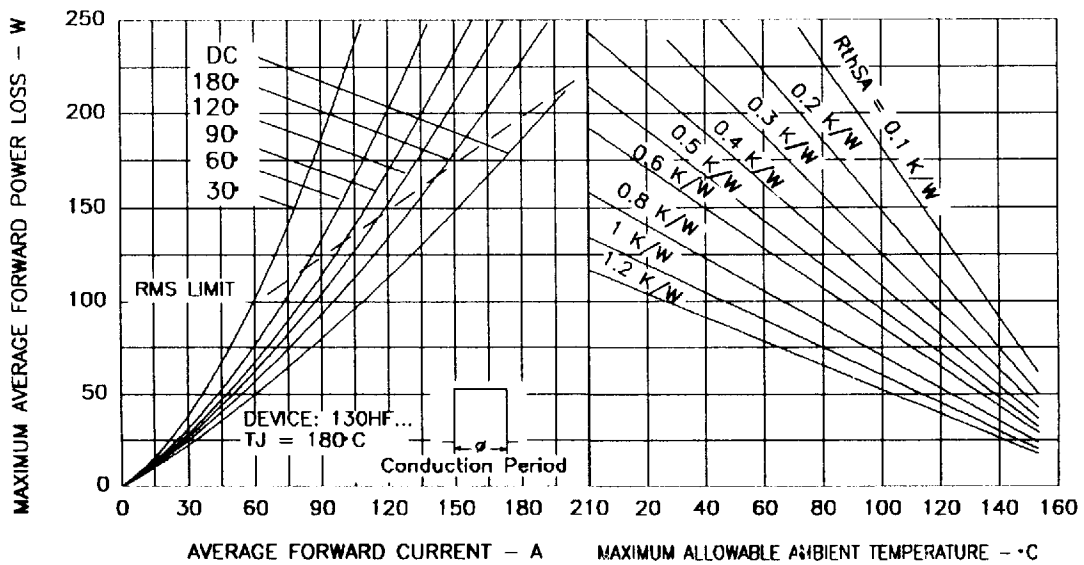




Fig. 9 - MAXIMUM NON-REPETITIVE SURGE CURRENT

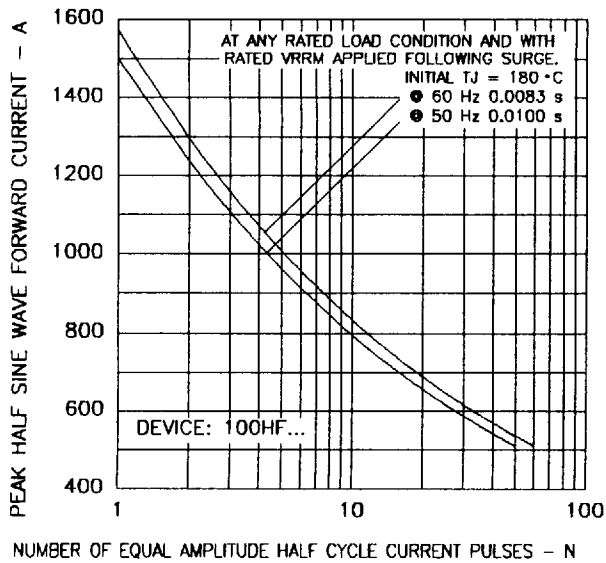


Fig. 10 - MAXIMUM NON-REPETITIVE SURGE CURRENT

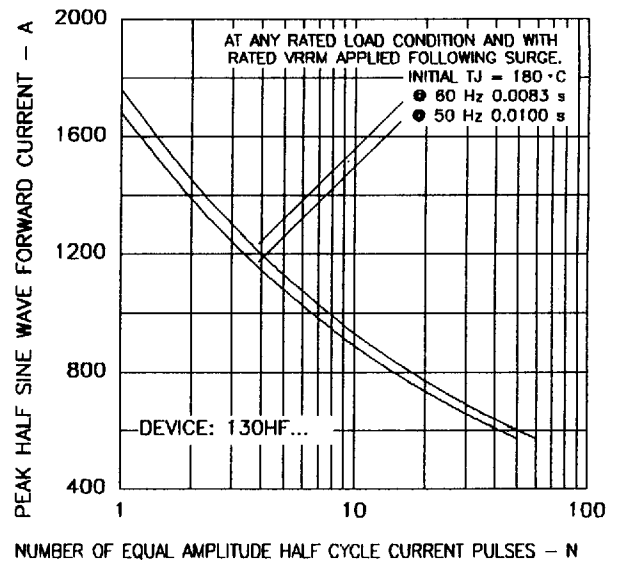


Fig. 11 - MAXIMUM NON-REPETITIVE SURGE CURRENT

