

150 Ampere STUD Power Diodes

Features

- Alloy diode
- Popular series for rough service
- Stud cathode and stud anode version

Typical Applications

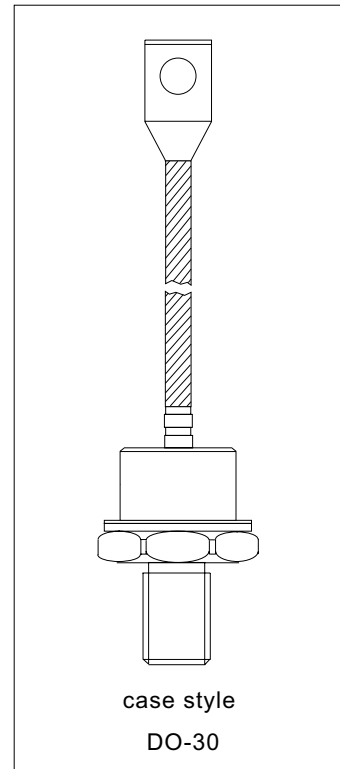
- Welders
- Power supplies
- Motor controls
- Battery chargers
- General industrial current rectification

ELECTRICAL SPECIFICATIONS

$I_{F(AV)}$	Maximum average forward current $T_c = 150^\circ\text{C}$	150 A
V_{FM}	Maximum peak forward voltage drop @ Rated $I_{F(peak)}$	1.33 V
I_{FSM}	Maximum peak one cycle (non-rep.) surge current 10 msec.	3570 A
I_{FRM}	Maximum repetitive peak forward current	750 A
I^2t	Max. I^2t rating (non-rep.) 10 msec.	64000 A ² Sec

THERMAL MECHANICAL SPECIFICATIONS

θ_{J-C}	Maximum thermal resistance junction to case	0.25° C/W
θ_{C-H}	Contact thermal resistance	GD150N/R 0.07° C/W
T_J	Operating junction temp.	-40°C to 200°C
T_{stg}	Storage temperature	-40°C to 200°C
W	Approx. weight	100 gms.



Mounting torque GD150N/R	minimum	Not lubricated threads	14.1 (125)	N · m (lbf · in)
	maximum		17.0 (150)	
	minimum	Lubricated threads	12.2 (108)	
	maximum		15.0 (132)	

ELECTRICAL RATINGS

TYPE NUMBER GD150N/R		01	02	04	06	08	10	12	14	16
V_{RRM}	Max. repetitive peak reverse voltage (V)	100	200	400	600	800	1000	1200	1400	1600
V_{RSM}	Max. non-repetitive peak reverse voltage (V)	150	300	500	700	900	1100	1300	1500	1700
$V_{R(RMS)}$	Max. R.M.S. reverse voltage (V)	70	140	280	420	560	700	840	980	1120
V_R	Max. D.C. Blocking voltage (V)	100	200	400	600	800	1000	1200	1400	1600
	Recommended R.M.S. working voltage (V)	40	80	160	240	320	400	480	560	640
I_{RM}	Max. Peak reverse leakage current @ V_{RRM}, T_c (mA)	15	15	15	12	9	7	7	6	5

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FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		150	A
				150	°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 142 °C case temperature		235	A
Maximum peak, one cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reappplied	3570	
		t = 8.3 ms		3740	
		t = 10 ms	100 % V_{RRM} reappplied	3000	
		t = 8.3 ms		3140	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reappplied	64	kA ² s
		t = 8.3 ms		58	
		t = 10 ms	100 % V_{RRM} reappplied	45	
		t = 8.3 ms		41	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		640	kA ² √s
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_J$ maximum		0.67	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > $\pi \times I_{F(AV)}$), $T_J = T_J$ maximum		0.83	
Low level value of forward slope resistance	r_{f1}	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_J$ maximum		1.42	mΩ
High level value of forward slope resistance	r_{f2}	(I > $\pi \times I_{F(AV)}$), $T_J = T_J$ maximum		0.91	
Maximum forward voltage drop	V_{FM}	$I_{pk} = 471$ A, $T_J = 25$ °C, $t_p = 10$ ms sinusoidal wave		1.33	V

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.031	0.023	$T_J = T_J$ maximum	K/W
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

Note

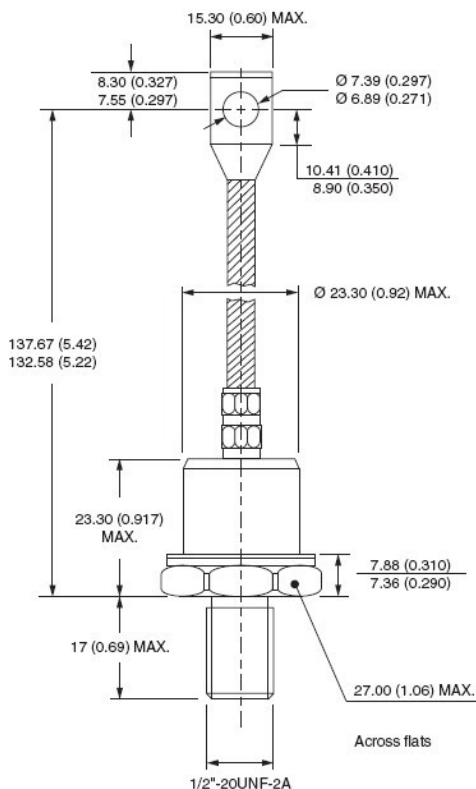
- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

ORDER INFORMATION TABLE

GD150	M/F	R	40
①	②	③	④

- ① - GD150 - Essential Part no.
- ② - None - Stud with 1/2" 20 UNF-2A Threading
M Stud with M12 Threading
- ③ - N - Normal polarity
R - Reverse polarity
- ④ - Voltage Rating (See table)

