NELL SEMICONDUCTOR

NP505W Series

RoHS

PASSIVATED ASSEMBLED CIRCUIT ELEMENTS 50 A

Features

1. Electrically isolated base plate
2. Voltage rating up to 1600V
3. Glass passivated junctions for greater reliability
4. High dynamic characteristics
5. Simplified mechanical design and assembly
6. Wide choice of circuit configqurations

Ordering code

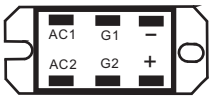
NP	50	5	W
(1)	(2)	(3)	(4)

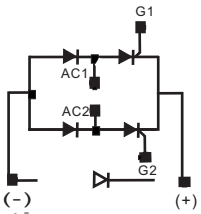
(1) For Passivated Assembled Modules

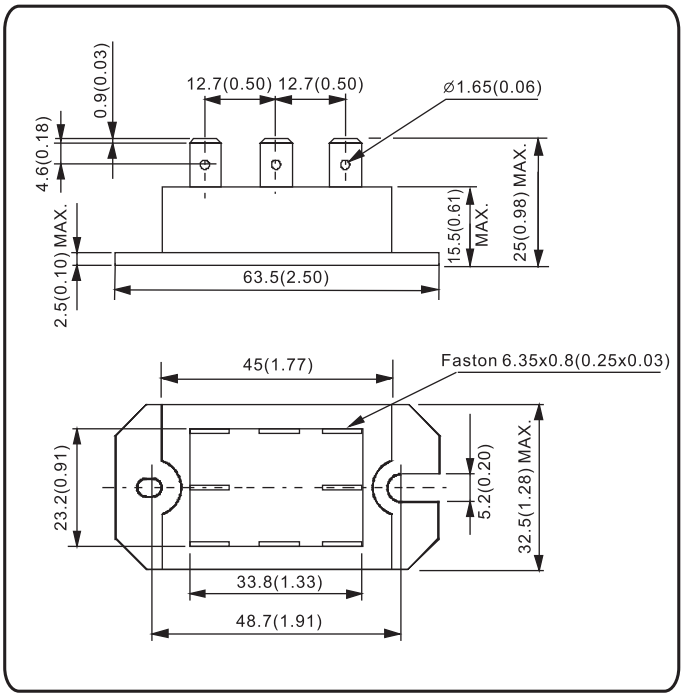
(2) Maximum average forward current , A

(3) 1=400V : 2=800V : 3=1000V : 4=1200V : 5=1600V

(4) Basic series

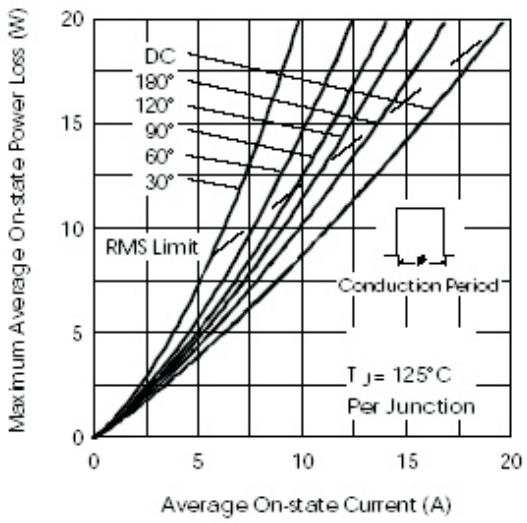


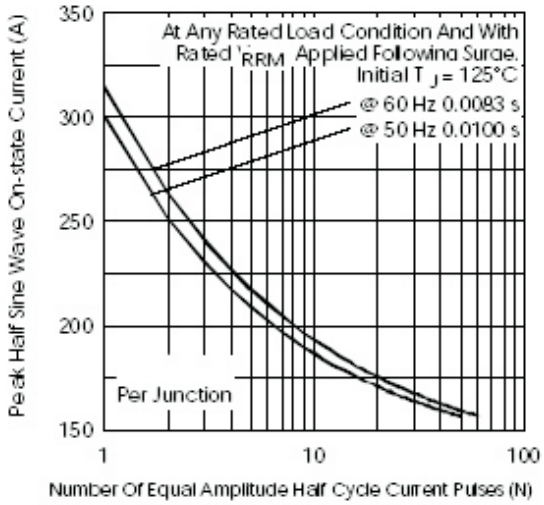


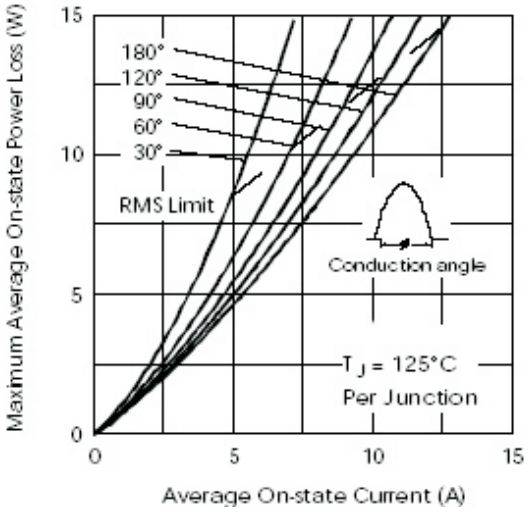


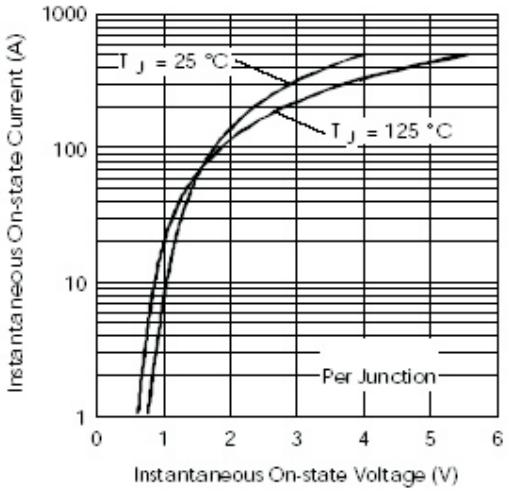
Electrical Characteristics

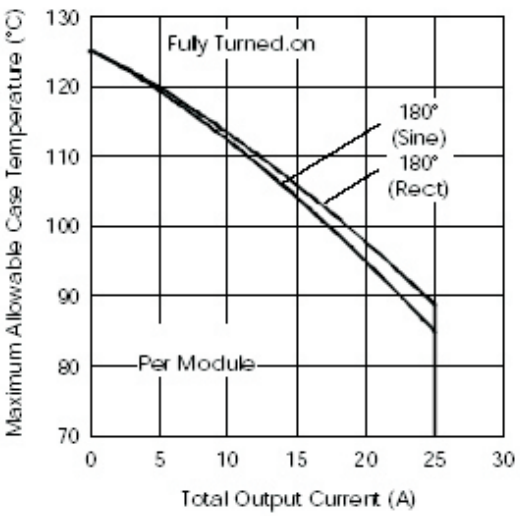
Parameter		Condition	Max. Value	Unit
$I_{T(AV)}$	Max. Average on-state current	180° half sine wave , 50 Hz Single side cooled , T_C=85 °C	50	A
I_{FSM}	Non-repetitive on-state or forward current	t=10ms	600	A
V_{RRM} V_{DRM}	Max. repetitive peak reverse voltage		400 to 1600	V
I_{RRM} IDRM	Repetitive peak reverse current	$V_R = V_{RRM}$	10	mA
I_{TSM}	Max. peak, one-cycle,on-state non-repetitive surge current	t=10ms	715	A
I^2t	Max. Permissible surge energy		900	A^2S
V_{TM}	Max. Forward voltage drop		1.4	V
$V_{T(TO)}$	Value of threshold voltage		0.83	V
r_{t1}	On-state slope resistance		9.61	mΩ
I_{GD}	Max. Required DC gate current to trigger	T_j=25 °C	60	mA
V_{GT}	Max. Required DC gate voltage to trigger		2	V
