

# EST100BN120SN

## Ultra-Fast Soft Recovery Diode Module

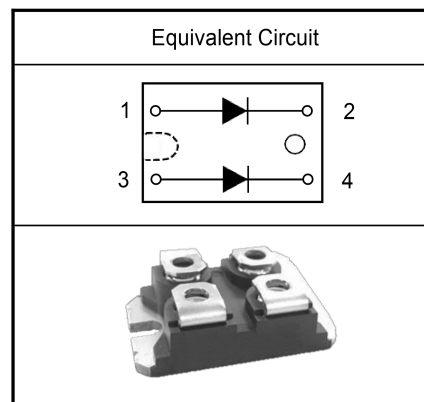
### Equivalent Circuit and Package

#### Features

- Repetitive Reverse Voltage :  $V_{RRM} = 1200V$
- Low Forward Voltage Drop :  $V_F(\text{typ.}) = 1.6V$
- Average Forward Current :  $I_F(\text{AV.}) = 100A @ T_c = 100^\circ C$
- Ultra-Fast Reverse Recovery Time :  $t_{rr}(\text{typ.}) = 180 \text{ ns}$
- Extensive Characterization of Recovery Parameters
- Reduced EMI and RFI
- Isolation Type Package

#### Applications

- Welding Machine
- Induction Heating
- UPS



#### Absolute Maximum Ratings @ $T_c=25^\circ C$ (Per Leg)

Symbol	Parameter	Conditions	Ratings	Unit	
$V_{RRM}$	Repetitive Peak Reverse Voltage		1200	V	
$V_{R(DC)}$	Reverse DC Voltage		960	V	
$I_{F(AV)}$	Average Forward Current	Resistive Load	$T_c = 25^\circ C$	200	A
			$T_c = 100^\circ C$	100	A
$I_{FSM}^{(1)}$	Surge(non-repetitive) Forward Current	One Half Cycle at 60Hz, Peak Value	1400	A	
$I^2_t$	$I^2t$ for Fusing	Value for One Cycle Current, $t_w = 8.3ms, T_j = 25^\circ C$ Start	$8.13 \times 10^3$	$A^2s$	
$T_j^{(2)}$	Junction Temperature	-	-40 ~ 125	$^\circ C$	
$T_{stg}$	Storage Temperature	-	-40 ~ 125	$^\circ C$	
$V_{isol}$	Isolation Voltage	@ AC 1 minutes	2500	V	
$P_d$	Maximum Power Dissipation		337	W	
-	Mounting screw torque	M4	1.45	N.m	
-	Mounting terminals screw torque	M4	1.45	N.m	

(Note \*1) Repetitive rating : Pulse width limited by max junction temperature

(Note \*2) The maximum junction temperature of chip is  $150^\circ C$

**Electrical Characteristics of FRD @  $T_c=25^\circ\text{C}$  (unless otherwise specified)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit	
$V_R$	Cathode Anode Breakdown Voltage	$I_R = 100\mu\text{A}$	1200	-	-	V	
$V_{FM}$	Maximum Forward Voltage	$I_{FM} = 100\text{A}$	$T_j = 25^\circ\text{C}$	-	1.6	1.95	V
			$T_j = 125^\circ\text{C}$	-	1.6	-	
$I_{RRM}$	Repetitive Peak Reverse Current	$T_C = 100^\circ\text{C}$ , $V_{RRM}$ applied	-	-	2.0	mA	
$t_{rr}$	Reverse Recovery Time	$I_{FM} = 100\text{A}$ , $V_R = 600\text{V}$ $di/dt = -1000\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	-	180	220	ns
			$T_j = 125^\circ\text{C}$	-	240	-	

**Thermal Characteristics and Weight**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction-to-Case	per FRD	-	-	0.37	$^\circ\text{C}/\text{W}$
Weight	Weight of Module		-	-	30	g

