RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RMP3N90IP
RMP3N90LD

N-Channel ENHANCEMENT MODE MOSFET

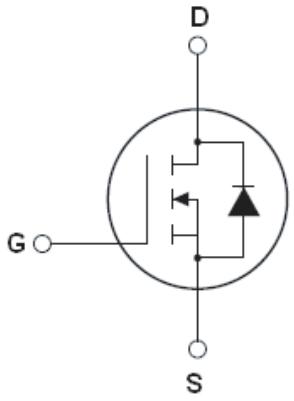
General Description

RMP3N90 is an N-channel enhancement mode MOSFET,which uses the self-aligned planar process and improved terminal technology,reducing the conduction loss,enhancing the avalanche energy.

$V_{DS}@T_{jmax}$	900	V
$R_{DS(ON)\ TYP}$	2.8	Ω
I_D	3.0	A

Features

- Low Crss
- Low gate charge
- Fast switching
- Improved ESD capability
- Improved dv/dt capability
- 100% Avalanche Tested
- ROHS compliant
- Halogen-free



Schematic diagram

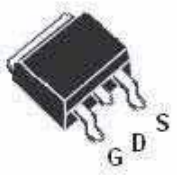
Application

- High efficiency swith mode power supplies
- Electronic lamp ballasts
- Uninterruptible Power Supply（UPS）

Package Marking And Ordering Information

Device	Device Package	Marking
RMP3N90IP	TO-251	3N900
RMP3N90LD	TO-252	3N900

TO-251



TO-252

Table 1. Absolute Maximum Ratings (T_C=25℃)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS} 0V）	V_{DS}	900	V
Gate-Source Voltage (V_{DS} 0V)	V_{GS}	±30	V
Continuous Drain Current at Tc=25°C	$I_{D\ (DC)}$	3	A
Continuous Drain Current at Tc=100°C	$I_{D\ (DC)}$	1.9	A
Pulsed drain current **(Note 1)**	$I_{DM\ (pluse)}$	12	A
Maximum Power Dissipation(Tc=25℃)	P_D	50	W
Single pulse avalanche energy **(Note2)**	E_{AS}	460	mJ
Avalanche current	I_{AR}	1	A
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55...+150	°C

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Table 2. Thermal Characteristic

Parameter	Symbol	Value	Unit
Thermal Resistance，Junction-to-Case（Maximum）	R_{thJC}	2.5	°C/W
Thermal Resistance，Junction-to-Ambient （Maximum）	R_{thJA}	83.3	°C/W

Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
On/off states						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	900	-	-	V
Breakdown Voltage Temperature Coefficent	$\triangle BV_{DSS}/\triangle Tj$	I_D=250μA,referenced to 25°C	-	0.6	-	V/°C
Zero Gate Voltage Drain Current(Tj=25℃)	I_{DSS}	V_{DS}=900V,V_{GS}=0V	-	-	1	μA
Zero Gate Voltage Drain Current(Tj=125℃)	I_{DSS}	V_{DS}=720V,V_{GS}=0V	-	-	10	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±30V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	3.0	-	5.0	V
Drain-Source On-State Resistance**(Note 3)**	$R_{DS(ON)}$	V_{GS}=10V, I_D=1.5A	-	2.8	3.2	Ω
Dynamic Characteristics						
Forward Transconductance**(Note 3)**	g_{FS}	V_{DS} = 40V, I_D = 1.5A	-	2.5	-	S
Input Capacitance	C_{lss}	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	-	850	-	PF
Output Capacitance	C_{oss}		-	56	-	PF
Reverse Transfer Capacitance	C_{rss}		-	14	-	PF
Total Gate Charge **(Note 3)**	Q_g	V_{DS}=720V,I_D=3A, V_{GS}=10V	-	19	-	nC
Gate-Source Charge**(Note 3)**	Q_{gs}		-	4.2	-	nC
Gate-Drain Charge**(Note 3)**	Q_{gd}		-	9.1	-	nC
Switching times						
Turn-Off Delay Time**(Note 3)**	$t_{d(off)}$	V_{DD}=450V,I_D=3A,R_G=25Ω	-	35	-	nS
Source- Drain Diode Characteristics						
Maximum Continuous Drain-Source Diode Forward Current	I_S		-	-	3	A
Forward On Voltage**(Note 3)**	V_{SD}	Tj=25°C,I_S =3A,V_{GS}=0V	-	-	1.4	V
Reverse Recovery Time**(Note 3)**	t_{rr}	Tj=25°C,I_F=3A,di/dt=100A/μs	-	570	-	nS
Reverse Recovery Charge**(Note 3)**	Q_{rr}		-	3.6	-	uC

