General Description：

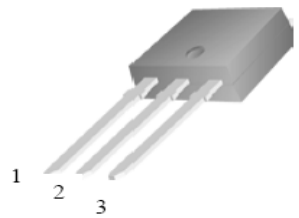
SR2N65 the silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor an be used inc various power switching circuit for system miniaturization and higher efficiency. The package form is TO-251 TO-252, ESOP-8 TO-220,TO-220F which accords with the RoHS standard.

Features：

- **Fast Switching**
- **Low ON Resistance(Rdson≤4.5Ω)**
- **Low Gate Charge (Typical Data:8.4nC)**
- **Low Reverse transfer capacitances(Typical:3.7pF)**
- **100% Single Pulse avalanche energy Test**

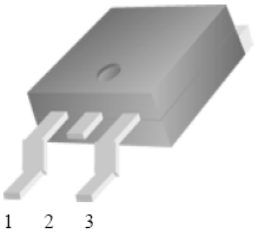
RoHS

TO-251



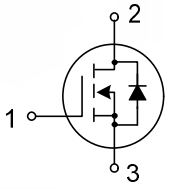
1.Gate 2.Drain 3.Source

TO-252

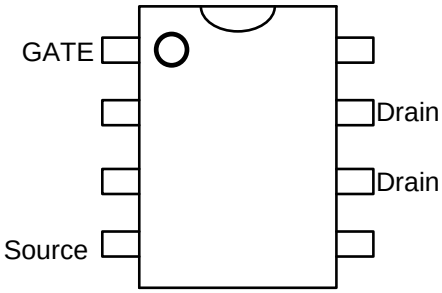


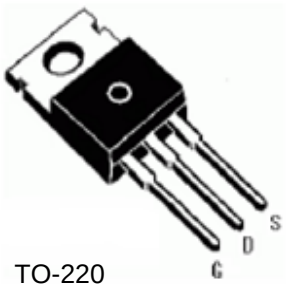
1.Gate 2.Drain 3.Source

Inner Equivalent Principium Chart

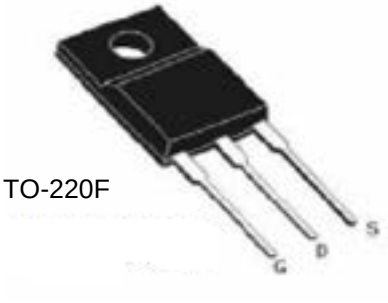


SOP-8/ESOP8





TO-220



TO-220F

Applications：

Power switch circuit of adaptor and charger.

Absolute（Tc= 25℃ unless otherwise specified）：

Symbol	Parameter	Rating			Units
		TO-251/252	TO-220	SOP8/220F	
V_{DSS}	Drain-to-Source Voltage	650			V
I_D	Continuous Drain Current	2.0			A
	Continuous Drain Current T_C = 100 °C	1.3			A
I_{DM} [a1]	Pulsed Drain Current	8.0			A
V_{GS}	Gate-to-Source Voltage	±30			V
E_{AS} [a2]	Single Pulse Avalanche Energy	20			mJ
E_{AR} [a1]	Avalanche Energy ,Repetitive	6.4			mJ
I_{AR} [a1]	Avalanche Current	1.9			A
dv/dt [a3]	Peak Diode Recovery dv/dt	4.6			V/ns
P_D	Power Dissipation	35	54	44	W
	Derating Factor above 25°C	0.28	0.43	0.35	W/℃
T_J， T_{stg}	Operating Junction and Storage Temperature Range	150，–55 to 150			℃
T_L	Maximum Temperature for Soldering	300			℃

Electrical Characteristics（Tc= 25℃ unless otherwise specified）：

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	650	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	ID=250uA,Reference25℃	--	0.65	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS} = 650V, V_{GS}= 0V, T_a = 25℃	--	--	10	μA
		V_{DS} =520V, V_{GS}= 0V, T_a = 125℃			100	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}= 30V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS} =-30V	--	--	-100	nA

