

# ESD150NC60K / ESD150NS60K

## High-EAS&Ultra-Fast Soft Recovery Diode Module

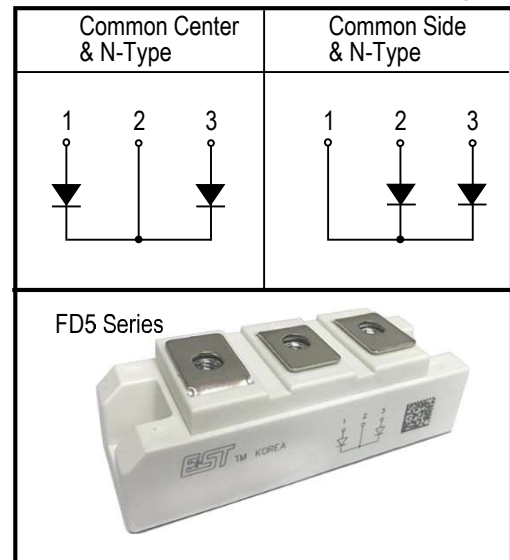
### Features

- Repetitive Reverse Voltage :  $V_{RRM} = 600V$
- Low Forward Voltage Drop :  $V_F(\text{typ.}) = 1.3V$
- Average Forward Current :  $I_F(\text{AV.}) = 150A$  @  $T_c = 100^\circ C$
- Ultra-Fast Reverse Recovery Time :  $t_{rr}(\text{typ.}) = 150ns$
- Extensive Characterization of Recovery Parameters
- High EAS
- Reduced EMI and RFI
- Isolation Type Package

### Applications

- Welding Machine
- Induction Heating
- UPS

### Equivalent Circuit and Package



Please see the package out line information

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

Symbol	Parameter	Conditions	Ratings	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage		600	V
$V_{R(DC)}$	Reverse DC Voltage		480	V
$I_{F(AV)}$	Average Forward Current	$T_c = 25^\circ C$	300	A
		$T_c = 100^\circ C$	150	A
$I_{FSM}^{(1)}$	Surge(non-repetitive) Forward Current	One Half Cycle at 60Hz, Peak Value	2100	A
$I_t^2$	$I_t^2$ for Fusing	Value for One Cycle Current, $t_w = 8.3ms$ , $T_j = 25^\circ C$ Start	$1.83 \times 10^4$	$A^2s$
$T_j^{(2)}$	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		781	W
-	Mounting screw torque	M6	4.0	N.m
-	Mounting terminals screw torque	M6	3.0	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	$I_R = 100\mu\text{A}$	600	-	-	V	
$V_{FM}$	Maximum Forward Voltage	$I_{FM} = 150\text{A}$	$T_j = 25^\circ\text{C}$	-	1.3	1.65	V
			$T_j = 125^\circ\text{C}$	-	1.1	-	
$I_{RRM}$	Repetitive Peak Reverse Current	$T_C = 100^\circ\text{C}$ , $V_{RRM}$ applied	-	-	1.0	mA	
$t_{rr}$	Reverse Recovery Time	$I_{FM} = 150\text{A}$ , $V_R = 300\text{V}$ $di/dt = -700\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	-	150	190	ns
			$T_j = 125^\circ\text{C}$	-	200	-	

### ■ Thermal Characteristics and Weight

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Junction-to-Case	per FRD	-	-	0.15	$^\circ\text{C}/\text{W}$
Weight	Weight of Module		-	-	180	g