I_H	Max. Holding current		130	mA
V_{GD}	Max. Gate voltage which will not trigger any devices	At 67% V_{DRM}	0.20	V
$d_{v/dt}$	Critical rate of rise of off-state voltage	V_{DM} = 0.67 V_{DRM}	200	V/us
$d_{i/dt}$	Max. Rate of rise of turned-on current	Gate drive 20V , 20Ω , $t_r \leq$ 0.5 us	200	A/us
T_{stg}	Storage temperature range		-40 to 125	°C
$R_{th(J-C)}$	Max. Thermal resistance	Single side cooled	1.05	K/ W
W_t	Approximate weight		58	g
T	Module to heatsink (M 6)	A mounting compound is recommened. Torque should be rechecked after a period of 3 hours.	4	Nm

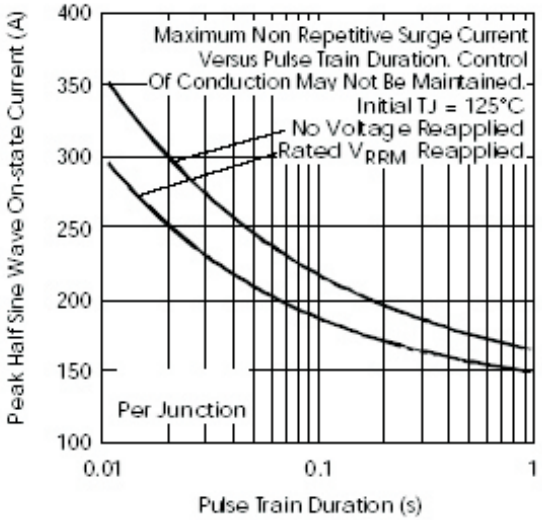

Maximum Average On-state Power Loss (W)
Average On-state Current (A)
DC
180°
120°
90°
60°
30°
RMS Limit
Conduction Period
T J = 125°C
Per Junction


Peak Half Sine Wave On-state Current (A)
Number Of Equal Amplitude Half Cycle Current Pulses (N)
At Any Rated Load Condition And With
Rated VRRM Applied Following Surge.
Initial T J = 125°C
@ 60 Hz 0.0083 s
@ 50 Hz 0.0100 s
Per Junction


Maximum Average On-state Power Loss (W)
Average On-state Current (A)
180°
120°
90°
60°
30°
RMS Limit
Conduction angle
T J = 125°C
Per Junction


Instantaneous On-state Current (A)
Instantaneous On-state Voltage (V)
T J = 25 °C
T J = 125 °C
Per Junction


Maximum Allowable Case Temperature (°C)
Total Output Current (A)
Fully Turned.on
180°
(Sine)
180°
(Rect)
Per Module


Peak Half Sine Wave On-state Current (A)
Pulse Train Duration (s)
Maximum Non Repetitive Surge Current
Versus Pulse Train Duration. Control
Of Conduction May Not Be Maintained.
Initial TJ = 125°C
No Voltage Reapplied
Rated VRRM Reapplied
Per Junction