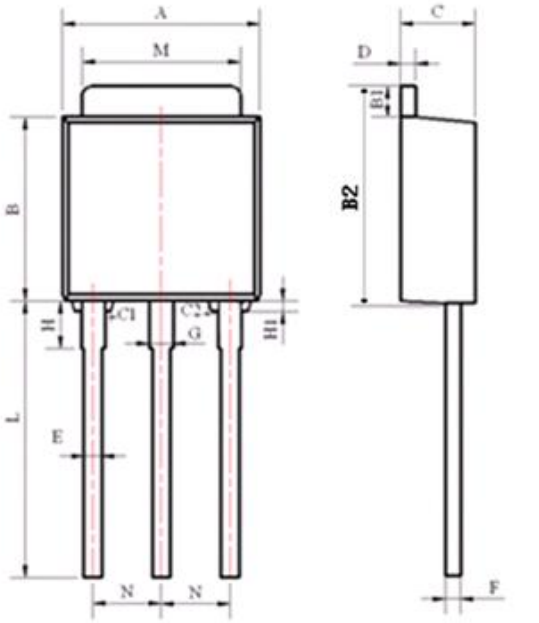
ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=10V,I_D=1.0A	--	3.6	4.5	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.3		3.6	V
Pulse width tp≤300μs, δ ≤2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Trans conductance	V_{DS}=30V, I_D =1.0A		2.45	--	S
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = 25V f = 1.0MHz	--	313		pF
C_{oss}	Output Capacitance		--	31.2		
C_{rss}	Reverse Transfer Capacitance		--	3.7		

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =2.0A V_{DD} = 325V V_{GS} = 10V R_G = 25Ω	--	20.3	--	ns
tr	Rise Time		--	145	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	33 .3	--	
t_f	Fall Time		--	11.8	--	
Q_g	Total Gate Charge	I_D =2.0A V_{DD} =520V V_{GS} = 10V	--	8.4		nC
Q_{gs}	Gate to Source Charge		--	1.6		
Q_{gd}	Gate to Drain (“Miller”)Charge		--	3.1		

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	2	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	8	A
V_{SD}	Diode Forward Voltage	I_S=2.0A,V_{GS}=0V	--	--	1.4	V
trr	Reverse Recovery Time	I_S=2.0A,T_j = 25° C	--	284	--	ns
Qrr	Reverse Recovery Charge	dI_F/dt=100A/us, V_{GS}=0V	--	1008	--	nC
Pulse width tp≤300μs, δ ≤2%						

Package Information：

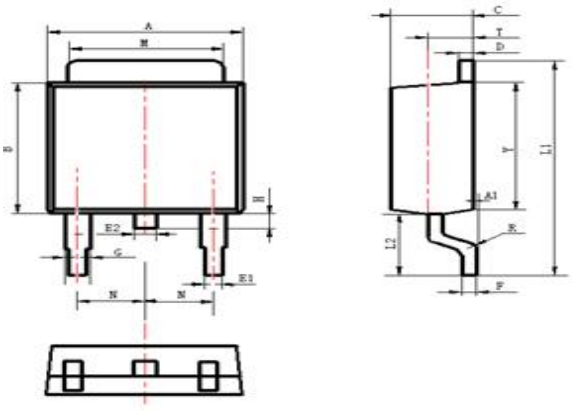


Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
B	5.70	6.40
B1	1.00	1.20
B2	6.90	7.30
C	2.10	2.50
C1	0.20	0.40
C2	0.30	0.50
D	0.30	0.60
E	0.50	0.70
F	0.30	0.60
G	0.70	1.00
H	1.60	2.40
H1	0.30	0.40
L	7.50	9.80
	2.10	2.90
M	5.10	5.50
N	2.09	2.49