Notes: 1.Repetitive Rating: Pulse width limited by maximum junction temperature

2.L=57mH,I_{AS}=3A, V_{DD}=50V, R_G=25Ω,Starting Tj=25°C

3. Pulse Test :Pulse Width≤300μS,Duty Cycle≤2%

RATING AND CHARACTERISTICS CURVES (RMP3N90LD(IP))

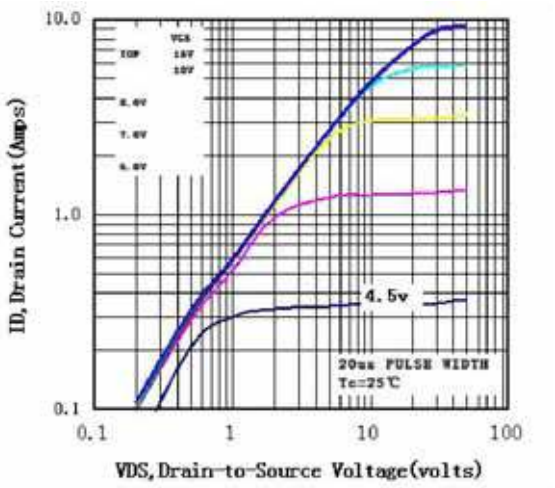


Fig1 Typical Output Characteristics, Tc=25℃

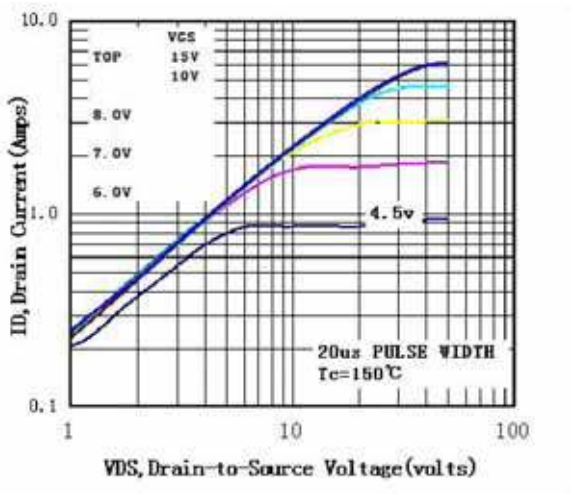


Fig2 Typical Output Characteristics, Tc=150℃