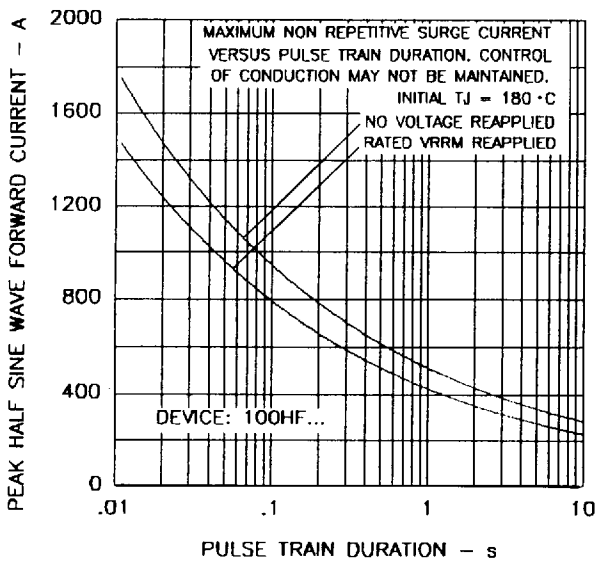


Fig. 12 - MAXIMUM NON-REPETITIVE SURGE CURRENT

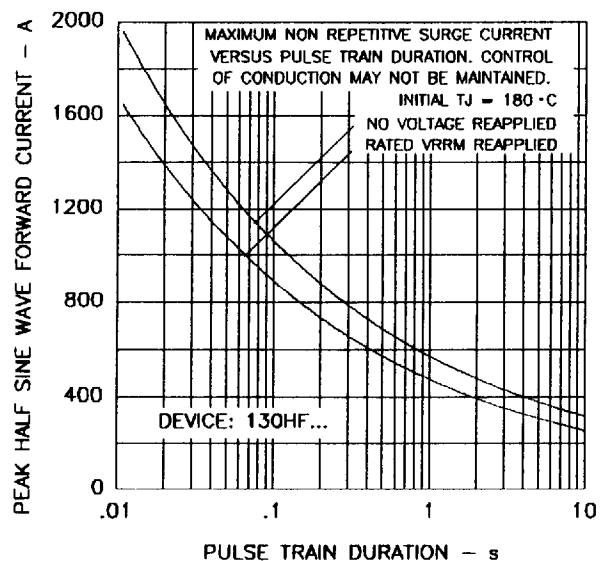


Fig. 13 - FORWARD VOLTAGE DROP CHARACTERISTICS

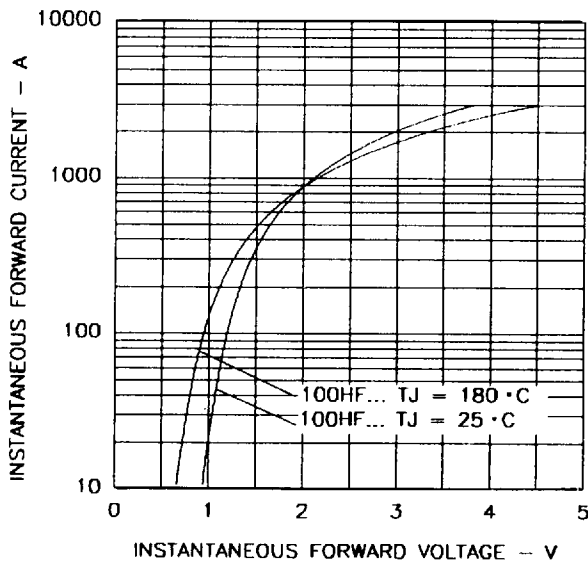


Fig. 14 - FORWARD VOLTAGE DROP CHARACTERISTICS