## ■ Performance Curves

Fig. 1 Typical Forward Voltage Drop vs. Instantaneous Current

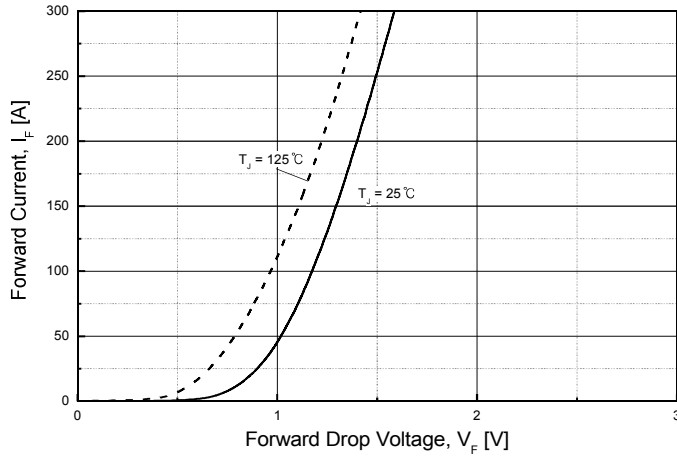


Fig. 2 Forward Current Derating Curve

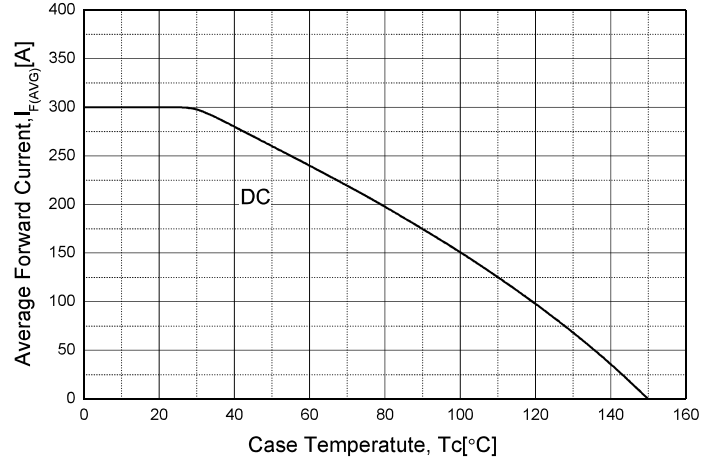
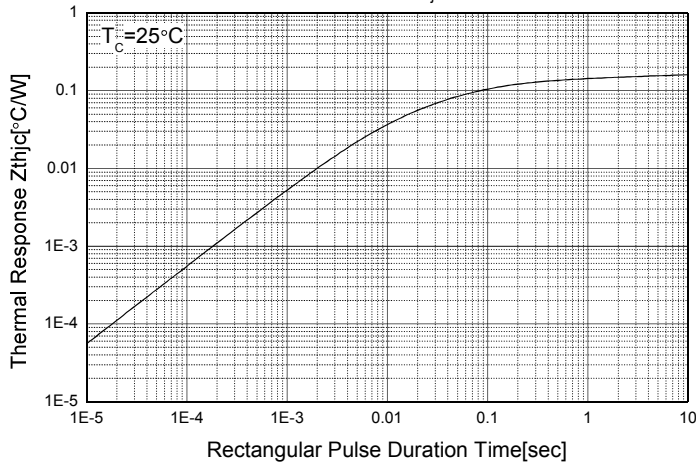


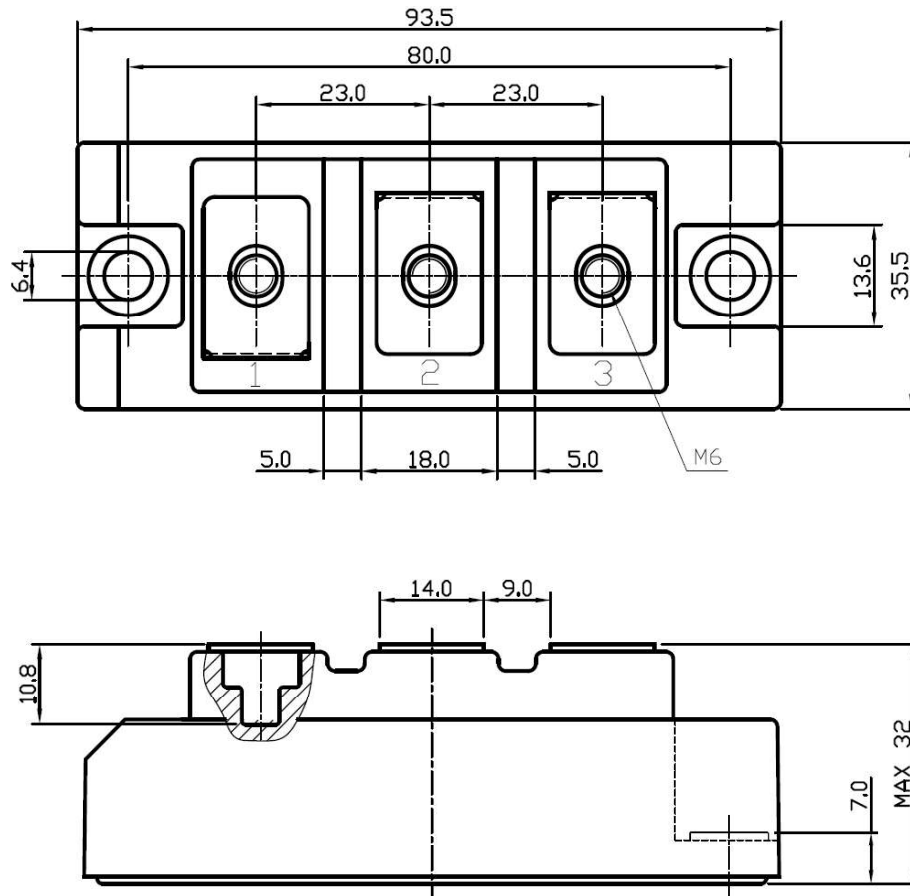
Fig. 3 Transient Thermal Impedance ( $Z_{thjc}$ ) Characteristics



■ Package Out Line Information

FD5 Package

Dimensions in mm



■ Internal Circuit