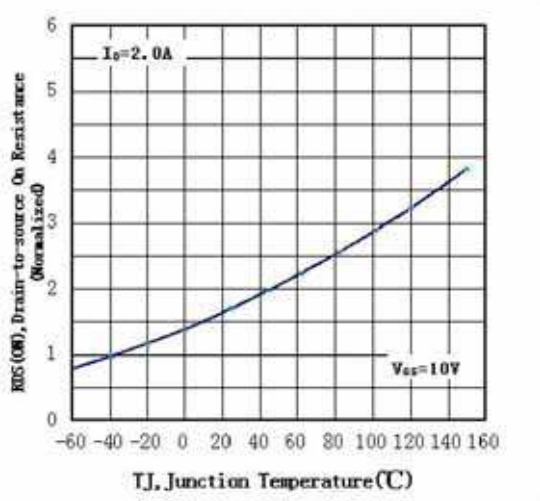


Fig3 Normalized Resistance Vs.Temperature

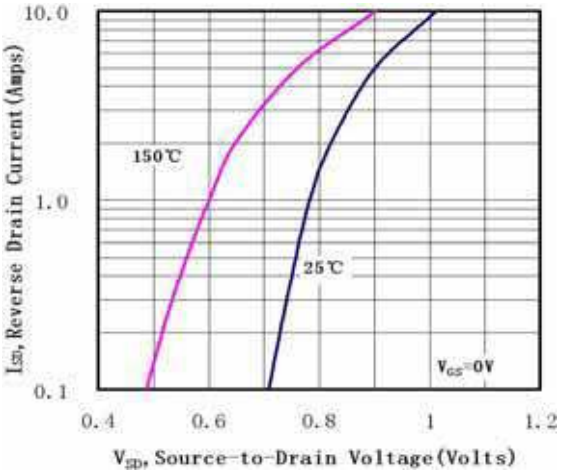


Fig4 Typical Source-Drain Diode Forward Voltage

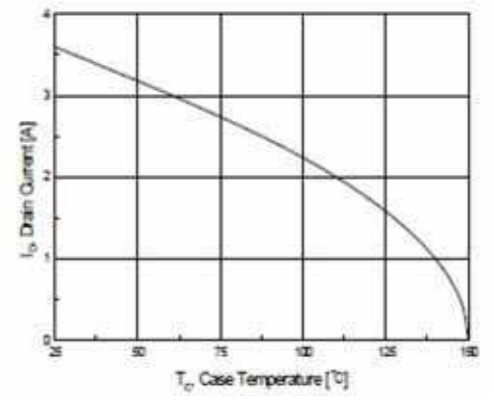


Fig5 Maximum Drain Current Vs.Case Temperature

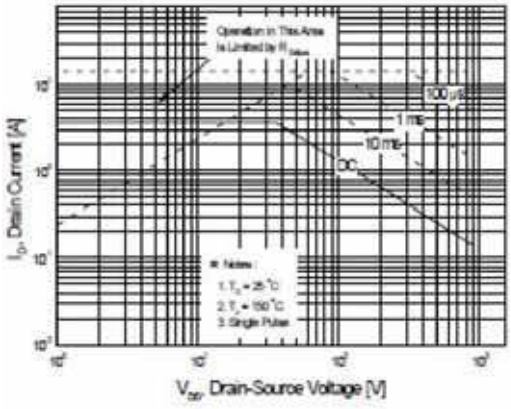
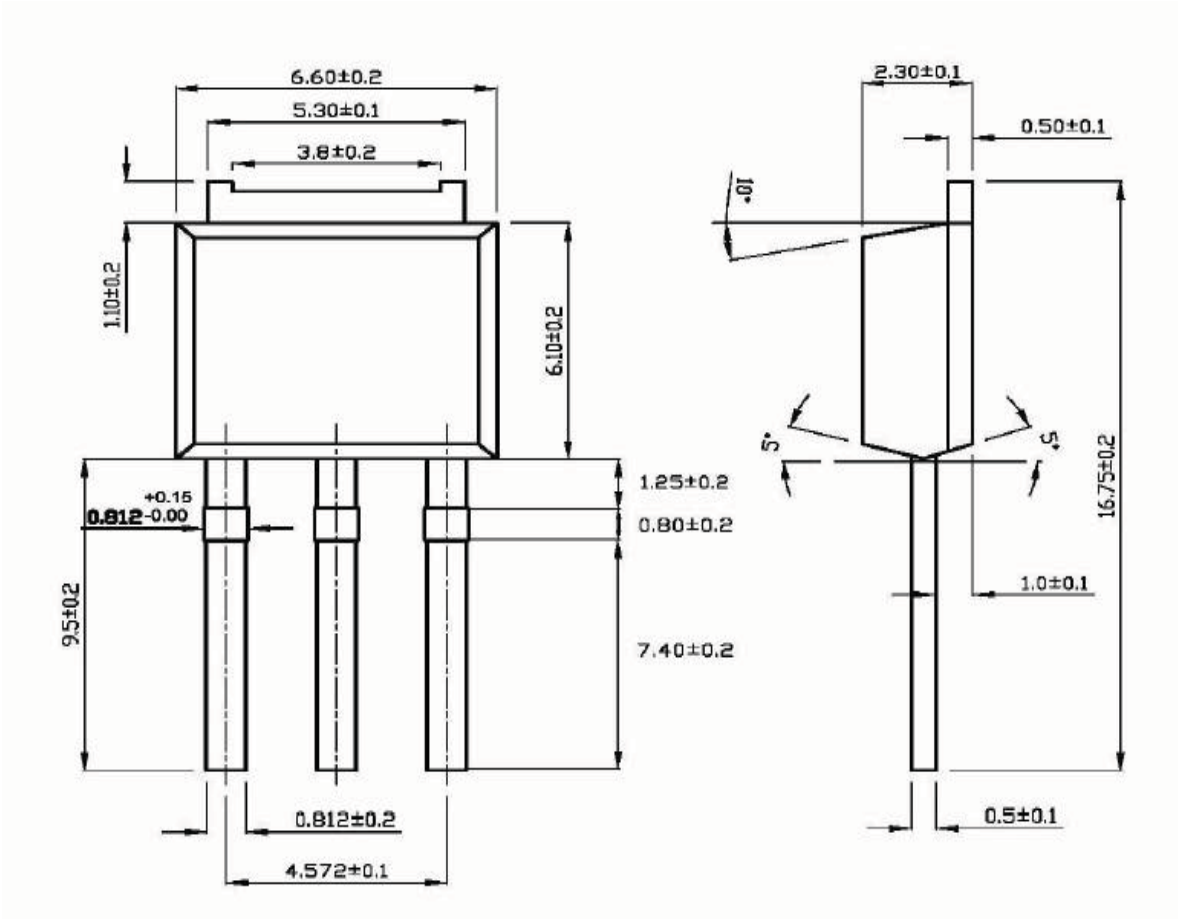
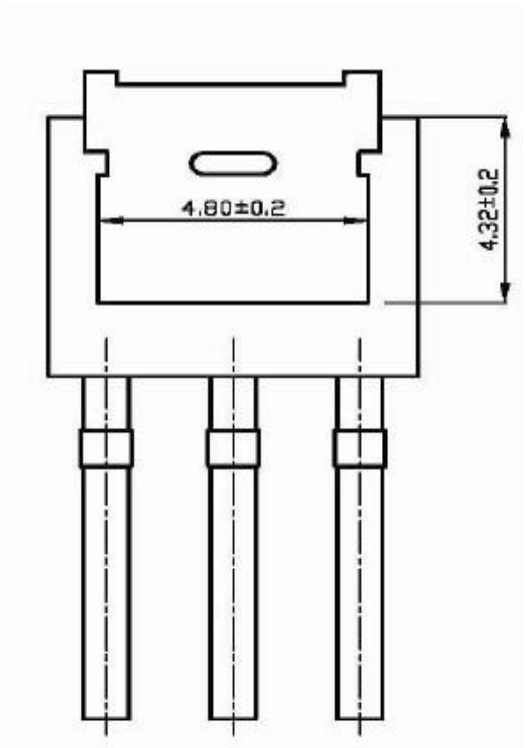