### Performance Curves

Fig. 1 Typical Forward Voltage Drop vs. Instantaneous Current

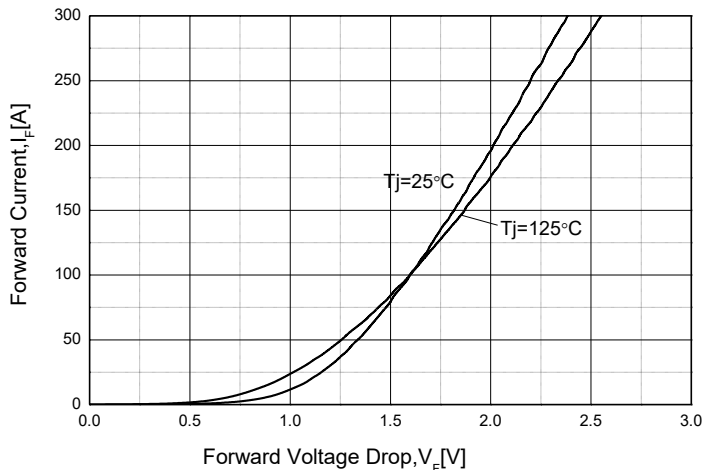


Fig. 2 Typical Reverse Recovery Time vs.  $-di/dt$

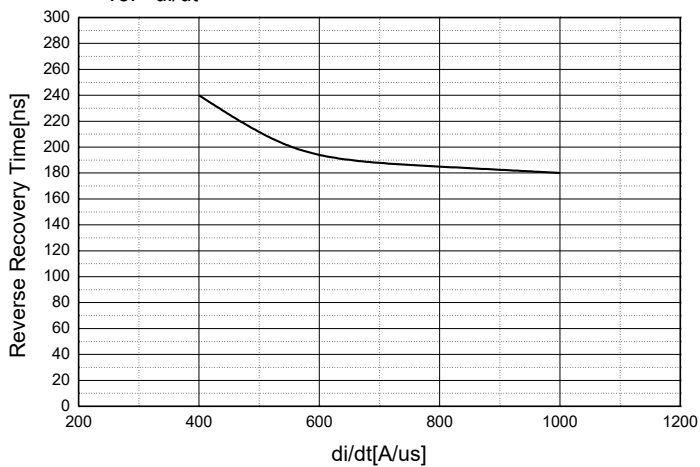


Fig. 3 Transient Thermal Impedance ( $Z_{thjc}$ ) Characteristics

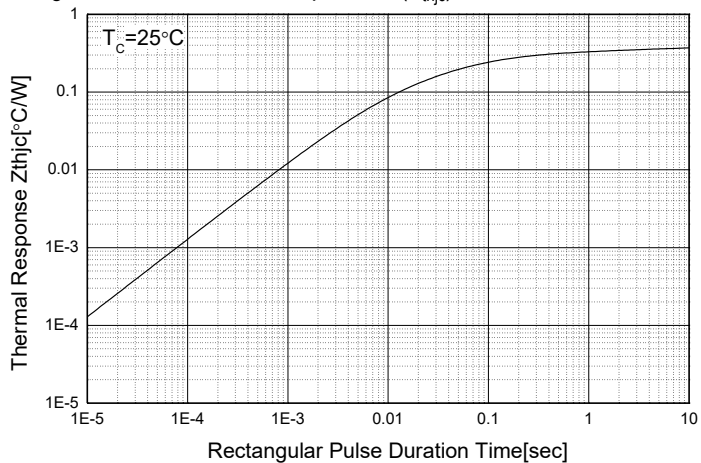
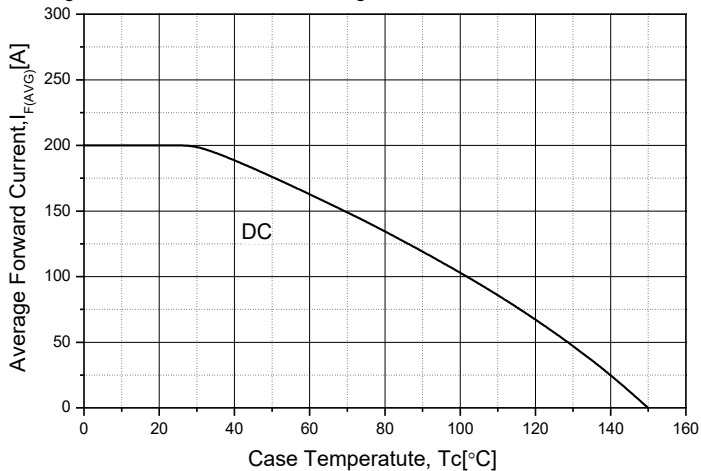


Fig. 4 Forward Current Derating Curve



## ■ Package Out Line Information