TO-251 Package

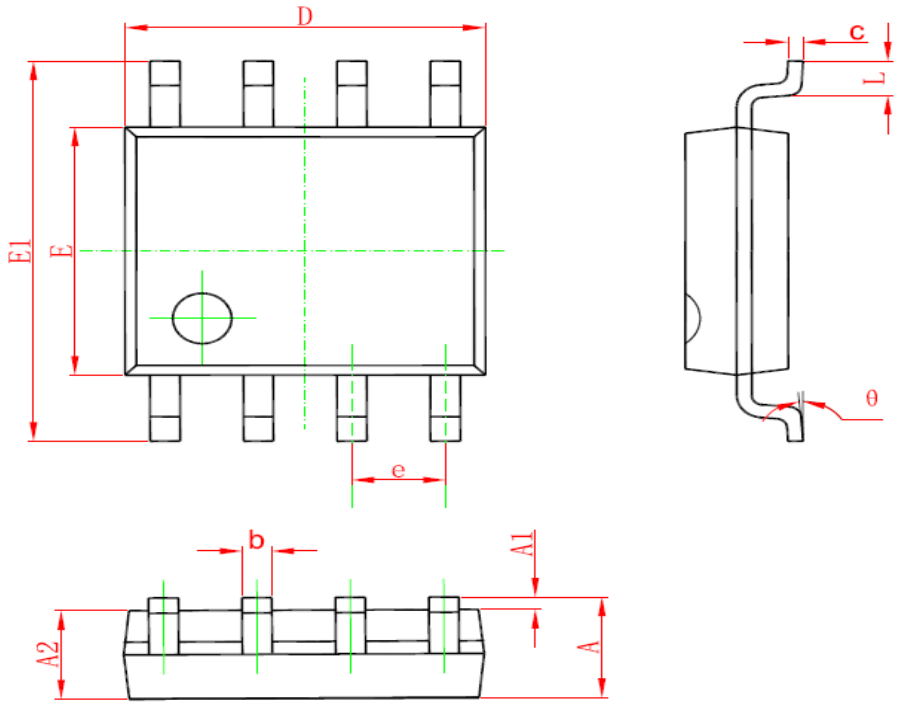
Package Information

TO-252-2L



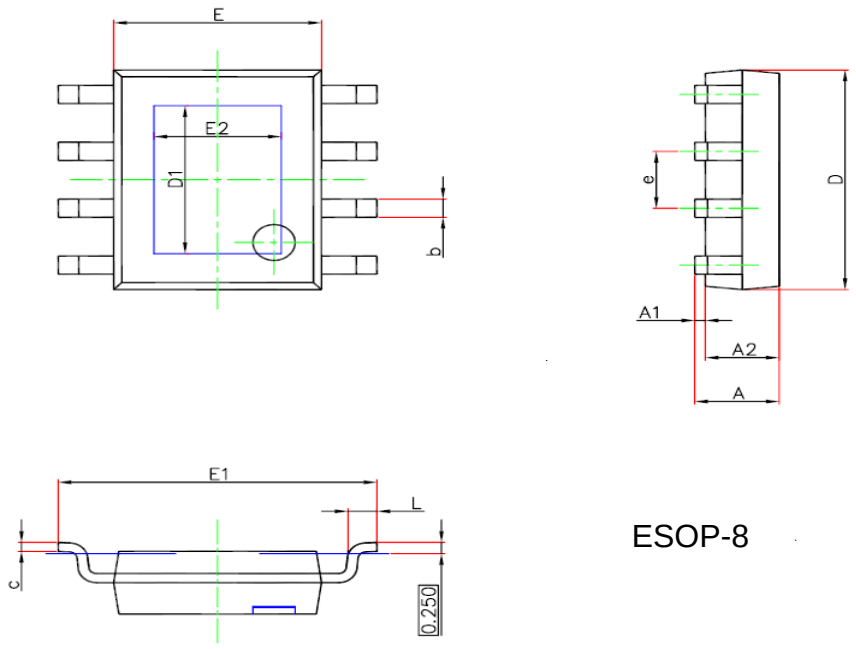
Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.60
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.00
L1	9.60	10.30
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