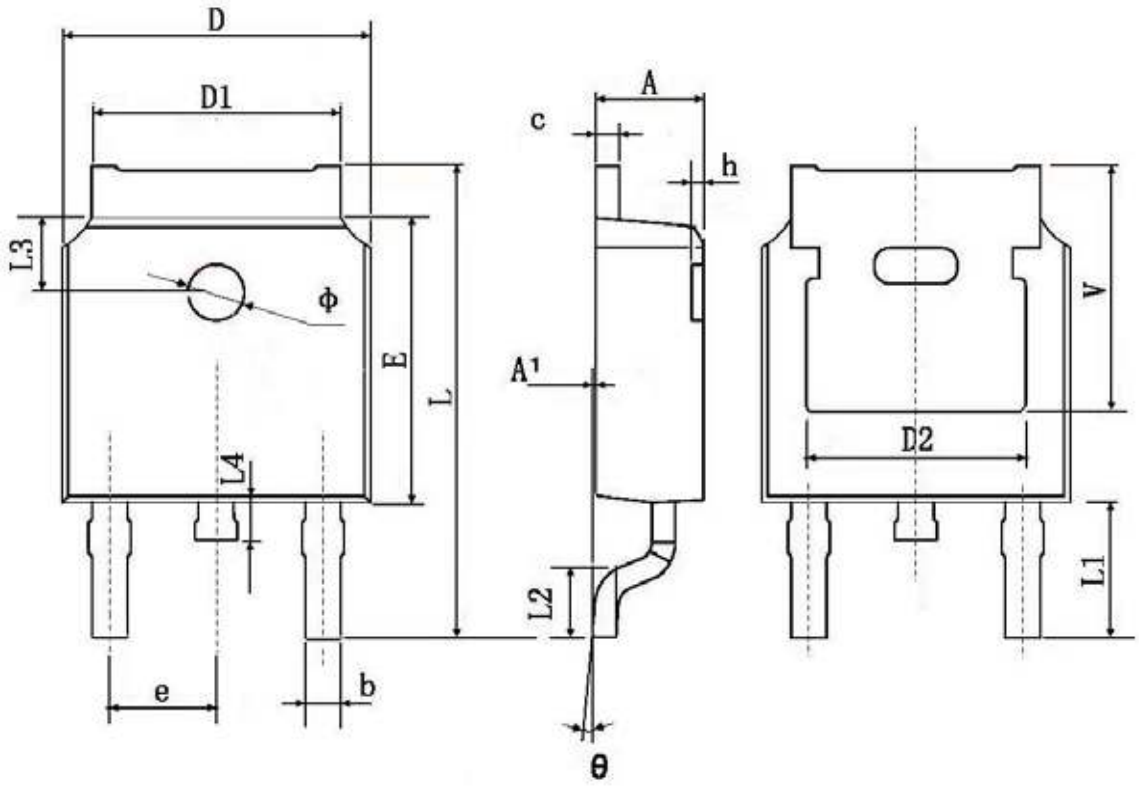
Fig6 Maximum Safe Operating Area

TO-251 Package Information





TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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