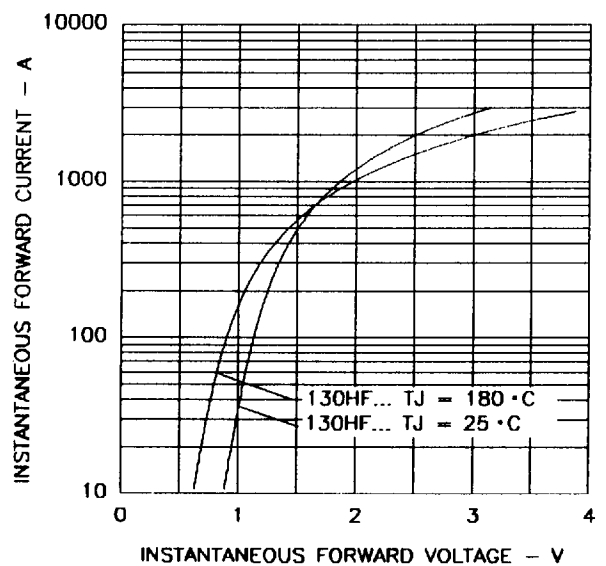
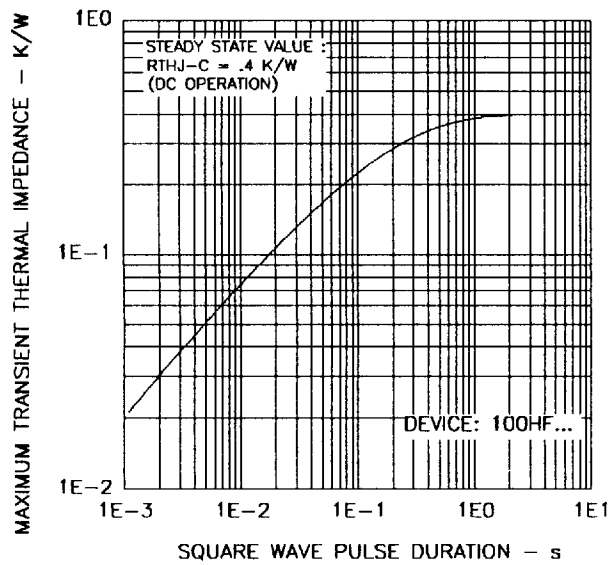
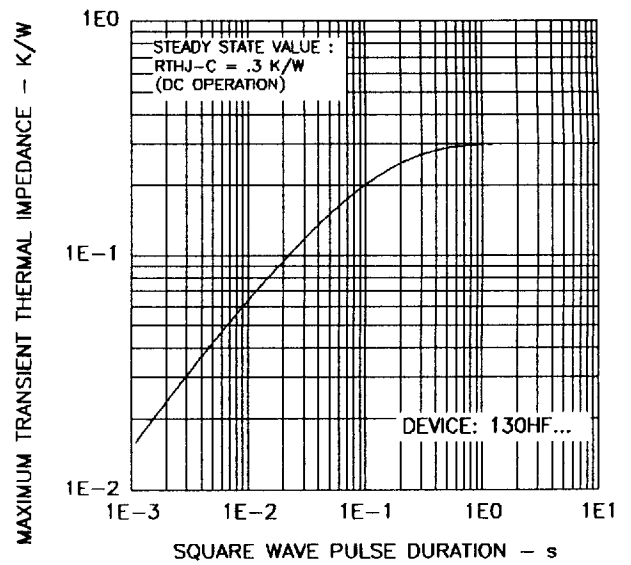


Fig. 15 - THERMAL IMPEDANCE Z_{thjc} CHARACTERISTICSFig. 16 - THERMAL IMPEDANCE Z_{thjc} CHARACTERISTICS

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