Outline Table



POLARITY



R= Reverse polarity Cathode base N= Normal polarity Anode base

Conforms to JEDEC (30mm² braid) DO-30
All dimensions in millimeters (inches)

GD150N/R-XX..SERIES

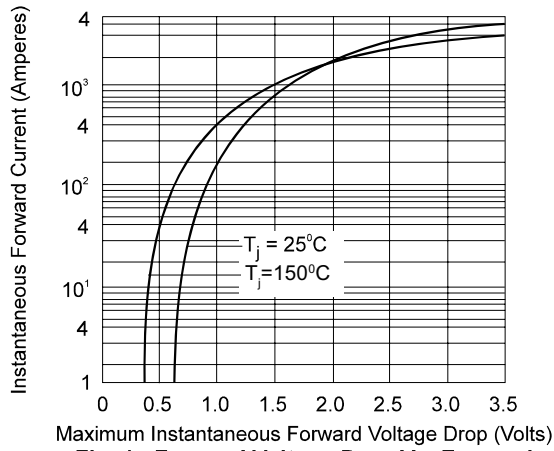


Fig. 1 - Forward Voltage Drop Vs. Forward Current

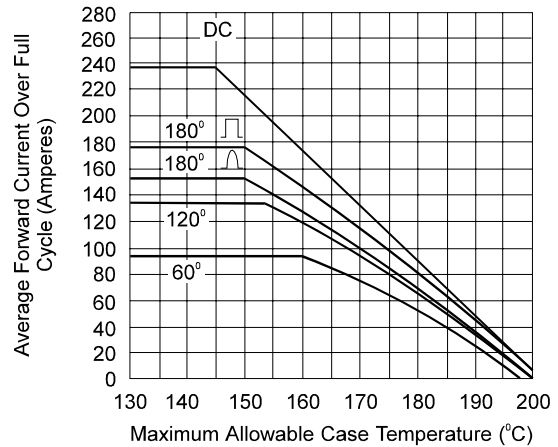


Fig. 2 - Average Forward Current Vs. Case Temperature

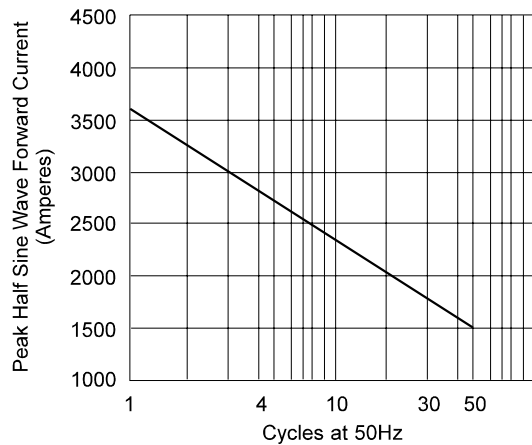


Fig. 3 - Maximum Non Recurrent Surge Current

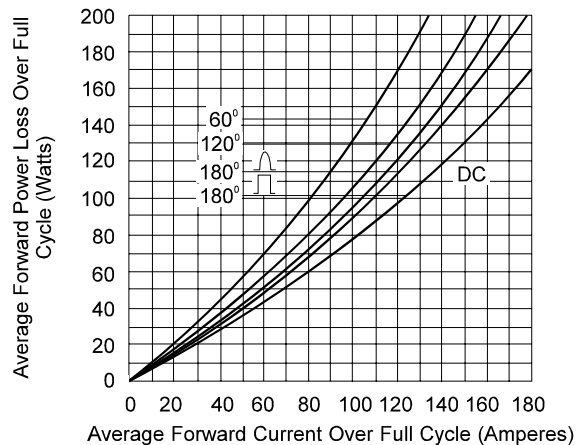


Fig. 4 - Average Forward Power Loss Vs. Low Level Forward Current

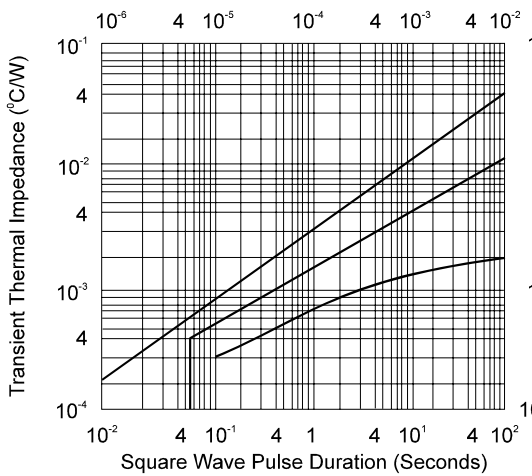


Fig. 5 - Transient Thermal Impedance

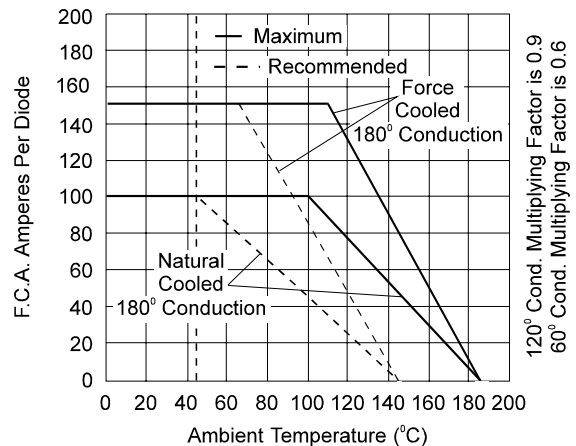


Fig. 6 - Diode GD150N/R Mounted on Heat Sink Type K5 with θ_{HA-NC} 0.55° C/W FC 0 13° C/W

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