SOP8 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

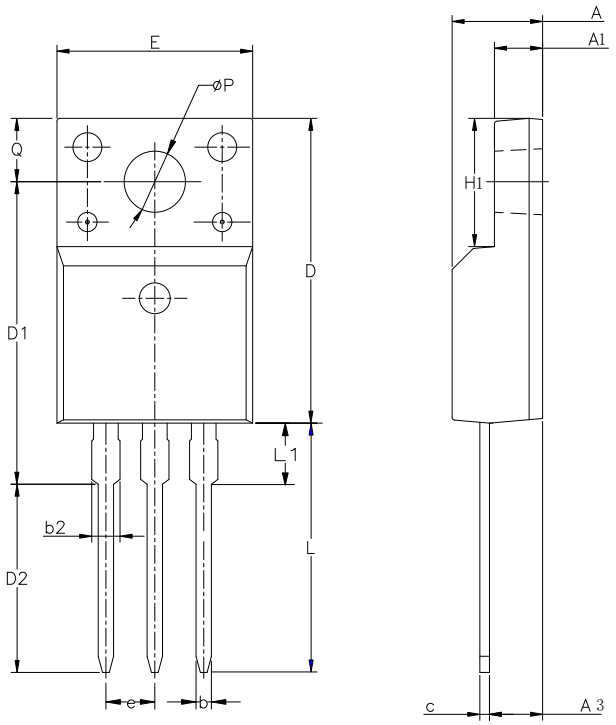
SOP8-EP (EXP PAD) PACKAGE OUTLINE DIMENSIONS



ESOP-8

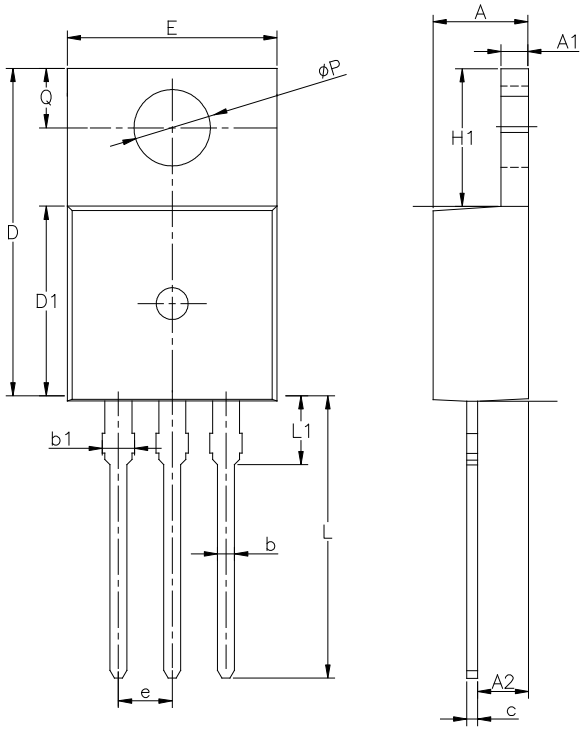
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.700	0.053	0.067
A1	0.000	0.100	0.000	0.004
A2	1.350	1.550	0.053	0.061
c	0.170	0.250	0.007	0.010
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
E2	2.313	2.513	0.091	0.099
L	0.400	1.270	0.016	0.050
b	0.330	0.510	0.013	0.020
D	4.700	5.100	0.185	0.201
D1	3.202	3.402	0.126	0.134
e	1.270 BASIC		0.050 BASIC	
θ	0°	8°	0°	8°

TO-220F



SYMBOL	MIN	NOM	MAX
A	4.42	4.7	5.02
A1	2.3	2.54	2.8
A3	2.5	2.76	3.1
b	0.7	0.8	0.9
b2	_	_	1.47
c	0.35	0.5	0.65
D	15.25	15.87	16.25
D1	15.3	15.75	16.3
D2	9.3	9.8	10.3
E	9.73	10.16	10.36
e	2.54BSC		
H1	6.4	6.68	7
L	12.48	12.98	13.48
L1	_	_	3.5
øP	3	3.18	3.4
Q	3.05	3.3	3.55

TO-220



SYMBOL	MIN	NOM	MAX
A	4.3	4.5	4.7
A1	1	1.3	1.5
A2	1.8	2.4	2.8
b	0.6	0.8	1
b1	1	_	1.6
c	0.3	0.5	0.7
D	15.1	15.7	16.1
D1	8.1	9.2	10
E	9.6	9.9	10.4
e	2.54BSC		
H1	6.1	6.5	7
L	12.6	13.08	13.6
L1			3.95
øP	3.4	3.7	3.9
Q	2.6	_	3.2